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Technical Report Overview

Report: Koocanusa Reservoir Monitoring Program Annual Data Summary Report - 2021

Overview: This annual report provides an overview of the environmental monitoring activities that were conducted in 2021 in the Canadian portion of Koocanusa Reservoir and a summary of the associated results. This report is required under Permit 107517.

This report was prepared for Teck by Minnow Environmental Inc.

For More Information
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Future studies will be made available at **teck.com/elkvalley.**

Koocanusa Reservoir Monitoring Program Annual Data Summary Report - 2021

Prepared for:
Teck Coal Limited
Sparwood, British Columbia

Prepared by:
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Georgetown, Ontario

June 2022

Koocanusa Reservoir Monitoring Program
Annual Summary Report – 2021

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EXECUTIVE SUMMARY

The Koocanusa Reservoir Monitoring Program is an ongoing monitoring program to assess spatial differences in physico-chemical and biological conditions in portions of the Koocanusa Reservoir (the reservoir) downstream and upstream of the Elk River mouth. This annual report provides an overview of the environmental monitoring activities conducted in the Canadian portion of the Koocanusa Reservoir with data included from Montana monitoring programs where applicable, together with a summary of results in accordance with conditions of British Colombia Ministry of Environment and Climate Change Strategy (ENV) Permit 107517 (Section 9.8), The principal findings from the Koocanusa Reservoir Monitoring Program in 2021 are summarized below.

Water Quality

Reservoir levels in 2021 were well within normal ranges observed in previous years. During the low-pool in April 2021, the reservoir was fully wetted and not indicative of riverine conditions that have been observed in previous years (i.e., 2014, 2017, and 2018).

Order constituents (except for selenium), as well as non-order constituents selected for assessment, had monthly average concentrations below or equal to applicable BC water quality guidelines and applicable site performance objectives (SPOs) throughout 2021 at all permitted water quality stations. Monthly mean concentrations of selenium in water were elevated relative to guidelines on at least one occasion at RG_GRASMERE and RG_USGOLD, and exceeded the SPO in January and April at RG_DSELK.

Productivity assessment indicated annual median N:P ratios were consistently 15 or more throughout the water column at all permitted water quality stations in 2021, and thus indicative of phosphorous limitation. Phosphorus limitation can result in a lack of plant and algal growth throughout this system, however, this effect is confounded by the seasonal drawdown that occurs. Trophic status classification suggest Koocanusa Reservoir was primarily oligotrophic to mesotrophic most of the year.

Monthly loadings of nitrate and selenium from the Elk River to the reservoir were highest from May to July, with the peak coinciding with freshet in June. In the Kootenay River, May to July also showed the highest loadings for nitrate and selenium to the reservoir, with the peak loadings occurring in June. Loadings of both nitrate and selenium to Koocanusa Reservoir were higher from the Elk River than from the Kootenay River on both a monthly and annual timescale.

Sediment Quality

Sediment, both downstream and upstream of the Elk River, was primarily composed of silt-sized material and lesser amounts of clay-sized material. Lower proportions of silt and higher proportions of clay were indicated in sediment downstream of the Elk River compared to upstream, however no differences in proportions of sand or total organic content material were indicated between areas. Arsenic, cadmium, chromium, copper, iron, manganese, nickel, selenium, and zinc concentrations in sediment were elevated above the lower working sediment quality guideline (WSQG) at two or more stations downstream of the Elk River. Of these metals, sediment concentrations of iron, manganese, and nickel were also above the lower WSQG at the upstream area suggesting background concentrations of these three parameters that point to sources upstream of the reservoir. Several metals and polycyclic aromatic hydrocarbons (PAHs) occurred at significantly higher concentrations in sediment downstream of the Elk River compared to upstream in 2021.

Zooplankton Community and Tissue Chemistry

In 2021, no differences in overall density, biomass, and richness of the community, or absolute density and biomass of the major zooplankton groups were indicated between transects located downstream and upstream of the Elk River. Relative biomass of Cladocera and Rotifera was higher, whereas the relative biomass of Copepoda was lower, downstream of the Elk River compared to upstream. Density, biomass, and richness of the overall zooplankton community, as well as density and biomass of all dominant taxonomic groups, was lower at the downstream transect in 2021 than in 2019 and 2020, but a similar change was also apparent at the upstream transect in 2021 compared to 2019 and 2020 and unrelated to mine operations.

Zooplankton tissue selenium concentrations were below the BC chronic interim guideline both downstream and upstream of the Elk River in June and August 2021. There were no differences in selenium concentrations in zooplankton observed between areas downstream and upstream in either June or August, nor were there differences in concentrations between June and August within areas. Temporally, zooplankton tissue selenium concentrations were lower in June 2021 compared to 2020 both downstream and upstream of the Elk River and comparable to 2019. Tissue selenium concentrations in August 2021 were comparable to concentrations previously reported in 2019 and 2020, suggesting no changes over time.

Benthic Invertebrate Community and Tissue Chemistry

In 2021, benthic invertebrate richness and density were higher downstream than upstream of the Elk River. The benthic invertebrate community was primarily dominated by Oligochaeta (mostly Tubificinae) and Insecta (primarily chironomids) both downstream and upstream of the

Elk River. Evaluation of community composition indicated higher absolute density of Chironomidae, Bivalvia, Oligochaeta, and Ostracoda downstream of the Elk River compared to upstream. However, among the dominant taxonomic groups, only the relative abundance of Bivalvia was higher downstream compared to upstream of the Elk River suggesting similar overall structure of the benthic invertebrate community between transects. Temporally, benthic invertebrate richness, density, Shannon's diversity, and the absolute and relative densities of major taxonomic groups in 2021 were generally within respective ranges shown historically in 2016 and 2018 for each individual study area suggesting no substantial changes in benthic invertebrate community composition over time at either transect.

Benthic invertebrate tissue collected downstream of the Elk River in April 2021 contained a selenium concentration that was above the BC guideline and greater than in the benthic invertebrate tissue collected upstream of the Elk River. The selenium concentration in the benthic invertebrate tissue sample collected upstream of the Elk River in April 2021 was also elevated relative to the BC guideline. In May, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated above the EVWQP Level 1 fish benchmark and higher than concentrations observed upstream of the Elk River. In August, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated above the BC guideline but remained below the BC guideline upstream of the Elk River. Temporally, concentrations of selenium in benthic invertebrate tissue downstream of the Elk River appeared to be higher than the concentration previously observed in 2019, but lower than 2020 for both April and August, whereas concentrations upstream of the Elk River remained within historical ranges. Selenium concentrations in benthic invertebrate tissues were higher downstream compared to upstream of the Elk River in both 2020 and 2021, unlike in 2019 where selenium concentrations were comparable between areas.

Fish Health Assessment

In 2021, differences observed in both female and male Peamouth Chub (PCC) were within their respective critical effect sizes (CES) indicating the results were not ecologically meaningful. Qualitative temporal comparisons of the occurrence and direction of significant differences in fish health endpoints did not indicate any consistent trends in differences for either female or male PCC at both downstream study areas compared to the mouth of Sand Creek (upstream) study area from 2014 to 2021. For female Redside Shiners (RSC), the only ecologically meaningful difference observed was lighter relative gonad weight and liver weight in females from RG_GC compared to upstream of the Elk River (RG_SC), both of which were outside of the CES of ±25 %. No differences observed in male RSC endpoints between the downstream and upstream areas were ecologically meaningful. Temporal comparisons of the occurrence and

direction of significant differences in endpoints did not indicate any consistent trends in differences for either female or male RSC at both downstream study areas compared to the upstream study area from 2016 to 2021.

Fish Tissue Chemistry

Mean selenium concentrations in muscle tissue of all fish sampled were below the applicable BC fish muscle tissue guideline and US EPA criterion at all areas in 2021. PCC, RSC, and Bull Trout (BT) captured downstream showed significantly higher muscle selenium concentrations than upstream in 2021, but all concentrations were lower than guidelines and therefore the differences are not expected to be ecologically significant.

PCC were targeted in April, May, and June in 2021, however, results indicated that May provided the best opportunity to capture gravid females for the collection of ripe ovaries. Selenium concentrations in well-developed (i.e., ripe) ovary tissue provide the most direct predictor for potential reproductive effects in fish and are the basis for the development of the BC water quality guidelines for chronic effects related to selenium. Ovary gonadosomatic index (GSI) from PCC collected in 2021 were greater than in females collected in April 2020 indicating that females in 2021 had more developed ovaries at the time of sampling. Mean selenium concentrations in the ovaries of PCC sampled at RG_ER (May and June) and RG_GC (June) were greater than the BC ovary tissue guideline, but less than the US EPA criterion and the EVWQP Level 1 benchmark for reproductive effects to fish. Correlation between GSI and ovary tissue selenium concentrations in 2021 indicated lower concentrations of selenium in ovary tissue associated with higher GSI values, which is more representative of selenium concentrations expected in ripe ovaries. Considering selenium concentrations relative to GSI, selenium concentrations in PCC ovary tissue were higher downstream of the Elk River (at the RG_ER site) compared to upstream, but no difference in selenium concentrations were observed between the farther downstream (RG_GC) and upstream (RG_SC) study areas.

RSC were targeted in June 2021, which resulted in the collection of females with higher GSI than observed in previous years. Mean selenium concentrations in the ovaries of RSC collected downstream of the Elk River (RG_ER and RG_GC) in June 2021 were greater than the BC guideline but below the US EPA criterion. The mean selenium concentration in RSC ovaries was below the BC guideline in RG_SC. No differences were observed between downstream and upstream areas. In general, PCC and RSC females with higher GSIs were collected in 2021 compared to previous years. However, concentrations of selenium in ovary tissues observed in 2021 should not be compared to concentrations previously observed without taking historical gonadal development into consideration. This will be explored during the three-year temporal analysis.

Conclusion

This annual summary report provides an overview of environmental monitoring activities conducted in Koocanusa Reservoir, along with the associated results from 2021. The next annual summary report will cover data from 2022 will be due to ENV in June 2023. Data collected from 2020 to 2022 will be used to address key questions related to changes over time and will be presented in the three-year interpretive report due to ENV in December 2023.

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ACRONYMS AND ABBREVIATIONS

AMP – Adaptive Management Plan

ANOVA – Analysis of Variance

ANCOVA – Analysis of Covariance

BAL – Brooks Analytical Laboratory

BC – British Columbia

BCMOE – British Columbia Ministry of Environment

BCWQG – British Columbia Water Quality Guidelines

BT – Bull Trout

CES – Critical Effect Size

CPUE – Catch-Per-Unit-Effort

CRM – Certified Reference Material

DELT - Deformities, Erosions, Lesions, and Tumors

DO – Dissolved Oxygen

DS – Downstream

DSS – Digital Sampling Sensor

dw – Dry Weight

EEM – Environmental Effects Monitoring

EMC – Environmental Monitoring Committee

ENV – British Columbia Ministry of Environment and Climate Change Strategy (formerly BCMOE)

EVWQP – Elk Valley Water Quality Plan

EWT – Early Warning Trigger

GEI – GEI Consultants

GPS – Global Positioning System

GSI – Gonadosomatic Index

HR-ICP-MS – High Resolution Inductively Coupled Plasma Mass Spectrometry

HSD – Honestly Significant Difference

ICP-MS - Inductively Coupled Plasma Mass Spectrometry

Ind/L – Individuals per Litre

IS – Independent Scientist

K-M – Kaplan-Meier

KNC – Ktunaxa Nation Council

KO - Kokanee

KS – Kolmogorov-Smirnov

LA-ICPMS - Laser Ablation Inductively Coupled Plasma Mass Spectrometry

LEL – Lowest Effect Level

LPL – Lowest Practical Level

LRL – Laboratory Reporting Limit

LSS – Largescale Sucker

MAD – Median Absolute Deviation

MCT – Measure of Central Tendency

MFWP - Montana Fish, Wildlife, and Parks

MOD – Magnitude of Difference

MT DEQ – Montana Department of Environmental Quality

MU – Management Unit

MW – Mountain Whitefish

NMDS – Non-metric Multi-dimensional Scaling

N:P – Nitrogen to Phosphorous Ratio

NSC – Northern Pikeminnow

PAH – Polycyclic Aromatic Hydrocarbon

PCC – Peamouth Chub

PEL – Probable Effect Level

QAPP – Quality Assurance Project Plan

QA/QC – Quality Assurance / Quality Control

RAEMP – Regional Aquatic Effects Monitoring Program

RB – Rainbow Trout

RSC – Redside Shiner

SD – Standard Deviation

SEL – Severe Effect Level

SPO – Site Performance Objective

SRC – Saskatchewan Research Council

TDS – Total Dissolved Solids

TEL – Threshold Effect Level

TOC – Total Organic Carbon

Trich – TrichAnalytics Inc.

TSI – Trophic Status Index

TSS – Total Suspended Solids

US ACE – United States Army Corps of Engineers

US EPA – United States Environmental Protection Agency

UTM – Universal Transverse Mercator

WCT – Westslope Cutthroat Trout

WSC – Water Survey of Canada

WSQG – Working Sediment Quality Guidelines

ww – Wet Weight

YOY – Young-of-the-year

YP – Yellow Perch

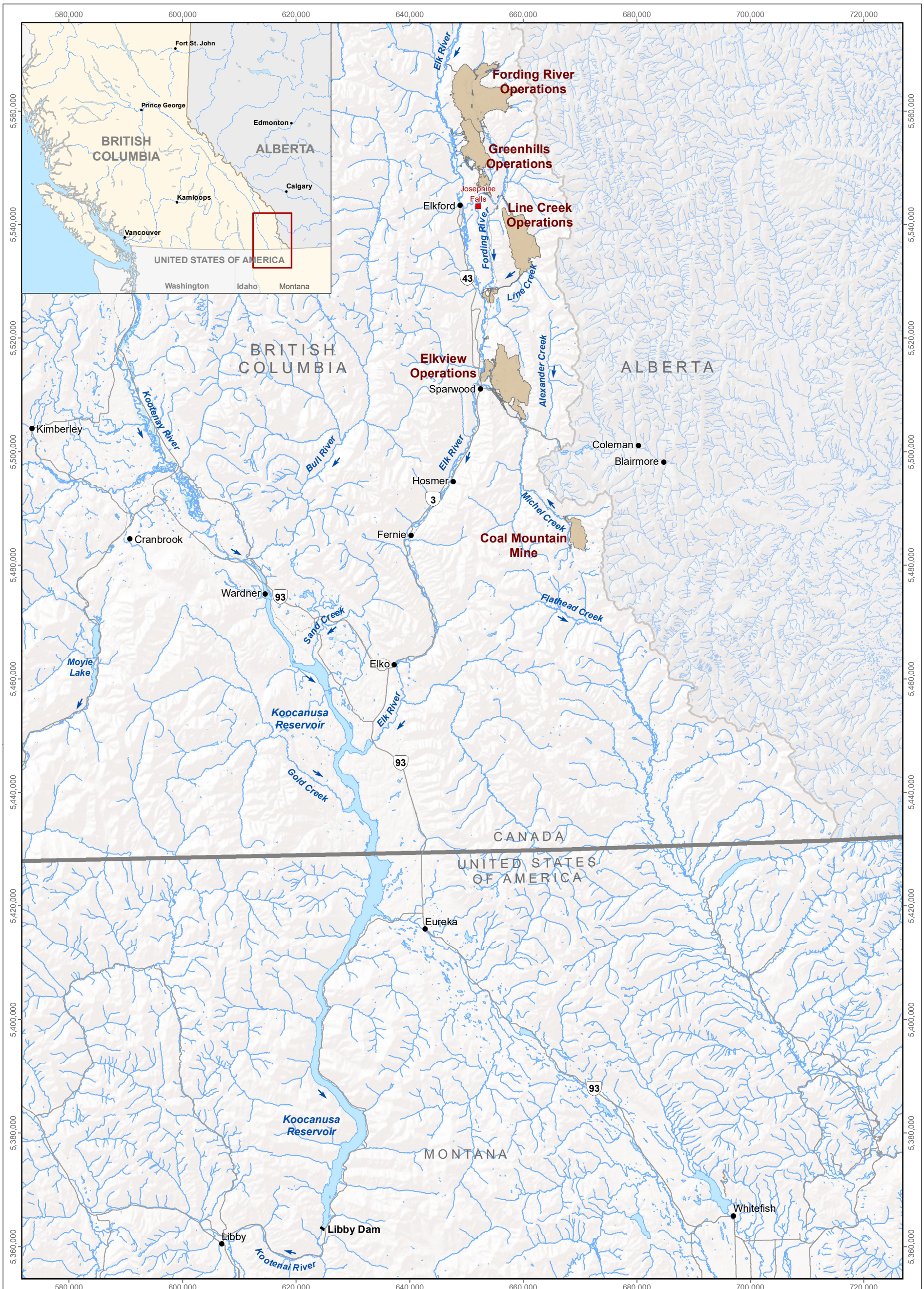
1 INTRODUCTION

1.1 Background

Teck Coal Limited (Teck) owns and operates four steelmaking coal mines within the Elk River watershed of southeastern British Columbia (BC; Figure 1.1). A fifth mine, Coal Mountain Mine (CMm), is also owned by Teck and located in the Elk River watershed; however, it is no longer in operation and has been moved into the care and maintenance designation. From its headwaters near Elk Lakes, the Elk River flows southwesterly into Koocanusa Reservoir approximately 20 kilometres (km; 12 miles) upstream from the border between Canada and the United States (US; Figure 1.1). Koocanusa Reservoir was created by the construction of Libby Dam in Montana and is operated by the United States Army Corps of Engineers (US ACE) to provide flood protection, hydroelectric power, and recreational benefits. At full pool, the reservoir is 155 km (96 miles) in length, of which, approximately 68 km (42 miles) occurs within Canada and the remainder within the United States (Figure 1.1).

In addition to the Elk River, the Kootenay (Kootenai) and Bull rivers supply the majority of inflow to the reservoir (26%, 62%, and 11%, respectively, of mean annual inflow; Woods 1982; Hamilton et al. 1990). Water levels within Koocanusa Reservoir are generally lowest in late winter/early spring (March through May) and highest in summer/early fall (August and September). The normal annual pool fluctuation of the reservoir is about 25 metres (m). At maximum drawdown, a reduction in reservoir total length up to 53%, volume up to 85%, mean depth up to 51%, and total surface area up to 69% generally occurs, with the largest relative changes occurring in the Canadian portion of the reservoir (Hamilton et al. 1990). This results in riverine conditions during low-pool for the section of the reservoir that extends below Gold Creek.

In 2014, the Elk Valley Water Quality Plan (EVWQP; Teck 2014) was developed and served as the basis for the issuance of Permit 107517 (the Permit) from the British Columbia Ministry of Environment and Climate Change Strategy (ENV). The Permit specifies water quality limits and site performance objectives (SPOs) for monitoring stations located downstream from the mines and the requirement to implement a Regional Aquatic Effects Monitoring Program (RAEMP). Overarching objectives of the RAEMP are to monitor, assess, and interpret indicators of aquatic ecosystem condition related to mine operations, and to inform adaptive management relative to expectations established in approved plans for mine development . The Koocanusa Reservoir Monitoring Program objectives are consistent with the RAEMP and are used to inform adaptive management relative to expectations established in approved plans for mine development and in the Permit. In accordance with the Permit and the RAEMP, annual monitoring programs were



LEGEND

- Libby Dam
- Teck Coal Mine Operations

Location of Teck Coal Mine Operations Relative to Koocanusa Reservoir

0 10 20 40
km

N
W E
S

Projection: North American Datum 1983 UTM Zone 11

Date: June 2022
Project 217202.0017

minnow environmental inc.

Figure 1.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0017 - Teck Koocanusa 2021\D - GIS\Annual Report\21-17 Figure 1 Teck Coal Limited Operation USA.mxd

designed, accepted by ENV, and implemented for Koocanusa Reservoir beginning in 2013, which was followed by the development of a comprehensive three-year monitoring program referred to as the Koocanusa Reservoir Monitoring Program. To date, the Koocanusa Reservoir Monitoring Program has been implemented over two 'cycles', from 2014 to 2016 and from 2018 to 2020 (Minnow 2014, 2015a, 2016, 2018, 2019, 2020). The third cycle of the three-year monitoring program (2021 to 2023) was initiated in April 2021 (Minnow 2021). This program is used to assess whether physico-chemical and biological conditions in Koocanusa Reservoir differ within the Canadian portions of the reservoir downstream of the Elk River confluence compared to upstream, and whether these conditions are changing over time. Questions specific to the evaluation of potential mine-related effects in the Canadian portion of the reservoir that served as the basis for the development of the monitoring program include:

- Are mine-related water quality constituents different downstream of the Elk River compared to upstream, influenced by differences in reservoir levels, are they changing over time, are the changes consistent with expectations, and are levels below respective guidelines and SPOs?
- Is productivity (based on nutrient concentration in the water) different downstream of the Elk River compared to upstream, influenced by differences in reservoir levels (i.e., low-,-high-pool, and transitional period), and is productivity changing over time?
- Are concentrations of mine-related constituents in sediment that benthic invertebrates are exposed to different downstream of the Elk River compared to upstream and are concentrations changing over time?
- Do zooplankton and/or benthic invertebrate community structure differ downstream of the Elk River compared to upstream, and are the differences changing over time?
- Are selenium concentrations in zooplankton different downstream of the Elk River compared to upstream, and are the differences changing over time?
- Are selenium concentrations in benthic invertebrates greater than guidelines or effect thresholds, do they differ downstream of the Elk River compared to upstream, and are the differences changing over time?
- Is fish health different downstream of the Elk River compared to upstream, and are differences in fish health endpoints changing over time?
- Are selenium concentrations in fish tissue greater than guidelines or effect thresholds, do they differ downstream of the Elk River compared to upstream, and are the differences changing over time?

The Koocanusa Reservoir Monitoring Program was designed with technical advice and input from the Environmental Monitoring Committee (EMC)[1], whose role includes review of submissions and provision of technical advice and input to Teck and the ENV Director as a condition under the Permit. In the most recently amended version of the Permit (April 4, 2019; Section 10.8), requirements outlined for the Koocanusa Reservoir Monitoring Program were expanded to include:

> *"The Permittee must prepare on an annual basis a report summarizing activities and monitoring results. The report must be submitted to the Lake Koocanusa Monitoring and Research Working Group (Lake Koocanusa Working Group) and the EMC by June 30 of each year."*

Accordingly, this report provides an overview of environmental monitoring activities conducted in the Canadian portion of Koocanusa Reservoir, along with the associated results, from 2021[2]. In this annual data report, results from 2021 are presented and spatially compared between areas located downstream and upstream of the Elk River confluence. Questions related to assessment of changes occurring over time are addressed separately in the three-year interpretive reports (e.g., Minnow 2016, 2020).

1.2 Linkages to Teck's Adaptive Management Plan

As required in Section 11 of the Permit, Teck has developed an Adaptive Management Plan (AMP) to support implementation of the EVWQP in achieving water quality and calcite targets, protect human health and the environment, and facilitate continuous improvement of water quality in the Elk Valley (Teck 2018a). Following an adaptive management framework, the AMP identifies six Management Questions that are re-evaluated with each AMP update. The AMP also identifies key uncertainties that need to be reduced to fill gaps in current understanding and support achievement of the EVWQP objectives.

The Koocanusa Reservoir Monitoring Program (under the umbrella of the RAEMP) is designed to evaluate AMP Management Question #5 (MQ5; i.e., "Does monitoring indicate that mine-related changes in aquatic ecosystem conditions are consistent with expectations?") through the evaluation of the study questions. Biological monitoring data are evaluated in an integrated manner with other types of monitoring data (e.g., water quality and sediment quality) to address questions specific to the Koocanusa Reservoir Monitoring Program and MQ5.

[1] The EMC consists of representatives from Teck, ENV, the Ministry of Energy and Mines, the Ktunaxa Nation Council (KNC), Interior Health Authority, and an Independent Scientist (IS).

[2] Unlike previous years when biological monitoring was also conducted, only water quality sampling was conducted in the Montana portion of Koocanusa Reservoir in 2021. These data were incorporated into the 2021 analyses where appropriate.

During development of the AMP, a number of uncertainties related to MQ5 were identified that were summarized as Key Uncertainty 5.1 (i.e., “How will monitoring data be used to identify potentially important mine-related effects on the aquatic ecosystem?”) and its corresponding Underlying Uncertainties (Teck 2018). With the understanding that the Koocanusa Reservoir is a different environment and requires different monitoring endpoints than the RAEMP, the Koocanusa Reservoir Monitoring Program was designed to answer different key questions than outlined under the RAEMP. These seven key questions (see Section 1.1) guide data analyses to address specific aspects of MQ5. The overall role of the Koocanusa Reservoir Monitoring Program in the AMP process is through the identification of unexpected conditions (chemical and biological) based on projections and/or expectations, and whether the unexpected conditions are mine-related. In a scenario where the cause of an unexpected condition cannot be determined through the data evaluation process, an Adaptive Management Response framework is initiated to determine if management actions are required.

Data evaluation under the 2014 to 2016 Koocanusa Reservoir Monitoring Program Report (Minnow 2018) identified monitoring adjustments, including the Redside Shiner Toxicity Study (Golder 2020) and the Northern Pikeminnow Toxicity Study (Brix et al. 2020), which were initiated in response to elevated tissue selenium concentrations. These supporting studies, in addition to the formal adaptive management process, and data acquired through the Koocanusa Reservoir Monitoring Program lead to adjustments to relevant study designs to better address study questions and the MQ5 key uncertainties (Teck 2018a). As such, a targeted fish tissue sampling approach was initiated in 2021 in response to recent research regarding the relationship between selenium concentrations and ovary development stage (e.g., Brix et al. 2020). Selenium concentrations in well-developed (i.e., ripe) ovary tissue provide the most direct predictor for potential reproductive effects in fish (Janz et al. 2010, DeForest and Adams 2011) and are the basis for the development of the BC water quality guidelines for chronic effects related to selenium. Recent research has indicated that the concentration of selenium in ovary tissue is inversely related to the development stage of the ovary, with higher selenium concentrations occurring in less developed ovaries and lower selenium concentrations occurring in more maturely developed ovaries (Brix et al. 2020). This research has indicated that the determination of potential effects associated with selenium concentrations in ovary tissue should be conducted when ovaries are fully developed. In light of these recent findings, the gonadosomatic index (GSI; i.e., a surrogate for relative gonad weight) of fish sampled as part of the ovary tissue sampling component of past Koocanusa Reservoir Monitoring Program surveys were examined in 2021 to determine the relative stage of ovary development at the time of collection for the selenium concentration analyses. The timing of ovary tissue sampling was therefore expanded to include April, May, and June for Peamouth Chub (PCC), and June for Redside Shiner (RSC),

as part of the 2021 program to target collection of gravid females, differing from previous monitoring cycles in which PCC and RSC were sampled only in April. Sampling for PCC spanned three months because the ecologically relevant window for gravid females was unknown in the Koocanusa Reservoir, whereas for RSC, females were known to be in spawning condition in June based on previous sampling conducted for the Redside Shiner Toxicity Study (Golder 2020).

2 METHODS

2.1 General Overview

The Koocanusa Reservoir Monitoring Program was designed to evaluate changes in water quality, sediment quality, and/or biota in the reservoir downstream relative to upstream of the Elk River confluence, and whether any identified changes can be attributed to influences from mining activities within the Elk River watershed for the Canadian portion of the reservoir. To address the study questions described in Section 1.1, the 2021 Koocanusa Reservoir Monitoring Program included the following components:

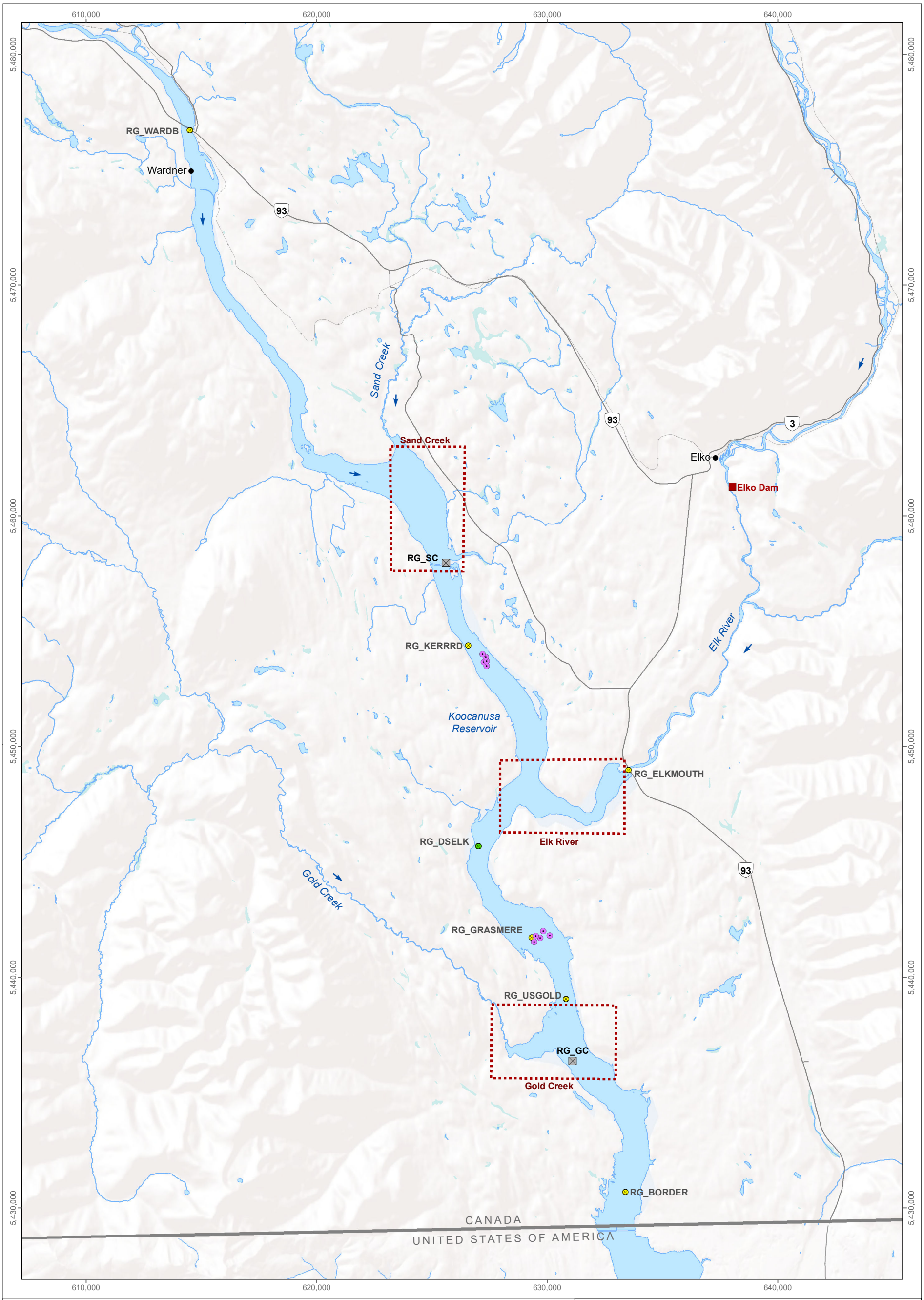
- Water quality (physical and chemical);
- Sediment quality (physical and chemical);
- Zooplankton (community and tissue);
- Benthic invertebrate tissue; and
- Fish health assessment and targeted tissue sampling.

Objectives of this annual monitoring report are to provide an overview of environmental monitoring activities conducted in 2021 in the Canadian portion of Koocanusa Reservoir (Table 2.1; Figure 2.1) and where applicable, supplement this information with publicly available data collected from the Montana portion of the reservoir in 2021. Data analyses included statistical evaluations to identify potential differences in key endpoints between areas located downstream and upstream of the Elk River confluence, and brief qualitative comparisons to results from the previous three years of monitoring[3]. Field sampling was conducted during three spring sampling events and one late summer sampling event (Table 2.2). In 2021, reservoir levels were well within normal ranges observed in previous years (Figure 2.2). During the low-pool in April 2021, the reservoir was fully wetted and not indicative of riverine conditions that have been observed in previous years (i.e., 2014, 2017, and 2018). During the initial spring sampling event conducted April 19th to 29th, water quality, benthic invertebrate tissue, fish health, and targeted fish tissue sampling of PCC and sport fish were completed. The second spring sampling event, conducted May 25th to 31st, included water quality and targeted fish tissue sampling of PCC and sport fish. The third spring sampling event, conducted June 21st to 25th, included water quality, zooplankton tissue, and targeted fish tissue sampling of PCC, RSC, and sport fish. The late summer sampling

[3] A comprehensive temporal analysis of data collected from 2014 to 2022 will be provided in the next three-year report.

Table 2.1: Summary of Receptors, Assessment Endpoints, Measurement Endpoints, and Evaluation Criteria for Koocanusa Reservoir, 2021 to 2023

Receptor Group	Focal Species (if Relevant)	Assessment Endpoint	Measurement Endpoint	Evaluation Criteria	Indicator Type
All	Not specific	Not specific	Sediment chemistry	Comparison of results relative to guidelines, between upstream and downstream of the Elk River, and to past observations	Indirect
			Water chemistry	Comparison of concentrations of mine-related constituents relative to SPOs and guidelines, nutrients relative to trophic classifications, between upstream and downstream of the Elk River, and to past observations	Indirect
Zooplankton	Not applicable	Abundance and assemblage	Density	Comparison of results between upstream and downstream of the Elk River and to past observations	Direct
			Richness		
			Biomass		
			Major community group		
		Chemistry	Tissue selenium concentrations	Comparison of results relative to guidelines and effect benchmarks, between upstream and downstream of the Elk River, and to past observations	Indirect
Benthic invertebrates	Not applicable	Abundance and assemblage	Density	Comparison of results between upstream and downstream of the Elk River and to past observations	Direct
			Richness		
			Major community group		
		Chemistry	Tissue selenium concentrations	Comparison of results relative to guidelines and effect benchmarks, between upstream and downstream of the Elk River, and to past observations	Indirect
Fish	Peamouth chub and redside shiner	Population health assessment	Survival (age)	Comparison of results between upstream and downstream of the Elk River and to past observations	Direct
			Growth (body weight against age)		
			Reproduction (gonad weight against body weight)		
			Energy storage (condition - body weight against length and liver weight against body weight)		
		Chemistry	Tissue selenium concentrations	Comparison to guidelines and effect benchmarks, between upstream and downstream of the Elk River, and to past observations	Indirect
	Sport fish	Fish health, and human health risk from fish consumption	Tissue chemistry	Comparisons to guidelines and effect benchmarks, between upstream and downstream of the Elk River, to past observations, and to human health effect benchmarks (evaluated outside of the monitoring program)	Indirect



LEGEND

- Permitted Water Quality Station
- Order Water Quality Station
- Profundal Sediment, Zooplankton (Community and Tissue Chemistry), and Benthic Invertebrate (Community and Tissue Chemistry) Sampling Location
- Water Chemistry and In Situ Monitoring Station
- Approximate Fish (fish tissue and health) Sampling Area

Sampling Locations in Koocanusa Reservoir, 2021

0 2.5 5 10
km

N W E S

Projection: North American Datum 1983 UTM Zone 11

Date: June 2022
Project 217202.0017

minnow environmental inc.

Figure 2.1

Document Path: C:\Users\MLaPalme\Trinity Consultants, Inc\Teck - 217202.0017 - Teck Koocanusa 2021\D - GIS\Annual Report\21-17 Figure 2.1 Sampling Locations in Koocanusa Reservoir, 2021.mxd

Table 2.2: Overview of the 2021 Koocanusa Reservoir Monitoring Program

Study Area	Biological Area Code	Biological Area Description	UTMs		2021																									
					April							May			June							August								
					Water		Benthic Invertebrates	Fish				Water		Fish	Water		Plankton	Fish			Water		Sediment	Plankton		Benthic Invertebrates		Fish
					Chemistry	*In Situ* Water Quality	Tissue Chemistry	Fish Health		Tissue Chemistry		Chemistry	*In Situ* Water Quality	Tissue Chemistry	Chemistry	*In Situ* Water Quality	Zooplankton Tissue Chemistry	Tissue Chemistry			Chemistry	*In Situ* Water Quality	Quality (Chemistry and Composition)	Zooplankton Tissue Chemistry	Zooplankton Community	Community	Tissue Chemistry	Sport Fish Tissue Chemistry
			Easting	Northing				Peamouth Chub	Redside Shiner	Peamouth Chub	Sport Fish [a]			Peamouth				Peamouth Chub	Redside Shiner	Sport Fish [a]								
Upstream of the Elk River	RG_SC	near the mouth of Sand Creek	625624	5457296	1	1	-	35	80	10	up to 8	1	1	10	1	1	-	10	10	up to 8	1	1	-	-	-	-	-	up to 8
	RG_KERRRD	upstream of the mouth of Elk River	626575	5454366	R	R	-	-	-	-	-	R	R	-	R	R	-	-	-	-	R	R	-	-	-	-	-	-
	RG_TN	near the RG_KERRRD permitted water quality station	627112	5453380	-	5	1	-	-	-	-	-	-	-	-	5	5	-	-	-	-	5	5	5	5	5	1	-
Elk River	RG_ER	near the mouth of Elk River	627959	5447572	-	-	-	35	80	10	up to 8	-	-	10	-	-	-	10	10	up to 8	-	-	-	-	-	-	-	up to 8
	RG_DSELK	near the mouth of Elk River	627022	5445670	R	R	-	-	-	-	-	R	R	-	R	R	-	-	-	-	R	R	-	-	-	-	-	-
Downstream of the Elk River	RG_GRASMERE	downstream of the mouth of Elk River	629326	5441735	R	R	-	-	-	-	-	R	R	-	R	R	-	-	-	-	R	R	-	-	-	-	-	-
	RG_T4	near the RG_GRASMERE permitted water quality station	629235	5441654	-	5	1	-	-	-	-	-	-	-	-	5	5	-	-	-	-	5	5	5	5	5	1	-
	RG_USGOLD	Upstream of the mouth of Gold Creek	630811	5439055	R	R	-	-	-	-	-	R	R	-	R	R	-	-	-	-	R	R	-	-	-	-	-	-
	RG_GC	near the mouth of Gold Creek	630926	5436344	1	1	-	35	80	10	up to 8	1	1	10	1	1	-	10	10	up to 8	1	1	-	-	-	-	-	up to 8
	RG_BORDER	Downstream of the mouth of Gold Creek near Montana border	633382.9	5430700	R	R	-	-	-	-	-	R	R	-	R	R	-	-	-	-	R	R	-	-	-	-	-	-

Note: "-" indicates that no sampling is occurring for a specific monitoring component during that time period. "number" indicates number of samples collected. "R" indicates routine sampling by Teck. Tissue samples for northern pikeminnow collected during the Northern Pikeminnow Toxicity Study were included in analysis. Water quality data from Teck routine stations were collected under the Routine Water Quality Program.

[a] Up to 8 individuals of each sport fish (bull trout, Kokanee, mountain whitefish, rainbow trout, westslope cutthroat trout, yellow perch) species were captured over the course of the sampling year.

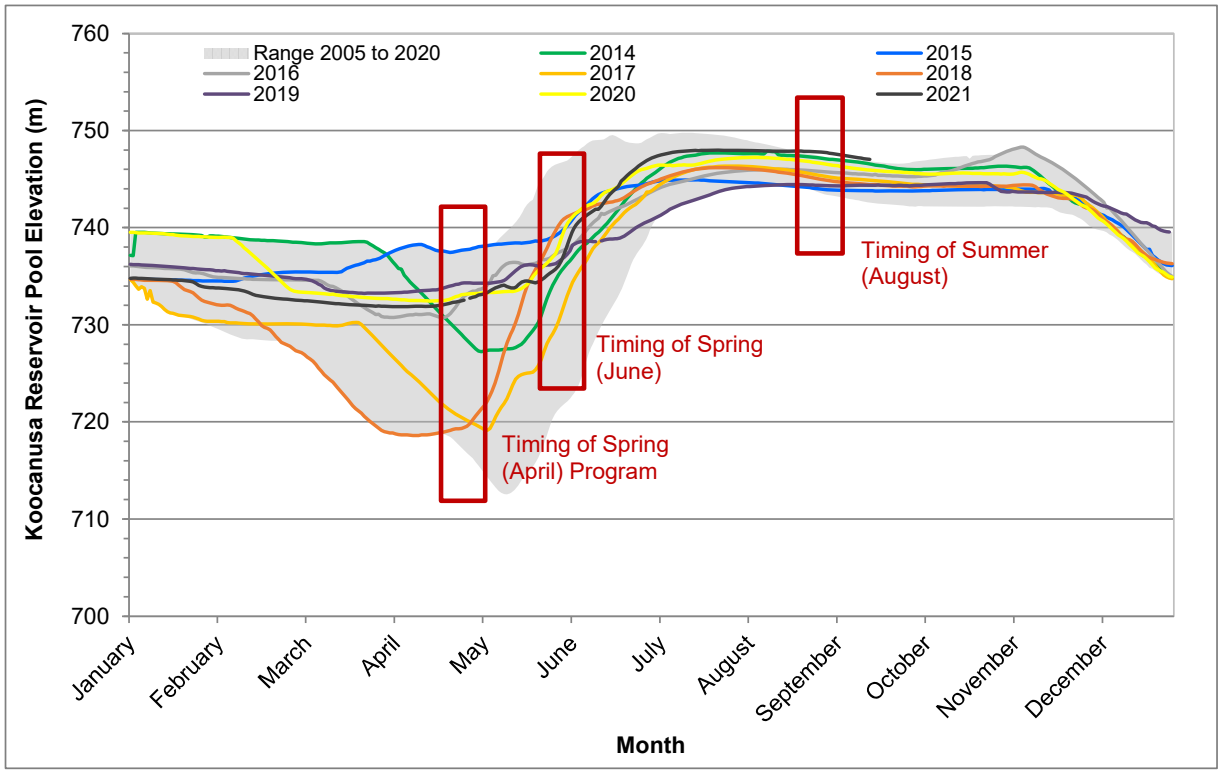


Figure 2.2: Koocanusa Reservoir Water Surface (Pool) Elevation, 2014 to 2021

Notes: Shaded area is the historical daily range of water levels from 2005 to 2020. Data from United States Army Corps of Engineers (USACE 2020).

event, conducted August 24th to 28th, included water quality, sediment quality, zooplankton community and tissue, benthic invertebrate tissue, and sport fish tissue sampling.

Sampling locations used in 2021 were consistent with those outlined under the approved 2021 to 2023 study design, which were the same as those used in previous monitoring from 2014 to 2016, and from 2018 to 2020 (Minnow 2021). Sampling of profundal sediment quality, zooplankton community and tissue, and benthic invertebrate tissue was completed at one transect downstream of the Elk River (RG_T4) and one transect upstream of the Elk River (RG_TN), with each transect including five sampling stations (Figure 2.1). Fish sampling (for fish health assessment and tissue) was conducted at two areas downstream of the mouth of the Elk River (Elk River [RG_ER] and Gold Creek [RG_GC]), and one upstream area (Sand Creek [RG_SC][4]; Figure 2.1). Routine water quality monitoring data that were collected by Teck at permitted downstream water quality monitoring stations (RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER) and an upstream water quality monitoring station (RG_KERRRD; Figure 2.1; Teck 2019) in 2021 were also summarized in this annual report.

2.2 Water Quality

2.2.1 Overview

Water quality was assessed through the collection of water chemistry samples and *in situ* field measures. Water chemistry data collected by Teck for their permitted surface water quality monitoring program (i.e., stations RG_KERRRD, RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER; see Figure 2.1) are summarized herein. Four of these stations are referred to as receiving water sampling sites (RG_KERRRD, RG_GRASMERE, RG_USGOLD, RG_BORDER), while the fifth station (RG_DSELK; EMS E300230) is an Order station for which SPOs have been established. Two additional water quality samples (RG_SC and RG_GC) were collected separately for the Koocanusa Reservoir Monitoring Program concurrent with biological sampling events conducted in April, May, June, and August to augment the Teck routine water quality monitoring program. Water chemistry data collected during Teck's routine water quality monitoring program were also used to evaluate productivity. In addition, as per the ENV (2018) study design approval letter, monthly nitrate and selenium loadings to the Koocanusa Reservoir were calculated and summarized in this report. Routine water quality monitoring data collected by United States Army Corps of Engineers (US ACE) from the Montana portion of the reservoir (Stations International Boundary, Tenmile, and Forebay) were also included in evaluations for this 2021 annual report. Consistent with monitoring completed previously within

[4] These areas may be adjusted based on seasonal reservoir elevations, access restrictions, and the ability to deploy traps and nets.

the Canadian portion of the reservoir, *in situ* water quality (field parameters) data were collected at each biological monitoring study area/station upstream and downstream of the Elk River confluence in April, May, June, and August 2021 (Table 2.2).

2.2.2 Water Chemistry

2.2.2.1 Sampling and Laboratory Analysis

The Permit requires the collection of water samples at five permitted stations located within the Canadian portion of the reservoir ('Permitted Water Quality Station' on Figure 2.1). Water chemistry samples were collected weekly from April 1st to July 15th and monthly outside of this period. When ice was present, through-ice samples were collected only after consideration of suitable ice thickness and other safety concerns. Water chemistry samples were collected at transects established at RG_DSELK, RG_USGOLD, and RG_BORDER monthly throughout the year, when conditions allowed, to identify whether mixing was uniform across the reservoir at each transect. Additional transects were assessed weekly from April to May at RG_DSELK to better assess mixing of water from Elk River across the reservoir and its effect on water quality conditions during low-pool conditions. The justification for developing transects was to use systematic and grid sampling data as the basis for determining means, percentiles, and other summary metrics (and the variability associated with these metrics) useful for evaluating spatial patterns or trends over time. Such a design provides a practical and simple approach for ensuring uniform coverage of water quality across and within the reservoir. The probability that any body of water such as a reservoir is relatively homogeneous with regards to any water-quality characteristic is low.[5]

Two additional water quality samples (RG_SC and RG_GC; 'Water Quality Station' on Figure 2.1) were also collected concurrent with sampling events in April, May, June, and August where samples could not be aligned with Teck routine water quality stations (see 'Water Quality Stations' on Figure 2.1; Table 2.2).

Methods used for the collection of all water chemistry samples were consistent with those outlined in the Koocanusa Reservoir Water Quality Monitoring Plan (Teck 2020). Water samples were analyzed for conventional parameters, major ions, nutrients, total and dissolved metals, and chlorophyll-a concentrations (Table 2.3). All water chemistry samples were analyzed by ALS

[5] Ultimately, these transect data were omitted from the calculation of the monthly means in the analysis of the water quality data. Although useful for examining mixing across the reservoir at the Order station RG_DSELK, and select permitted stations, these data were not used to assess compliance in 2021 nor intended for comparison against BC WQGs. Data for these transect stations are provided in Appendix B.

Table 2.3: British Columbia Water Quality Guidelines, Site-Specific Elk Valley Water Quality Plan (EVWQP) Benchmarks, and Interim Screening Values Applicable to Surface Waters

Variable		Units	British Columbia Water Quality Guidelines [a]				Site-Specific Benchmark or Water Quality Objective [b]
			Long-term Average	Short-term Maximum	Year	Status	Elk River
Non-Metals	Total Alkalinity	mg/L	For dissolved calcium = < 4mg/L, WQG = <10 For dissolved calcium = 4 to 8 mg/L, WQG = 10 to 20 For dissolved calcium = > 8 mg/L, WQG = > 20	-	2015	Working	-
	Unionized Ammonia [c]	mg/L	pH and Temperature dependent (tabular)	pH and Temperature dependent (tabular)	2009	Approved	-
	Chloride	mg/L	150	600	2003	Approved	-
	Fluoride	mg/L	-	For hardness ≤ 10 mg/L, WQG = 0.4 For hardness > 10 mg/L, WQG = [-51.73 + 92.57 × $\log_{10}$(hardness)]×0.01 Maximum applicable hardness = 385 mg/L	1990	Approved	-
	Nitrate-N	mg/L	3	33	2009	Approved	Level 1 EVWQP benchmark = 3 mg/L N[j] Level 2 EVWQP benchmark = 5 mg/L N[j] Level 3 EVWQP benchmark = 21 mg/L N[j]
	Nitrite-N [d]	mg/L	0.02 to 0.20	0.06 to 0.60	2009	Approved	-
	Dissolved oxygen [e]	mg/L	For buried embryo/alevin life stages, WQG (water column) = 11 WQG (interstitial) = 8 For other life stages, WQG (water column) = 8	For buried embryo/alevin life stages, WQG (water column) = 9 WQG (interstitial) = 6 For other life stages, WQG (water column) = 5	1997	Approved	-
	pH [f]	pH units	6.5 - 9.0		1991	Approved	-
	Sulphate [g]	mg/L	128 to 429 Maximum applicable hardness = 250 mg/L	-	2013	Approved	Level 1 EVWQP Benchmark = BCWQG = 429
	Total Dissolved Solids	mg/L	-	-	-	-	Level 1 Screening Value = 1000
Metals and Metalloids	Total Antimony (III)	mg/L	0.009	-	2015	Working	-
	Arsenic	mg/L	-	0.005	2002	Approved	-
	Barium	mg/L	1	-	2015	Working	-
	Beryllium	mg/L	0.00013	-	2015	Working	-
	Boron	mg/L	1.2	-	2003	Approved	-
	Chromium [h]	mg/L	For Cr(VI), WQG = 0.001 For Cr(III), WQG = 0.0089	-	2015	Working	-
	Cobalt	mg/L	0.004	0.11	2004	Approved	-
	Iron	mg/L	-	1	2008	Approved	-

Note: "-" indicates no sample collected.

[a] British Columbia Working (BCMOE 2017) or Accepted (BCMOE 2019) Water Quality Guidelines for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness), guidelines were screened using concurrent values.

[b] When appropriate, site-specific Elk Valley Water Quality Plan Benchmarks (EVWQP; Teck 2014) or interim screening values were applied in addition to or instead of BC water quality guidelines. Interim screening values are displayed for nickel (Golder 2017; Coal Mountain Operations Aquatic Health Assessment Report). Site specific Water Quality Objectives developed for Koocanusa will be used when finalized.

[c] Temperature and pH dependent; range of minimum and maximum values.

[d] Dependent on concurrent chloride, range of values reported (BCMOE 2019).

[e] Dissolved oxygen guidelines represent a minimum value, and so exceedances were quantified below this guideline.

[f] Unrestricted change permitted within this pH range.

[g] For hardness-based guidelines, concurrent hardness values were used for calculating guidelines. If hardness values exceeding the maximum applicable hardness, then guidelines were determined using the maximum applicable hardness. If hardness values is lower than the minimum hardness, then guidelines were determined using the minimum hardness.

[h] Chromium(VI) is the dominant oxidation state in oxygenated environments, and so its guideline was applied.

[i] The most conservative guideline (0.00000125 mg/L) was applied.

[j] at representative hardness of 200 mg/L as $CaCO_3$ for the Elk River.

Table 2.3: British Columbia Water Quality Guidelines, Site-Specific Elk Valley Water Quality Plan (EVWQP) Benchmarks, and Interim Screening Values Applicable to Surface Waters

Variable			Units	British Columbia Water Quality Guidelines [a]				Site-Specific Benchmark or Water Quality Objective [b]
				Long-term Average	Short-term Maximum	Year	Status	Elk River
Metals and Metalloids	Total	Lead [g]	mg/L	For hardness ≤ 8 mg/L, none proposed For hardness 8 to 360 mg/L, WQG = 0.001×{3.31+ exp[1.273 × ln(hardness) - 4.704]} No more than 20% of samples in a 30-d period should be >1.5X the guideline. Maximum applicable hardness = 360 mg/L	For hardness ≤ 8 mg/L, WQG ≤ 0.003 For hardness 8 to 360 mg/L, WQG = 0.001×{exp[1.273 × ln(hardness) - 1.460]} Maximum applicable hardness = 360 mg/L	1987	Approved	-
		Manganese [g]	mg/L	For hardness 37 to 450 mg/L, WQG ≤ 0.004 × hardness + 0.605 Maximum applicable hardness = 450 mg/L	For hardness 25 to 259 mg/L, WQG ≤ 0.01102 × hardness + 0.54 Maximum applicable hardness = 259 mg/L	2001	Approved	-
		Mercury [i]	mg/L	MeHg ≤ 0.5% of THg, WQG = 0.00002 Else, WQG = [0.0001/(MeHg/THg)] OR When MeHg = 0.5% of THg, WQG= 0.00002 When MeHg = 1.0% of THg, WQG = 0.00001 When MeHg = 8.0% of THg, WQG= 0.00000125	-	2001	Approved	-
		Molybdenum	mg/L	1	2	1986	Approved	-
		Nickel [g]	mg/L	-	-	-	-	Level 1 Interim Screening Value = 0.0053 Level 2 Interim Screening Value = 0.015 Level 3 Interim Screening Value = 0.022
		Selenium	µg/L	2	-	2014	Approved	Level 1 EVWQP Benchmark = 19 Level 2 EVWQP Benchmark = 74
		Silver [g]	mg/L	For hardness ≤ 100 mg/L, WQG = 0.00005 For hardness > 100 mg/L, WQG = 0.0015	For hardness ≤ 100 mg/L, WQG = 0.0001 For hardness > 100 mg/L, WQG = 0.003	1996	Approved	-
		Thallium	mg/L	0.0008	-	1997	Working	-
		Uranium	mg/L	0.0085	-	2011	Working	-
		Zinc [g]	mg/L	For hardness ≤ 90 mg/L, WQG = 0.0075 For hardness 90 to 330 mg/L, WQG = [7.5 + 0.75 (hardness - 90)]×0.001; Maximum applicable hardness = 330 mg/L	For hardness ≤ 90 mg/L, WQG = 0.033 For hardness 90 to 500 mg/L, WQG = [33 + 0.75 (hardness - 90)]×0.001; Maximum applicable hardness = 500 mg/L	1999	Approved	-
	Dissolved	Aluminum	mg/L	When pH ≥ 6.5, WQG = 0.05 When pH < 6.5, WQG = exp[1.6 - 3.327(median pH)+ 0.402(median pH)^2]	When pH ≥ 6.5, WQG = 0.1 When pH < 6.5, WQG = exp[1.209 - 2.426(pH)+ 0.286 (pH)^2]	2001	Approved	-
		Cadmium [g]	µg/L	For hardness = 3.4 to 285 mg/L, WQG = {exp[0.736×ln(hardness) - 4.943]} Maximum applicable hardness = 285 mg/L	For hardness = 7 to 455 mg/L, WQG = {exp[1.03×ln(hardness)-5.274]} Maximum applicable hardness = 455 mg/L	2015	Approved	Level 1 EVWQP Benchmark = $10^{0.83(\log(\text{hardness}))-2.53}$ Maximum applicable hardness = 285 mg/L
		Copper	mg/L	Biotic Ligand Model	Biotic Ligand Model	2019	Approved	-
		Iron	mg/L	-	WQG = 0.35 mg/L	2008	Approved	-

Note: "-" indicates no sample collected.

[a] British Columbia Working (BCMOE 2017) or Accepted (BCMOE 2019) Water Quality Guidelines for the Protection of Aquatic Life. For guidelines dependent on other analytes (e.g., hardness), guidelines were screened using concurrent values.

[b] When appropriate, site-specific Elk Valley Water Quality Plan Benchmarks (EVWQP; Teck 2014) or interim screening values were applied in addition to or instead of BC water quality guidelines. Interim screening values are displayed for nickel (Golder 2017; Coal Mountain Operations Aquatic Health Assessment Report). Site specific Water Quality Objectives developed for Koocanusa Reservoir will be used when finalized.

[c] Temperature and pH dependent; range of minimum and maximum values.

[d] Dependent on concurrent chloride, range of values reported (BCMOE 2019).

[e] Dissolved oxygen guidelines represent a minimum value, and so exceedances were quantified below this guideline.

[f] Unrestricted change permitted within this pH range.

[g] For hardness-based guidelines, concurrent hardness values were used for calculating guidelines. If hardness values exceeding the maximum applicable hardness, then guidelines were determined using the maximum applicable hardness. If hardness values is lower than the minimum hardness, then guidelines were determined using the minimum hardness.

[h] Chromium(VI) is the dominant oxidation state in oxygenated environments, and so its guideline was applied.

[i] The most conservative guideline (0.00000125 mg/L) was applied.

[j] at representative hardness of 200 mg/L as $CaCO_3$ for the Elk River.

Environmental (ALS) at either their Burnaby, British Columbia (BC) or Calgary, Alberta (AB) locations. The analyses were completed in accordance with procedures described in the most recent edition of the "British Columbia Laboratory Methods Manual for the Analysis of Water, Wastewater, Sediment, Biological Materials, and Discrete Ambient Air" (Province of BC 2020) as per the Permit requirements. Quality Assurance/Quality Control (QA/QC) applied to the laboratory analyses included assessment of the ability to achieve minimum laboratory reporting limits (LRLs; Table 2.4), show undetectable parameter concentrations in blank samples, and evaluation of matrix spikes, certified reference materials (CRMs), and laboratory duplicates, the latter of which was used to assess accuracy and precision of the laboratory data (Appendix A).

2.2.2.2 Data Analysis

The Koocanusa Reservoir Monitoring Program (Minnow 2021) was designed to address the following questions specific to water quality:

- Are mine-related water quality constituents different downstream of the Elk River compared to upstream, influenced by differences in reservoir levels[6], are they changing over time, are the changes consistent with expectations, and are levels below respective guidelines and SPOs?
- Is productivity (based on nutrient concentration in the water) different downstream of the Elk River compared to upstream, influenced by differences in reservoir levels (i.e., low-pool, high-pool, and transitional period), and is productivity changing over time?

Assessment of water chemistry data included comparison to applicable provincial guidelines and EVWQP benchmarks, spatial comparisons between downstream and upstream stations, and qualitative comparisons to data collected during previous monitoring. The constituents selected for the water chemistry assessment included four order constituents (total selenium, nitrate, sulphate, and dissolved cadmium) and twelve non-order mining-related constituents (total antimony, total barium, total boron, dissolved cobalt, total lithium, total manganese, total molybdenum, total nickel, nitrite, total dissolved solids, total uranium, and total zinc).[7] The data used in this assessment included samples collected at the five permitted stations: RG_KERRRD, RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER. Additional samples collected from the biological monitoring stations during the four biological sampling events in 2021

[6] Changes due to reservoir levels will be assessed in the three-year report.

[7] These twelve non-order constituents were selected based on the work done for the development of the surface water early warning triggers (EWT; Azimuth 2018).

Table 2.4: Laboratory Reporting Limits (LRLs) for Analytes Assessed in Water and Sediment Samples

Analyte	Water [a]		Sediment	
	Units	LRL	Units	LRL
Moisture	-	-	%	0.25
pH	-	-	pH	0.1
% Gravel	-	-	%	1.0
% Sand	-	-	%	1.0
% Silt	-	-	%	1.0
% Clay	-	-	%	1.0
Total Organic Carbon (TOC)	mg/L	0.5	%	0.05
Dissolved Organic Carbon (DOC)	mg/L	0.5	-	-
Hardness (as CaCO3)	mg/L	0.50	-	-
Turbidity	NTU	0.10		
Alkalinity	mg/L	1	-	-
Total Dissolved Solids (TDS)	mg/L	10	-	-
Total Suspended Solids (TSS)	mg/L	1.0	-	-
Ammonia, Total (as N)	mg/L	0.0050	-	-
Bromide (Br)	mg/L	0.050	-	-
Chloride (Cl)	mg/L	0.500	-	-
Fluoride (F)	mg/L	0.020	-	-
Nitrate (as N)	mg/L	0.0050	-	-
Nitrite (as N)	mg/L	0.001	-	-
Total Kjeldahl Nitrogen	mg/L	0.050	-	-
Phosphorus (P)-Total	mg/L	0.0020	-	-
Orthophosphate	mg/L	0.0010	-	-
Sulphate (SO4)	mg/L	0.30	-	-
Acenaphthylene	-	-	mg/kg dw	0.005
Anthracene	-	-	mg/kg dw	0.004
Benz(a)anthracene	-	-	mg/kg dw	0.01
Benzo(a)pyrene	-	-	mg/kg dw	0.01
Benzo(b)fluoranthene	-	-	mg/kg dw	0.01
Benzo(b+j+k)fluoranthene	-	-	mg/kg dw	0.01
Benzo(g,h,i)perylene	-	-	mg/kg dw	0.01
Benzo(k)fluoranthene	-	-	mg/kg dw	0.01
Chrysene	-	-	mg/kg dw	0.01
Dibenz(a,h)anthracene	-	-	mg/kg dw	0.005
Fluoranthene	-	-	mg/kg dw	0.01
Fluorene	-	-	mg/kg dw	0.01
Indeno(1,2,3-c,d)pyrene	-	-	mg/kg dw	0.01
2-Methylnaphthalene	-	-	mg/kg dw	0.01
Naphthalene	-	-	mg/kg dw	0.01
Phenanthrene	-	-	mg/kg dw	0.01
Pyrene	-	-	mg/kg dw	0.01
Aluminum (Al)	mg/L	0.003	mg/kg dw	50
Antimony (Sb)	mg/L	0.0001	mg/kg dw	0.1
Arsenic (As)	mg/L	0.0001	mg/kg dw	0.1
Barium (Ba)	mg/L	0.00005	mg/kg dw	0.5
Beryllium (Be)	mg/L	0.00002	mg/kg dw	0.1
Bismuth (Bi)	mg/L	0.00005	mg/kg dw	0.2
Boron (B)	mg/L	0.01	mg/kg dw	5
Cadmium (Cd)	mg/L	0.000005	mg/kg dw	0.02
Calcium (Ca)	mg/L	0.05	mg/kg dw	50
Chromium (Cr)	mg/L	0.0001	mg/kg dw	0.5
Cobalt (Co)	mg/L	0.0001	mg/kg dw	0.1
Copper (Cu)	mg/L	0.0005	mg/kg dw	0.5
Iron (Fe)	mg/L	0.01	mg/kg dw	50
Lead (Pb)	mg/L	0.00005	mg/kg dw	0.5
Lithium (Li)	mg/L	0.001	mg/kg dw	2
Magnesium (Mg)	mg/L	0.005	mg/kg dw	20
Manganese (Mn)	mg/L	0.0001	mg/kg dw	1
Mercury (Hg)	mg/L	0.000005	mg/kg dw	0.005
Molybdenum (Mo)	mg/L	0.00005	mg/kg dw	0.1
Nickel (Ni)	mg/L	0.0005	mg/kg dw	0.5
Phosphorus (P)	-	-	mg/kg dw	50
Potassium (K)	mg/L	0.05	mg/kg dw	100
Selenium (Se)	mg/L	0.00005	mg/kg dw	0.2
Silver (Ag)	mg/L	0.00001	mg/kg dw	0.1
Sodium (Na)	mg/L	0.05	mg/kg dw	50
Strontium (Sr)	mg/L	0.0002	mg/kg dw	0.5
Sulphur (S)	-	-	mg/kg dw	100
Thallium (Tl)	mg/L	0.00001	mg/kg dw	0.05
Tin (Sn)	mg/L	0.0001	mg/kg dw	2
Titanium (Ti)	mg/L	0.01	mg/kg dw	1
Uranium (U)	mg/L	0.00001	mg/kg dw	0.05
Vanadium (V)	mg/L	0.0005	mg/kg dw	0.2
Zinc (Zn)	mg/L	0.003	mg/kg dw	2

[a] Total and dissolved metals were analyzed for water samples. Laboratory reporting limits were the same for both fractions.

(RG_SC and RG_GC) were excluded from the water quality screening assessment due to limited sample sizes.[8]

Monthly mean concentrations were calculated for each order and non-order constituent using the Kaplan-Meier (K-M) method. This method involves transforming the left censored (i.e., < LRL value) dataset to a right censored (i.e., > LRL value) dataset, and then using the K-M estimator (used to estimate the mean survival time in survival analysis) to estimate the mean in the event that values below the LRL occurred within a data set. The calculation was conducted using the survfit() function in the survival package (Therneau 2017) in R. The K-M method is non-parametric and can accommodate multiple LRLs. The method of estimating the mean is equivalent to using the distribution of detectable values below the LRL to represent values that are less than the LRL. If there was only one LRL and no detected values below the LRL, then the K-M estimate of the mean was equivalent to replacing the value below the LRL with the LRL (i.e., the best estimate for the values less than the LRL is the LRL). The order and non-order constituents were screened against British Columbia Water Quality Guidelines (BCWQG; BCMOE 2019, 2021) and SPOs where applicable (i.e., for Station RG_DSELK). Plots of monthly average concentrations of these constituents at each station, together with applicable BCWQGs and SPOs, were prepared as the basis for qualitative comparisons among stations.

Water quality data from Montana from 2021 were represented in the plots. These data were also compared to United States Environmental Protection Agency (US EPA) criteria for dissolved cadmium, dissolved selenium, and total zinc. Water chemistry data from major inflows into Koocanusa Reservoir, namely the Kootenay River (Station RG_WARDB) and the Elk River (Station RG_ELKMOUTH), which are monitored on a regular basis, were also included in the monthly plots with the permitted station data. Data for RG_USELK were included for historical reference only.[9]

Order and non-order constituent data were compared statistically between downstream (RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER) and upstream (RG_KERRRD) permit stations to evaluate potential mine-related influences on water quality of Koocanusa Reservoir. Statistical comparisons were conducted on the mathematical differences in monthly mean concentrations between stations (i.e., mean concentration downstream of the

[8] Data collected concurrently with biological monitoring samples are provided in Appendix B, and only used to support biological observations.

[9] RG_USELK was the upstream station prior to 2015, but due to its proximity to the Elk River, this monitoring station was relocated farther upstream, renamed RG_KERRRD, and sampled as the upstream station thereafter.

Elk River less the mean concentration upstream of the Elk River) to remove the potential influence associated with differing sampling season.

Data from upstream and downstream stations were tested for whether differences in monthly mean parameter concentrations were different from zero using a one-sample t-test (or Wilcoxon signed rank test for data that were not normally distributed) by testing the hypothesis:

H_{01}: $\mu_d = 0$

The magnitude of difference (MOD) in parameter concentrations between stations was calculated if a significant difference was detected between stations as (using RG_USGOLD as an example):

$$\text{MOD} = \frac{(MCT_{RG\_USGOLD} - MCT_{RG\_KERRRD})}{MCT_{RG\_KERRRD}} \times 100\%$$

where MCT_{RG_USGOLD} and MCT_{RG_KERRRD} were the measure of central tendency (MCT) for the downstream and upstream stations, respectively (i.e., mean or median depending on whether the statistical comparison was conducted using a parametric or non-parametric method, respectively). The statistical analyses were conducted using R statistical software.

Total nitrogen and phosphorus ratios were calculated from the water chemistry data for each of the five permitted water stations (RG_KERRRD, RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER) and major inputs (Kootenay River [RG_WARDB] and Elk River [RG_ELKMOUTH]) and plotted to qualitatively evaluate differences between downstream and upstream of the Elk River in the Koocanusa Reservoir. Nitrogen and phosphorus ratios were also compared to categories defined by McDowell et al. (2009) using mass concentrations where ratios greater than 15 indicate phosphorus limitation, and ratios less than 7 indicate nitrogen limitation. The trophic status (e.g., oligo-, meso-, or eu-trophic) was calculated for permitted water sampling stations in the Canadian portion of Koocanusa Reservoir based on a Trophic State Index developed by the United States Environmental Protection Agency (US EPA 2007) that uses phosphorus, Secchi depth, and chlorophyll-a measurements (Table 2.5). The Trophic State Index was used to evaluate whether trophic status differed downstream compared to upstream of the Elk River confluence.

Nitrate and selenium loadings to Koocanusa Reservoir were calculated using methods outlined in “Permit 107517 2017 Report of Monitoring Results in the Koocanusa Reservoir” (Teck 2018b). Briefly, monthly average concentrations of nitrate and selenium measured at RG_ELKMOUTH and flow data prorated from applicable Water Survey of Canada (WSC) gauging stations on the Elk River were used to estimate loadings into the reservoir. A scaling method derived by Golder Associates Ltd. (Golder) used WSC hydrometric gauging stations located on the Elk River at Fernie (Station 08NK002; recent data) and at Phillips Bridge (Station 08NK005; historical data)

Table 2.5: Criteria for Trophic State Index

Variable [a]	Oligotrophic	Mesotrophic	Eutrophic
Calculated Trophic State Index (TSI) [b]	<30	40 - 50	50 - 60
Total Phosphorus (µg/L)	< 6	12 - 24	24 - 48
Chlorophyll-a (µg/L)	< 0.95	2.6 - 7.3	7.3 - 20
Secchi Depth (m)	> 8	4 - 2	2 - 1

Note: "-" indicates no data available.

[a] Carlson R. 1977. A Trophic State Index for Lakes. Limnol. Oceanogr. 22(2).361-362.

[b] TSI (Secchi Depth) = 60-14.41 ln(Secchi Depth)
TSI (Chlorophyll-a) = 9.81 ln(Chlorophyll-a) + 30.6
TSI (Total Phosphorus) = 14.42 ln(Total Phosphorus) + 4.15

to prorate monthly flow at the mouth of the Elk River as follows: RG_ELKMOUTH = Fernie (08NK002) x 1.53. The scaling factor developed by Golder was based on the relationship between monthly flows from each station as presented in the 2017 Permit Summary Report for Koocanusa Reservoir (Teck 2018b). Similar scaling methods were used to calculate nitrate and selenium loadings to the reservoir from the Kootenay River at Station RG_WARDB using the WSC Kootenay River hydrometric gauging station located at Fort Steele (Station 08NG065) to prorate monthly flow based on the following relationship: RG_WARDB = 08NG065 x 1.18. Estimated loads of nitrate and selenium (in kg/month) were calculated by multiplying the calculated daily load by the number of days in each month to provide a monthly loading rate using the following formula:

Flow (m^3/s) * concentration (mg/L) * 86.4 = kg/day * number of days in each month

2.3 Sediment Quality

2.3.1 Overview

Sediment quality was assessed as part of the 2021 monitoring program for the Canadian portion of the reservoir to characterize substrate chemistry and support interpretation of benthic invertebrate data. Sediment quality sampling was conducted in August at two transect areas downstream (RG_T4) and upstream (RG_TN) of the Elk River (Figure 2.1; Table 2.2).

2.3.2 Sample Collection

Sediment samples for physical and chemical characterization were collected using a stainless-steel petite Ponar (0.023 m^2 sampling area). At each of five stations located along transects downstream (RG_T4-1 to 5) and upstream of the Elk River (RG_TN-1 to 5), three grabs were collected to create a composite sediment sample consisting of the top three centimetres (cm) of sediment (i.e., the sediment fraction in which most benthic fauna generally reside [Kirchner 1975]). If the grab was not complete to each edge of the sampler, or lacked an intact sediment-water surface layer, it was discarded, and a new grab was collected. If the grab was acceptable, the top three centimetres of sediment were removed and placed into a separate plastic tub. This procedure was repeated until three acceptable grabs were obtained, after which the sample was homogenized using a stainless-steel spoon. The homogenized sediment was then transferred to a glass jar (for analysis of polycyclic aromatic hydrocarbons [PAHs]) and a labelled polyethylene sealable bag (for analyses of other parameters, as described below). Sampling locations were recorded for each station using a handheld global positioning system (GPS) unit in Universal Transverse Mercator (UTM) coordinates. Following collection of each sediment sample, the sample was placed in a cooler containing ice

and later transferred to a refrigerator for storage prior to shipment to an accredited analytical laboratory at the completion of the field study.

2.3.3 Laboratory Analysis

Sediment samples (whole sample not field-sieved) were sent to ALS (Calgary, AB) for analysis of moisture content, particle size, total organic carbon (TOC), metals/metalloids (hereafter collectively referred to as metals), and PAHs using analytical methods consistent with ENV laboratory guidance manual (Province of BC 2013, 2020) as specified in the Permit. Sediment sampling QA/QC included the collection and analysis of field duplicate samples (on a minimum of 10% of the total number of samples collected), as well as an assessment of the accuracy and precision of laboratory data (Province of BC 2020). Data quality was judged based on the ability to achieve minimum LRLs (Table 2.4), and review of the results from laboratory duplicate, spike recovery sample, blank sample, and CRM analyses (see Appendix A).

2.3.4 Data Analysis

Sediment quality data from the 2021 Koocanusa Reservoir Monitoring Program were used to address the following question with regards to sediment quality:

- Are concentrations of mine-related constituents in sediment that benthic invertebrates are exposed to different downstream of the Elk River compared to upstream and are concentrations changing over time?

The assessment of sediment data included comparison to applicable guidelines, spatial comparisons between downstream and upstream areas, and qualitative comparisons to data from 2019 to 2021[10]. Sediment particle size distribution data were presented for each sampling event using a stacked bar graph with concentrations of TOC plotted on the secondary axis. Sediment chemistry data were compared to applicable BC Working Sediment Quality Guidelines (WSQGs). The lower WSQGs (i.e., lowest effect level/threshold effect level [LEL/TEL]) represent concentrations below which adverse biological effects would not be expected to occur (BCMOE 2021). In contrast, the upper sediment quality guidelines (i.e., probable effect level/severe effect level [PEL/SEL]) represent concentrations above which effects to sediment dwelling biota may be observed (BCMOE 2021). All parameters with mean concentrations that exceeded the lower WSQG were plotted. Selenium was plotted for all stations, even if concentrations were below the WSQG.

[10] Statistical comparisons over time are completed only for the three-year report and were not conducted as part of this 2021 annual report.

A pairwise t-test was used to evaluate differences in mean sediment chemistry between downstream and upstream transects (RG_T4 and RG_TN, respectively) for data collected in August. Data were $\log_{10}$-transformed as required to meet test assumptions of normality. If test assumptions of normality were not met for the pairwise t-test despite transformation, rank transformation for a non-parametric (Mann-Whitney U-) test was used. A more conservative α of 0.5 was used for testing the assumptions to limit the use of the rank transformation in those instances where assumptions were violated. In instances where normality could not be achieved through data transformation, the non-parametric Mann-Whitney test was conducted using rank-transformed data. In instances where the assumption of homogeneity of variances was not met (Levene's test; α = 0.05) but data were normally distributed, a two-sample t-test assuming unequal variances was conducted using transformed data (Ruxton 2006).

An observed effect size was calculated for each statistical comparison analyzed using a two-sample t-test as:

$$\text{Observed Effect Size} = (\bar{X}_{Downstream} - \bar{X}_{Upstream})/SD$$

where $\bar{X}_{Downstream}$ and $\bar{X}_{Upstream}$ were the downstream and upstream transect means and the SD is an estimate of the upstream area standard deviation. The estimate of the upstream area standard deviation was either the pooled standard deviation from the two-sample t-test for equal variances, or the upstream area sample standard deviation when the two-sample t-test for unequal variances was applied. The effect size calculations were conducted on the transformed scale when the data were transformed for analysis. When the Mann-Whitney test was used, the observed effect size was estimated using median values instead of means, and the Pooled Median Absolute Deviations (MAD) instead of SD as follows:

$$\text{MAD} = median(|x^i_{Area} - median(x_{Area})|)$$

where x^i_{Area} was each observation in the dataset, $median(x_{Area})$ was the median of the area to which x^i_{Area} belongs (i.e. downstream or upstream) and $|f(x)|$ was the absolute value of $f(x)$.

An MOD in parameter concentrations was calculated as a percentage difference in the measure of central tendency between the downstream area(s) and the upstream area as:

$$\text{MOD} = \frac{(MCT_{RG\_T4} - MCT_{RG\_TN})}{MCT_{RG\_TN}} \times 100\%$$

where MCT_{RG_T4} and MCT_{RG_TN} were the measures of central tendency for the downstream and upstream areas. Measures of central tendency were reported in the original data units as:

- means when no transformation was used;
- geometric means when a $\log_{10}$-transformation was used; and

- medians when a rank transformation was used.

Parameters with concentrations above the WSQG LEL guidelines in 2021 were qualitatively compared to values from 2019 and 2020.

2.4 Zooplankton

2.4.1 Overview

Zooplankton community samples were collected in August 2021, and zooplankton tissue samples were collected in June and August 2021, to assess differences in community endpoints and selenium concentrations in tissue, respectively, between study locations downstream (RG_T4) and upstream (RG_TN) of the Elk River, as well as seasonally (tissue only; ENV 2018; Figure 2.1, Table 2.2).

2.4.2 Sample Collection

Zooplankton community samples were collected using a 19 cm diameter, fine mesh (i.e., 60 micrometre [µm]) plankton net, that was hauled vertically through the entire water column at each sampling station based on methods described by the Province of BC (2013)[11]. A composite sample, consisting of three vertical hauls of the plankton net lowered through the water column until approximately 1.5 m above the sediment-water interface (to avoid disturbing the sediment and potentially resulting in addition of benthic organisms into the sample), was collected at RG_TN (RG_TN-1 to RG_TN-5) and RG_T4 (RG_T4-1 to RG_T4-5). Upon retrieval of each vertical haul, the sample material was transferred into a pre-labelled plastic sampling jar and, following retrieval of the third vertical haul, preserved to a level of 10% buffered formalin in ambient water. Zooplankton community samples were collected along with supporting measures that included an *in situ* water quality profile and Secchi depth (see Section 2.2.2.). The preserved zooplankton community samples were stored at ambient temperature until shipment to the laboratory.

Zooplankton tissue samples were collected using an 80 µm mesh plankton net (30 cm diameter aperture) designed to target zooplankton and avoid collection of phytoplankton (i.e., the mesh size excluded phytoplankton from zooplankton tissue samples). One sample representing a composite of ten vertical hauls through the entire water column (beginning 1.5 m above the sediment-water interface to avoid disturbance of sediment) was collected at each RG_TN and RG_T4 transect station. Upon retrieval of each haul, as much water as possible was removed from the collected material before transferring the sample to a labelled sterile cryovial.

[11] Study design requirements to collect samples from 10 m below the surface were removed in 2019 based on recommendations from the EMC.

Following transfer of material from the tenth haul, the sample was placed in a cooler on ice and, at the completion of daily field sampling, frozen.

2.4.3 Laboratory Analysis

Zooplankton community samples were sent to Salki Consultants Inc. (Winnipeg, MB), where after being allowed to stand undisturbed for 72 hours, were decanted (60 µm filter on vacuum hose, back flushed) to 45 mL glass vials to standardize volume (40 mL) for analyses and long-term storage. Samples were analyzed for species composition, abundance, and biomass of crustaceans and rotifers. Each sample underwent the following three levels of analysis:

- 1/10, 1/20, 1/40, or 1/80 (depending on zooplankton abundance in sample) of each sample was examined under a compound microscope at 63× to 160× magnification, and a minimum of 200 organisms were identified to species (crustaceans) or lowest practical level (LPL; rotifers), and assigned to instar size categories. Additionally, lengths (± 15 µm) of female and male adult specimens (n=20) of dominant species were measured in representative samples for biomass determinations;
- a sub-sample, representing 10 to 20% of the sample volume, was examined under a stereoscope at 12× magnification to identify and enumerate mature and gravid individuals of larger-sized species and rare (i.e., less abundant) species, and to assign these individuals to size classes; and
- the entire sample was examined under a stereoscope at 1/10 magnification to improve abundance/biomass estimates for any large-sized, less abundant, species in the sample.

Under a compound microscope, Cyclopoida and Calanoida specimens (mature and immature) were identified to the species level with the exception of nauplii (N1-N6), which were classified as either Calanoida (small or large) or Cyclopoida (small or large). Cladocera were identified to the species level, while rotifers were identified to genus. Taxonomic identifications were conducted primarily using Brooks (1957), Wilson (1959), and Yeatman (1959) taxonomic keys. Digital microscopic images of selected specimens were provided with the analytical data.

Zooplankton abundance was reported as individuals per litre (ind/L) based on volumes calculated from net mouth area, sample haul depth, and replication. Biomass estimates for each species were determined from:

- abundances of adults multiplied by mean adult wet weights developed from measured lengths (n=20 per adults of dominant species in representative samples), and length-weight relationships presented in Malley et al. (1989); and,

- abundances of various immature instar categories multiplied by weights of respective size categories determined from length-weight regressions (as per Malley et al. 1989).

Additional size measurements made on less common specimens were factored into the biomass calculations. Zooplankton biomass was reported in micrograms (wet weight) per litre (µg/L) of filtered water. Sub-sampling accuracy was assessed by performing replicate counts on 10% of samples. Replicate samples were chosen at random and processed at different times from the original sample to reduce bias.

Zooplankton tissue samples were shipped to TrichAnalytics Inc. (Trich; Saanichton, BC), for analysis of metals (including mercury) and selenium using laser ablation inductively coupled plasma mass spectrometry (LA-ICPMS) consistent with ENV laboratory guidance as specified in Permit 107517 (Province of BC 2020). At the laboratory, the samples were freeze dried prior to analysis, and thus concentrations were reported on a dry weight basis. Accuracy and precision of data was judged based on ability to achieve minimum LRLs (Table 2.6), review of the results from laboratory duplicate analysis, as well as a comparison to CRMs (Appendix A).

2.4.4 Data Analysis

Data from the zooplankton community and tissue sampling were used to address the following questions:

- Does zooplankton community structure differ downstream of the Elk River compared to upstream and are the differences changing over time?
- Are selenium concentrations in zooplankton different downstream of the Elk River compared to upstream, and are the differences changing over time?

Zooplankton community data were compared between downstream and upstream study areas, and qualitatively to data from previous monitoring periods (2019 and 2020) using primary metrics of mean taxonomic richness [as identified to lowest practical level (LPL)], mean organism density (average number of organisms per litre), and mean biomass (mass of organisms per litre). Relative density and relative biomass of dominant taxonomic groups were calculated as the density or biomass of each respective group relative to the total number of organisms or biomass in the sample, respectively. Dominant taxa were defined as taxa representing at least 5% of the total organism density at one or more stations. Community endpoints were summarized by reporting the minimum, maximum, mean, median, standard deviation (SD), and sample size for each sampling area. Zooplankton community data were compared between downstream (RG_T4) and upstream areas (RG_TN) using pairwise t-tests or Mann-Whitney U-tests as described previously (see Section 2.3.4).

Table 2.6: Minimum Laboratory Reporting Limits (LRLs) for Metal Concentrations in Tissue Samples

Analyte	Units	Plankton, Benthic Invertebrate, and Fish Tissue LRL [a]
Moisture	%	-
Aluminum	mg/kg dw	0.052 to 0.296
Antimony	mg/kg dw	0.005 to 0.008
Arsenic	mg/kg dw	0.477 to 0.514
Barium	mg/kg dw	0.001
Boron	mg/kg dw	0.077 to 0.113
Cadmium	mg/kg dw	0.036 to 0.067
Calcium	mg/kg dw	15 to 55
Chromium	mg/kg dw	0.27 to 1.9
Cobalt	mg/kg dw	0.004 to 0.006
Copper	mg/kg dw	0.008 to 0.02
Iron	mg/kg dw	1.3 to 2.8
Lead	mg/kg dw	0.001 to 0.006
Lithium	mg/kg dw	0.006 to 0.008
Magnesium	mg/kg dw	0.024 to 0.03
Manganese	mg/kg dw	0.008 to 0.04
Mercury	mg/kg dw	0.025 to 0.071
Molybdenum	mg/kg dw	0.001 to 0.014
Nickel	mg/kg dw	0.001 to 0.07
Phosphorus	mg/kg dw	32 to 85
Potassium	mg/kg dw	3 to 15
Selenium	mg/kg dw	0.209 to 0.439
Silver	mg/kg dw	0.001
Sodium	mg/kg dw	0.781 to 2.5
Strontium	mg/kg dw	0.001
Thallium	mg/kg dw	0.001
Tin	mg/kg dw	0.03 to 0.043
Titanium	mg/kg dw	0.001 to 0.61
Uranium	mg/kg dw	0.001
Vanadium	mg/kg dw	0.053 to 0.077
Zinc	mg/kg dw	0.37 to 0.743

[a] Laboratory reporting limits provided by TrichAnalytics Inc. in Saanichton, British Columbia.

Differences in community composition were also assessed using non-metric multi-dimensional scaling (NMDS). The NMDS was used to reduce the zooplankton taxonomic data matrices to fewer dimensions, and to assist in the visualization of the level of similarity of communities based on the rank (e.g., sample A is more similar to Sample B than to Sample C) of the similarities (Clarke 1993). The NMDS takes the N-dimensional (here N = number of taxa) coordinates of each sample (i.e., area) and defines a set of new N dimensional coordinates that reflect the locations (rank distances) among samples. Because the use of non-transformed data often leads "to shallow interpretation in which only the pattern of a few, very common species is represented" (Clarke 1993), a log10 transformation was applied to the data and the resulting matrix was assessed for normality based on average skewness and kurtosis. The NMDS was conducted on the lowest practical level taxonomic data matrix using relative abundances. The analysis used a Bray-Curtis distance as the measure of relative community similarity or dissimilarity. A two-dimensional ordination solution was used when stress was less than 0.2, and additional dimensions were used only when required to reduce the stress to less than 0.2. The NMDS analysis was conducted using the vegan package (version 2.5-1) in R.

The assessment of zooplankton tissue data included comparison to the closest representative guidelines and benchmarks, and spatial comparisons between downstream and upstream areas of the reservoir. Concentrations of selenium in zooplankton tissues were compared to the interim chronic dietary BC guideline for invertebrate tissue (4 µg/g dry weight [dw]) and EVWQP Level 1 benchmarks for effects to benthic invertebrates (13 µg/g dw) and dietary effects to juvenile fish (11 µg/g dw). Zooplankton tissue data were also compared statistically using a two-way Analysis of Variance (ANOVA). This allowed for a comparison between downstream (RG_T4) and upstream (RG_TN) areas, but also for a seasonal comparison between June and August data. Data were $\log_{10}$ transformed (or $\log_{10}[x+1]$ for counts that contain 0) as necessary to meet assumptions of normality and homoscedasticity or rank transformed when these assumptions could not be met. When the *Area* and *Season* terms (or their interaction) were significant, *post hoc* contrasts were conducted to quantify significant changes in upstream and downstream stations overtime. If the *Area* and/or *Season* terms were not significant, *post hoc* contrasts were adjusted accordingly. When the *Season* term was significant, the temporal magnitude of difference (MOD) was calculated as a magnitude of difference between June and August:

$$\text{MOD} = \frac{(MCT_{August} - MCT_{June})}{MCT\,June} \times 100\%$$

where MCTs are measures of central tendency for each season. Measures of central tendency were means, geometric means, or medians for untransformed, log10-transformed and rank-transformed analyses, respectively. When the rank transformation was used, the observed

effect size was estimated using the Pooled Median Absolute Deviations (MAD) instead of pooled SD. When the *Area* term was significant a MOD between reference and exposed areas was calculated as:

$$\text{MOD} = \frac{(MCT_{Downstream} - MCT_{Upstream})}{MCTUpstream}$$

where $MCT_{Downstream}$ and $MCT_{Upstream}$ were the measures of central tendency for the downstream and upstream areas for each year when *Season* was significant, or over both seasons when not significant. When the interaction between *Area* and *Season* was significant *post hoc* contrast was also conducted to determine if differences between upstream and downstream differed over June and August. All post hoc contrasts were corrected for the number of tests using an α = 0.1 and Tukey's Honestly Significant Difference (HSD) correction.

The 2021 data were also plotted and compared qualitatively to data from previous monitoring (2019 and 2020).

2.5 Benthic Invertebrates

2.5.1 Overview

Benthic invertebrate community samples were collected in August 2021, and benthic invertebrate tissue samples were collected in April, May, and August 2021 from profundal areas downstream (RG_T4) and upstream (RG_TN) of the Elk River (Table 2.2; Figure 2.1)[12].

2.5.2 Sample Collection

Benthic invertebrate community samples were collected using a stainless-steel petite Ponar sampler. A single sample, consisting of a composite of five petite Ponar grabs, was collected at each station with care taken so that each grab captured the surface material and was full to each edge. Incomplete grabs were discarded. Each acceptable grab was field-sieved using 500 µm mesh with the retained material carefully be transferred into a plastic sampling jar containing both external and internal station identification labels. The benthic invertebrate community samples were preserved to a level of 10% buffered formalin in ambient water and submitted to a certified benthic taxonomist (Zeas Inc. in Nobleton, Ontario) for analysis.

A single composite benthic invertebrate tissue sample consisting of 20 petite Ponar grabs (i.e., a composite of four grabs from each of the five sampling stations [RG_T4-1 to RG_T4-5 and RG_TN-1 to RG_TN-5] in each study area) was collected in each of April and August 2021. Due to the low density of benthic invertebrates in the Koocanusa Reservoir, a composite sample

[12] The additional benthic invertebrate tissue samples collected in May 2021 were outside of the scope of the original study design, but included in this 2021 annual report as additional data points.

collected across a transect provided a spatially representative sample for each of the downstream and upstream areas. Each grab was placed into and sieved through a 500 µm mesh bag. The remaining material was transferred to a white enamel tray for removal of benthic organisms using tweezers. Visible organisms were removed from the debris/sediment and rinsed clean using ambient water. Similar to sampling conducted previously, chironomids were targeted for tissue collection, but if chironomids were not present in sufficient numbers, other benthic invertebrates were included in the sample (and noted on field sheets) to achieve sufficient sample weight for analysis (approximately 0.5 grams [g]). The benthic invertebrate tissue samples were transferred to sterile cryovials and frozen and submitted to a certified analytical laboratory (Trich; Saanichton, BC) for analysis. Supporting measures for each sample included *in situ* water quality measurements and Secchi depth measurements.

2.5.3 Laboratory Analysis

Laboratory processing of benthic invertebrate community samples followed standard sorting methods which incorporate recommended QA/QC procedures for assessing sub-sampling error and sorting recovery checks (Environment Canada 2012). Upon arrival at the laboratory, a biological stain was added to each sample to facilitate greater sorting accuracy. Samples were washed free of formalin in a 500 µm sieve and examined under a stereomicroscope at a magnification of at least ten times. Benthic invertebrates were removed from the sample debris and placed into vials containing a 70% ethanol solution according to major taxonomic groups (e.g., phyla, orders). A senior taxonomist enumerated and identified benthic organisms to the lowest practical level (typically to genus or species) using up-to-date taxonomic keys. Following identification, representative specimens of taxa not previously encountered under the Koocanusa Reservoir Monitoring Program were preserved in a 75% ethanol, 3% glycerol solution in separately labelled vials and added to a voucher collection maintained for the project.

Benthic invertebrate tissue samples were shipped to Trich (Saanichton, BC) for analysis of metals (including mercury) and selenium using LA-ICPMS consistent with ENV laboratory guidance as specified in Permit 107517 (Province of BC 2020). At the laboratory, the samples were freeze dried prior to analysis, and thus concentrations were reported on a dry weight basis. Accuracy and precision of data was judged based on ability to achieve minimum LRLs (Table 2.6), review of the results from laboratory duplicate analysis, as well as a comparison to CRMs (Appendix A).

2.5.4 Data Analysis

Benthic invertebrate community data collected in 2021 were evaluated between areas located downstream and upstream of the Elk River to address the following question:

- Does benthic invertebrate community structure differ downstream of the Elk River compared to upstream, and are the differences changing over time?[14]

Primary metrics of mean taxonomic richness (as identified to LPL) and mean organism density (average number of organisms per m^2) were calculated for each sample. Absolute and relative densities (calculated as the density of each respective taxa and group relative to the total number of organisms in the sample) of dominant taxa and groups were also calculated for each sample. Dominant taxa were defined as those species representing at least 5% of the total organism density at one or more stations. Community endpoints were summarized by reporting the sample size, mean, SD, median, minimum, and maximum for each sampling area and year. The methods used for the spatial analyses of the benthic invertebrate community data were the same as those outlined for the zooplankton community analysis, including the use of NMDS (Section 2.4.4). Benthic invertebrate community endpoints were also compared qualitatively to data from 2016 and 2018.[13]

Data from the 2021 benthic invertebrate tissue sampling were used to address the following question:

- Are selenium concentrations in benthic invertebrates greater than guidelines or effect thresholds, do they differ downstream of the Elk River compared to upstream, and are the differences changing over time?[14]

Selenium concentrations in benthic invertebrates were plotted and compared to the British Columbia Ministry of Environment (BCMOE 2019) interim guideline of 4 µg/g dw and to Level 1 dietary effects to juvenile birds, effects on benthic invertebrate reproduction, and for dietary effects to juvenile fish, respectively). Benthic invertebrate selenium concentrations were also compared qualitatively to data from 2019 and 2020.

2.6 Fish

2.6.1 Overview

Collection of fish is an integral component of the Canadian Koocanusa Reservoir Monitoring Program (Table 2.2). PCC and RSC, which represent key food sources for piscivorous fish (Lotic 2017), were collected near the mouths of Sand Creek, Elk River, and Gold Creek (RG_SC, RG_ER, and RG_GC respectively; Figure 2.1, Table 2.2) using lethal methods in spring (April) 2021, prior to fish spawning, to evaluate fish health. Additionally, PCC

[13] This represents the last three years benthic invertebrate community was sampled in Koocanusa Reservoir.

[14] Statistical evaluation of changes over time are to be completed for the three-year report only, and thus were not completed as part of this 2021 annual report.

were collected in April, May, and June, and RSC were collected in June for fish tissue assessment. The timing of these tissue sampling events was changed from previous years in order to target species-specific spawning windows and gather a greater number of meaningful tissue samples from gravid females. Sport fish (e.g., bull trout [BT; *Salvelinus confluentus*]) reflect the highest trophic level in the reservoir and are an important resource for human consumption (Lotic 2017, Ramboll Environ 2016), and for the latter reason, sport fish muscle tissue samples were collected using non-lethal methods (i.e., muscle plug) throughout April to August for tissue chemistry analyses. Data were supplemented with fish tissue samples collected during separate Northern Pikeminnow fishing programs conducted by Minnow Environmental Inc. (Minnow) in June and July 2021.

2.6.2 Fish Population Health Sample Collection

In the previous cycle, sample sizes for fish population health monitoring were determined based on the ability to detect a 20 to 30% difference in relative gonad size based on an *a priori* power analysis (standard EEM protocol; Environment Canada 2012); however, relative gonad size in PCC and RSC did not differ significantly between areas downstream and upstream of the Elk River in 2018 (Minnow 2020). In contrast, body weight, relative liver weight, and condition of female PCC, age of male PCC, length- and weight-at-age, and relative liver weight in female RSC, and relative liver weight in male RSC differed significantly between study areas in 2018 (Minnow 2020). Power analysis conducted using these latter endpoints indicated sample sizes of 15 sexually mature female and 20 male PCC, and 40 female and 40 male RSC were required from each of the three study areas were required to meet suitable effect sizes (Minnow 2021) for the fish health assessment in April 2021 (i.e., immediately prior to spawning; Appendix B). The fish health assessment targeted the collection of PCC and RSC from each of the two downstream (RG_ER and RG_GC) and one upstream (RG_SC) fish population health study areas in 2021 (Figure 2.1).

PCC and RSC were collected using gill nets set for very short periods starting with a maximum set time of 15 minutes. Gill nets with mesh size specific for targeting PCC (2”) and RSC (1”) were set on the bottom. The geographic coordinates of each net set (UTM units), as well as the time of net deployment and retrieval, were recorded on field sheets. Captured PCC and RSC were sacrificed and transported to a dedicated field laboratory for processing as soon as possible following capture (i.e., within hours). At the field laboratory, PCC and RSC were subject to measurement of fork and total lengths to the nearest millimetre using a standard measuring board. Fish weights were measured using appropriately sized spring scales (e.g., 50 g, 100 g, and 300 g) or a digital balance (± 0.001 g). The body cavity of each fish was opened and the sex and/or sexual maturity recorded. Whole gonads and livers were removed only from female fish and

weighed to the nearest milligram using an analytical balance with a surrounding draft shield. Following these measurements, age structures (i.e., otoliths) were removed from each fish. Each age structure was wrapped separately in waxed paper and placed inside a labelled envelope. Internal and external deformities, erosions (fin and gill), lesions, or tumours (DELT) observed during processing (Sanders et al. 1999) and the incidence of parasites (type and/or numbers) was recorded on laboratory bench sheets. In addition, number and combined weight of parasites was recorded and subtracted from the total body weight to get an accurate adjusted body weight of each fish. All DELTs were classified on a scale of 0 (normal) to 3 (severe), and covered a more complete assessment of external anomalies (Table 2.7).

2.6.3 Fish Tissue Sample Collection

The targeted species, the number of samples collected, and the timing of collection for the fish tissue assessment were as follows:

- peamouth chub ovary and muscle tissues collected from 10 females at three fish study areas (RG_SC, RG_ER, and RG_GC) in April, May, and June 2021;
- redside shiner ovary and muscle tissues collected from up to 10 females at three fish study areas (RG_SC, RG_ER, and RG_GC) in June 2021; and,
- sport fish muscle tissue (non-lethal collected of muscle tissue plugs) collected from up to eight individuals per species at three fishing areas (RG_SC, RG_ER, and RG_GC) among sampling events in April, May, June, and August 2021 (Figure 2.1).

Female PCC and RSC were captured and processed as outlined in Section 2.6.2. After dissection and measurements were taken, photographic documentation of each ovary was collected in case later verification of ovary development was required. Whole ovaries and a skinless, boneless muscle fillet sample were collected from sexually mature females and placed in separately labelled polyethylene (Whirl-Pak®) bags. Samples (i.e., ovaries, and muscle) were stored frozen prior to shipment to the respective laboratory for analysis.

Sport fish targeted for tissue collection included species previously sampled at Koocanusa Reservoir (i.e., Bull Trout [BT; *Salvelinus confluentus*], Kokanee [KO;*Oncorhynchus nerka*], Mountain Whitefish [MW; *Prosopium williamsoni*], Rainbow Trout [RB; *Oncorhynchus mykiss*], and Westslope Cutthroat Trout [WCT; *Oncorhynchus clarki lewisi*]; Minnow 2018). Burbot (*Lota lota*) were not a target species for muscle tissue sampling based on concerns regarding low abundance[15] and the cultural importance of this fish species to the KNC.

[15] In recent years, lower Kootenay burbot populations were designated as critically imperiled and red-listed, meaning potentially extirpated, endangered, or threatened.

Table 2.7: Anomaly (Formerly DELT) Severity Assessment

Scale	Body Surface	Body Form	Lesions	Tumours	Fins	Lips/Jaws/Snout	Eyes	Gills	Opercula	Infection (fungus, bacteria, virus)	Parasites
0	Normal; no aberrations	Normal	None	None	No active erosion	Normal, no lesions, swelling, tears etc.	No aberrations; good "clear" eye	Normal; No apparent aberrations	Normal; both opercula intact and complete	No observed infections	No observed parasites
1	Slight inflammation or reddening	Slight spinal curvature	Tears or wounds on caudal fins, pectoral or dorsal fins.	Tumour present, but localized and with no signs of sloughing/ ulceration	Light active erosion	Swelling on or around lips, mouth or snout	Swollen or protruding eyes	Gills with light, discolored margin along tips of the lamellae	Slight shortening of one or both opercula, gills covered	Minor, spatially isolated infection Note % of body covered:_____	Few observed parasites (#:_____)
2	Moderate inflammation or reddening	One of lordosis, kyphosis or scoliosis	Lesions or wounds on side of body	More than one tumour or one large tumour with no/minor sloughing/ ulceration	Moderate active erosion with some hemorr-haging	Small punctures or lesions	Hemorrhagi ng eye(s) or blind in one or both eyes	Frayed; erosion of tips of gill lamellae resulting in "ragged" gills	Moderate shortening of one or both opercula, gills exposed	Moderate infection or more than one body surface affected Note % of body covered:_____	Moderate parasite infestation (#:_____)
3	Severe inflammation or reddening	Signs of lordosis and kyphosis and scoliosis	Many lesions, rips or tears on body and on fins. Possibly on face as well.	One or more large tumour that may impair breathing/feeding/ swimming performance; signs of ulceration and/or sloughing	Severe active erosion with hemorrhagi ng	Tears, hanging maxilla, missing lips	Missing eye(s)	Clubbed; swelling of the tips of the gill lamellae	One or both opercula substantially shortened or missing, gills completely exposed	Infection covering large spatial area (>25% of surface) Note % of body covered:_____	Numerous parasites (#:_____)

If burbot were caught, they were immediately released. In addition, previous analysis of burbot tissue confirmed that selenium concentrations were below the BC guideline and EVWQP Level 1 benchmarks, and thus selenium is not expected to cause adverse effects in Burbot within Koocanusa Reservoir (Minnow 2015b).

Sport fish were collected using multiple methods. Very short-set gill nets (starting with a maximum set time of 15 minutes) were used to minimize the chance of adversely harming fish. Three foot-diameter hoop nets, attached to leads extending to the shoreline, were set on the bottom for overnight durations (i.e., approximately 24 hours; Minnow 2018). Angling, although not effective in April as a result of flowing water conditions and high turbidity, was used to target sport fish as it was the least invasive fishing method. Angling was conducted from a boat using a single hook baited with earthworms or using fishing lures. In addition, opportunistic sampling of dead fish took place in August during a Kokanee die off event. Deceased individuals were collected along the shoreline and processed as outlined above. The geographic coordinates (UTMs) of each net set or angling location, as well as the time of deployment and the time of retrieval, were recorded on field sheets. Sport fish were lightly anaesthetized in a dilute clove oil solution prior to processing. Each fish was then weighed using appropriately sized spring scales near the top of the scale's range so that measurements achieved a resolution of approximately one percent or less. Total length and fork length were determined using a standard measuring board (± 1 mm). External anomalies were assessed for each sport fish (Sanders et al. 1999) and recorded on field sheets. A muscle sample was then collected using a biopsy punch (4 mm acu-punch). Following extraction of the biopsy sample, skin was removed from the sample using a scalpel and the remaining muscle placed into a sterile cryovial. Once each fish recovered from the anesthetic in a recovery bin, it was released back into the reservoir near its capture location. The muscle tissue samples were stored frozen until shipment to an accredited laboratory (Trich, Saanich, BC).

2.6.4 Laboratory Analysis

Fish tissue samples were shipped to Trich for analysis of metals (including mercury) and selenium using LA-ICPMS consistent with ENV laboratory guidance as specified in Permit 107517 (Province of BC 2020). At the laboratory, the samples were freeze dried prior to analysis, and thus concentrations were reported on a dry weight basis. Accuracy and precision of data was judged based on ability to achieve minimum LRLs (Table 2.6), review of the results from laboratory duplicate analysis, replicate analysis of a minimum of 10% of samples, as well as a comparison to CRMs (Appendix A).

Otoliths collected for age analysis were submitted to AAE Technical Services (Winnipeg, MB). Otoliths were prepared and then read under a compound microscope using transmitted light.

For each structure, the age and edge condition were recorded along with a confidence rating for the age determination. For QA/QC purposes, age determinations from greater than 40% of samples were reassessed by a second individual at the laboratory to determine accuracy (Appendix A).

2.6.5 Data Analysis

2.6.5.1 Fish Health

Data from the fish health assessment were used to address the following question:

- Is fish health different downstream of the Elk River compared to upstream, and are differences in fish health changing over time?

Fish health endpoints representing four response categories, survival (mean age), growth (body weight-at-age, fork length-at-age), reproduction (gonad weight-at-body weight), and energy storage (body weight-at-fork length, liver weight-at-body weight), were evaluated separately for males and females of PCC and RSC collected from each study area. These endpoints are the same used for fish health assessments conducted by Canadian metal mines to satisfy EEM requirements under the *Fisheries Act* (Environment Canada 2012). Magnitudes of difference were interpreted relative to commonly accepted Critical Effect Sizes (CES; Munkittrick et al. 2009; Environment Canada 2012). Results were also compared qualitatively to those from the previous monitoring periods.

Summary statistics including mean, median, minimum, maximum, SD, standard error, and sample size were calculated by study area and fish sex for summary endpoints of age, body weight, fork length, condition factor (K = body weight/[fork length]^3×100,000), gonadosomatic index (GSI = gonad weight/body weight×100), and liver-somatic index (LSI = liver weight/body weight×100). Statistical analyses of datasets from the fish health survey were consistent with procedures outlined in the EEM technical guidance document (Environment Canada 2012), including the use of “adjusted” body weights in statistical analyses (whole body weight less the gonad and liver weights). Fish with parasites (e.g., tapeworms) were not used for the statistical analyses (fish health assessment), although a comparison of abnormalities between areas was completed.

Differences in mean age between study areas was compared using ANOVA. Other endpoints were compared using analysis of covariance (ANCOVA). Prior to conducting the ANOVA or ANCOVA tests, data were assessed for normality and homogeneity of variance, and log transformed where appropriate. Scatterplots of variable and covariate combinations were examined to identify outliers, leverage values or other unusual data, to confirm there was adequate overlap of data between areas being compared, and that there was a linear relationship

between the variable and the covariate. The first step in the ANCOVA analysis was to determine whether the slopes of the regression lines for both test areas were equal. This was accomplished by testing for a significant interaction term (dependent × covariate) in the ANCOVA model. If the interaction term was significant (i.e., regression slopes not equal, $p<0.05$), two methods were used to determine whether a full ANCOVA could proceed. In order of preference, these were 1) coefficients of determination that consider slopes equal regardless of an interaction effect (Environment Canada 2012), and 2) removal of influential points using Cook's distance and re-assessment of equality of slopes. If both methods proved unacceptable, the magnitude of difference calculation was estimated at both the minimum and maximum overlap of covariates between test areas (Environment Canada 2012). This resulted in a significant interaction effect (slopes are significantly different), but the calculation of the magnitude of difference at the minimum and maximum values of covariate overlap was not assigned statistical difference as it would for a full ANCOVA model. If the interaction term was not significant (i.e., homogeneous slopes between the two test populations), then the full ANCOVA model was run without the interaction term to test for differences in adjusted means between the two populations. The adjusted mean was then used as an estimate of the population mean based on the value of the covariate in the ANCOVA model.

For endpoints showing significant differences between areas, the magnitude of difference was calculated as described by Environment Canada (2012) using the mean (ANOVA), adjusted mean (ANCOVA with no significant interaction) or predicted values (ANCOVA with significant interaction). The anti-log of the mean, adjusted mean, or predicted value were used in the equations for endpoints that were log10-transformed. In addition, the magnitude of difference for ANCOVA with a significant interaction were calculated for each of the minimum and maximum values of the covariate. The minimum detectable effect size was calculated as a percent difference from the reference mean (using the observed sample sizes and $\alpha = \beta = 0.1$).

The gonadosomatic index was calculated for female PCC collected in April, May, and June, and used to determine which month provided the best opportunity for collecting gravid females based on gonad development.

A two-way ANOVA was used to fit the GSI index and terms for *Area* (RG_SC, RG_ER, RG_GC), *Month* (April, May and June), and their interaction. Terms were assessed using a significance level of $\alpha = 0.1$. If there was a significant interaction, a post hoc comparison was conducted to test for pairwise differences among months and areas using a Tukey's Honestly Significance Difference Test ($\alpha = 0.1$). A MOD for significant comparisons was calculated using methods outlined in Section 2.4.4.

2.6.5.2 Fish Tissue

Data from the tissue survey were used to address the following question:

- Are selenium concentrations in fish tissue greater than guidelines or effect thresholds, do they differ downstream of the Elk River compared to upstream, and are the differences changing over time?

Selenium concentrations in fish tissues collected in spring 2021 (April to June) from downstream areas (RG_ER and RG_GC) were compared statistically to those from the upstream area (RG_SC) for PCC and RSC. Selenium concentrations in all fish tissues were plotted and compared to the BC guidelines (for muscle [4 µg/g dw] and ovary [11 µg/g dw] tissues) and US EPA (2016) criteria (for muscle [11.3 µg/g dw] and ovary [15.1 µg/g dw] tissues), and the EVWQP Level 1 benchmark for reproduction (18 µg/g dw). Selenium concentrations in WCT tissue samples were also compared to a species specific EVWQP Level 1 benchmark for reproduction (25 µg/g dw; Table 2.8). Selenium concentrations in tissue were compared among areas (RG_SC, RG_ER, RG_GC) using ANOVA tests for species with sufficient sample sizes (n>3). Prior to analyses, the data were inspected for normality and homogeneity of variance before applying parametric statistical procedures. In cases where data did not meet the assumptions of ANOVA despite transformation, the Mann-Whitney test was used to test for differences between areas. When the area term was significant, *post hoc* comparisons were conducted to test for differences between downstream and upstream areas using a Tukey's Honestly Significance Difference test ($\alpha = 0.1$).

For female PCC, selenium concentration in fish tissues relative to GSI index were compared among study areas (RG_SC, RG_ER, RG_GC) using ANCOVA to account for potential differences in reproduction activity and sampling months as well as their interactions. The full model included terms for *Area*, *Month* with *GSI* as a covariate. There were no significant differences observed for *Month* or its interactions ($\alpha = 0.1$), therefore, these terms were removed from the final ANCOVA model and the analysis proceeded as a two-way ANCOVA (*Area* and *GSI*) the same as described for the mercury tissue comparisons. Data were log10 transformed to meet the requirements of normality and homogeneity of variance.

Qualitative temporal comparisons were completed for selenium concentrations in muscle and ovary tissue between 2019 to 2021 for all species.

Mercury concentrations in fish muscle relative to fish length were compared among study areas (RG_SC, RG_ER, and RG_GC) using ANCOVA to account for potential differences in fish body size/age. Tukey's Honestly Significance Difference tests ($\alpha = 0.1$) were used to compare downstream and upstream areas when area terms were significant in the ANCOVA.

Table 2.8: Selenium Benchmarks for Benthic Invertebrate and Fish Tissues in the Elk Valley

Endpoint	Tissue Type	Benchmark			Source
		Value (µg/g dw)	Type	Description	
Benthic Invertebrates	Whole body	4[a]	BC guideline	Interim guideline for aquatic dietary tissue based on weight of evidence of lowest published toxicity thresholds and no uncertainty factor applied	BCMOE (2014)
	Whole body	13	Site-specific benchmark	Level 1 (~10% effect) benchmark for growth, reproduction and survival of invertebrates	Teck (2014)
	Whole body	20	Site-specific benchmark	Level 2 (~20% effect) benchmark for growth, reproduction and survival of invertebrates	Teck (2014)
	Whole body	27	Site-specific benchmark	Level 3 (~50% effect) benchmark for growth, reproduction and survival of invertebrates	Golder (2014)
	Whole body	11	Site-specific benchmark	Level 1 (~10% effect) benchmark for dietary effects to juvenile fish (growth)	Teck (2014)
	Whole body	18[b]	Site-specific benchmark	Level 2 (~20% effect) benchmark for dietary effects to juvenile fish (growth)	Teck (2014)
	Whole body	26	Site-specific benchmark	Level 3 (~50% effect) benchmark for dietary effects to juvenile fish (growth)	Golder (2014)
	Whole body	15	Site-specific benchmark	Level 1 (~10% effect) benchmark for dietary effects to juvenile birds	Teck (2014)
	Whole body	22	Site-specific benchmark	Level 2 (~20% effect) benchmark for dietary effects to juvenile birds	Teck (2014)
	Whole body	41	Site-specific benchmark	Level 3 (~50% effect) benchmark for dietary effects to juvenile birds	Golder (2014)
Westslope cutthroat trout	Egg/ovary	25	Site-specific benchmark	Level 1 (~10% effect) benchmark for westslope cutthroat trout reproduction	Teck (2014)
	Egg/ovary	27	Site-specific benchmark	Level 2 (~20% effect) benchmark for westslope cutthroat trout reproduction	Teck (2014)
	Egg/ovary	33	Site-specific benchmark	Level 3 (~50% effect) benchmark for westslope cutthroat trout reproduction	Golder (2014)
	Muscle/ muscle plug	15.5	Site-specific benchmark	Muscle equivalent to the 25 mg/kg dw ovary benchmark, based on the relationship observed between selenium in muscle and ovary in westslope cutthroat trout	Nautilus Environmental and Interior Reforestation (2011)
Mountain whitefish	Egg/ovary	29.3	Site-specific benchmark	Conservative estimate of lower bound for potential effects	Nautilus (2017)
Other Fish	Egg/ovary	18	Site-specific benchmark	Level 1 (~10% effect) benchmark for reproduction effects to other species than westslope cutthroat trout	Teck (2014)
	Egg/ovary	22	Site-specific benchmark	Level 2 (~50% effect) benchmark for reproduction effects to other species than westslope cutthroat trout	Teck (2014)
	Egg/ovary	31	Site-specific benchmark	Level 3 (~50% effect) benchmark for reproduction effects to other species than westslope cutthroat trout	Golder (2014)
	Muscle	18	Site-specific benchmark	Muscle equivalent to the 18 mg/kg dw ovary benchmark, based on the relationship observed between selenium in muscle and ovary in longnose sucker	Minnow (2018a)
	Egg/ovary	11	BC guideline	Combination of weight of evidence and mean of published effects data with an uncertainty factor of 2 applied	BCMOE (2014)
	Whole body	4	BC guideline	Combination of weight of evidence and mean of published effects data with an uncertainty factor of 2 applied	BCMOE (2014)
	Muscle/ muscle plug	4	BC guideline	Whole-body translation to derive muscle benchmark with no additional uncertainty factor	BCMOE (2014)

[a] BC guidelines were not used in assessment of benthic invertebrate and fish tissue selenium concentrations. Assessment was completed relative to site-specific benchmarks only.

[b] Site-specific benchmark not applicable to dietary effects to juvenile westslope cutthroat trout for reasons outlined in Teck (2014).

Mercury concentrations in fish tissues were also compared to the BC tissue residue guideline for the protection of wildlife (0.033 µg/g ww; BCMOE 2019). The guideline was converted to a dry weight assuming a moisture content of 80% (average in muscle of all fish collected from Koocanusa Reservoir in 2020).

3 WATER QUALITY AND PRODUCTIVITY

3.1 Overview

Water quality was monitored weekly from April 1st to July 15th, and monthly outside of this time period (except when prevented by safety concerns) in 2021 by Teck at five stations: four located downstream from the Elk River (RG_DSELK, RG_GRASMERE, RG_USGOLD, RG_BORDER) and one located upstream from the Elk River (RG_KERRRD; Figure 2.1). Water chemistry samples and *in situ* measurements collected at each station were provided in an annual water quality monitoring report produced by Teck (2022) and are summarized in this report along with water quality information collected concurrently with biological sampling conducted at additional stations not aligned with those sampled by Teck (i.e., RG_SC and RG_GC; Figure 2.1). Water quality data from the US portion of the reservoir collected at three stations, including International Boundary, Tenmile, and Forebay stations, were also summarized in this report where applicable[16]. A summary of monthly nitrate and selenium loadings to Koocanusa Reservoir was also provided herein.

3.2 Water Quality

3.2.1 Water Chemistry

In 2021, among the order constituents, monthly average concentrations of nitrate, sulphate, and dissolved cadmium at RG_KERRRD, RG_GRASMERE, RG_USGOLD, and RG_BORDER were equal to or below respective BC water quality guidelines (Appendix Figures B.4, B.10, and B.13). Selenium, however, was elevated above the BC guideline on at least one occasion at RG_GRASMERE and RG_USGOLD (Appendix Figure B.12). At RG_DSELK, monthly average concentrations of the order constituents nitrate, sulphate, and dissolved cadmium did not exceed the SPOs, however, the monthly mean concentration of selenium was above the SPO in both January and April (Table 3.1)[17]. The twelve non-order constituents (i.e., total antimony, total barium, total boron, dissolved cobalt, total lithium, total manganese, total molybdenum, total nickel, nitrite, total dissolved solids, total uranium, and total zinc) occurred at concentrations below applicable BC water quality guidelines throughout 2021 at all of the permitted water quality stations (Appendix Table B.1; Appendix Figures B.1 to B.16). Concentrations of order and

[16] Montana water quality samples are not assessed for the same list of parameters as the Canadian water quality samples.

[17] In this table, the number of decimal places displayed for monthly mean concentrations were rounded to match the number of significant digits specified for the applicable provincial guideline or SPO.

Table 3.1: Monthly Mean Water Quality at RG_DSELK Screened Against SPOs, Koocanusa Reservoir Monitoring Program, 2021

Date	Total Selenium (µg/L)	Sulphate (mg/L)	Nitrate (mg/L as N)	Dissolved Cadmium (ug/L)
SPO	**2**	**308**	**3**	**0.19**
January	3	47	0.60	0.01
February	1	47	0.37	0.01
March	2	49	0.49	<0.005
April	3	47	0.53	0.01
May	1	22	0.40	0.01
June	1	16	0.26	<0.005
July	1	18	0.22	0.13
August	1	23	0.23	<0.005
September	1	28	0.21	<0.005
October	1	29	0.22	<0.005
November	1	29	0.22	<0.005
December	1	27	0.31	0.0098

Highlighted values are elevated relative to the SPO.

non-order constituents in water samples taken during biological monitoring at stations that did not align with Teck monitoring stations (downstream [RG_GC] and upstream [RG_SC] of the mouth of the Elk River) were below applicable BC water quality guidelines in samples taken throughout the water column, except for selenium which was above the BCWQG at RG_GC in samples collected during the April field program (Appendix Table B.2). In cases in which a parameter concentration is above the respective BCWQG, it does not indicate that an unacceptable risk exists, but rather that the potential for adverse effects may be increased and additional investigation may be required to evaluate for an effect (BCMOE 2019).

Monthly mean concentrations of total barium, lithium, molybdenum, nitrate, and selenium were significantly higher downstream of the Elk River compared to upstream at RG_KERRRD (Table 3.2). Conversely, significantly lower monthly mean concentrations of total boron, manganese, and nickel were indicated downstream of the Elk River, and no differences in monthly mean concentrations of dissolved cadmium, sulphate, total dissolved solids (TDS), or total uranium and zinc were found between the downstream and upstream stations (Table 3.2). Concentrations of all constituents were typically highest in the winter and spring months at all stations in 2021, and generally followed the same seasonal pattern observed in previous years (Appendix Figures B.1 to B.16). This seasonal change is likely reflective of the reservoir drawdown and lower water levels in the winter months which is meant to accommodate the forthcoming spring freshet. For both order and non-order constituents, concentrations at all permitted water quality stations both downstream and upstream of the Elk River in 2021 were within the respective seasonal ranges shown from 2014 to 2016, and from 2018 to 2020 (Appendix Figure B1 to B.16).

3.2.2 Productivity

Productivity comparisons among the five permitted water quality monitoring stations (RG_KERRRD, RG_DSELK, RG_GRASMERE, RG_USGOLD, and RG_BORDER) were based on evaluation of total nitrogen to total phosphorus concentration (N:P) ratios. Ratios of N:P greater than 15 indicate that phosphorus is limiting, whereas ratios less than 7 indicate that nitrogen is limiting, based on categories defined by McDowell et al. (2009) using mass concentrations. At all permitted water quality stations, annual median N:P ratios were consistently 15 or more throughout the water column in 2021 both downstream and upstream of the Elk River indicating phosphorus limitation (Figure 3.1). The N:P ratios at RG_WARDB and RG_ELKMOUTH were also indicative of phosphorus limitation, with the highest N:P ratio among all stations observed at RG_ELKMOUTH (Figure 3.1). The trophic status index classification (Carlson 1977) suggested that Koocanusa Reservoir was primarily oligotrophic to mesotrophic most of the year based on assessment using total phosphorus and chlorophyll-a concentrations

Table 3.2: Comparison of Differences in Parameter Concentrations between Downstream and Upstream (RG_KERRRD) Water Quality Stations, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Station	ANOVA[a]	Q1. Is there a difference in concentrations downstream compared to RG_KERRRD?[b] Magnitude of Difference (%)
Total Boron (mg/L)	RG_DSELK	0.927	-18
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Total Barium (mg/L)	RG_DSELK	0.997	20
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Dissolved Cadmium (mg/L)	RG_DSELK	0.327	ns
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Total Lithium (mg/L)	RG_DSELK	0.439	32
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Total Manganese (mg/L)	RG_DSELK	0.042	-3.9
	RG_GRASMERE		-30
	RG_USGOLD		-40
	RG_BORDER		-44
	FOREBAY		-69
	INTERNATIONAL_BOUNDARY		-47
Total Molybdenum (mg/L)	RG_DSELK	0.675	3.6
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Nickel (mg/L)	RG_DSELK	0.035	-0.54
	RG_GRASMERE		-24
	RG_USGOLD		-20
	RG_BORDER		-33
	FOREBAY		-48
	INTERNATIONAL_BOUNDARY		-2.0
Nitrate (NO_3 mg/L)	RG_DSELK	0.979	114
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
	FOREBAY		
	INTERNATIONAL_BOUNDARY		
Nitrite (NO_2 mg/L)	RG_DSELK	0.700	19
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
	FOREBAY		
	INTERNATIONAL_BOUNDARY		
Total Selenium (mg/L)	RG_DSELK	0.964	288
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
	FOREBAY		
	INTERNATIONAL_BOUNDARY		

Table 3.2: Comparison of Differences in Parameter Concentrations between Downstream and Upstream (RG_KERRRD) Water Quality Stations, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Station	ANOVA[a]	Q1. Is there a difference in concentrations downstream compared to RG_KERRRD?[b] Magnitude of Difference (%)
Sulphate (mg/L)	RG_DSELK	0.425	ns
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
	FOREBAY		
	INTERNATIONAL_BOUNDARY		
Total Dissolved Solids (mg/L)	RG_DSELK	0.734	ns
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
	FOREBAY		
	INTERNATIONAL_BOUNDARY		
Uranium (mg/L)	RG_DSELK	0.859	ns
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		
Zinc (mg/L)	RG_DSELK	0.563	ns
	RG_GRASMERE		
	RG_USGOLD		
	RG_BORDER		

Station difference P-value < 0.05.
Downstream value higher than upstream.
Downstream value lower than upstream.

Notes: "ns" indicates non-significant difference (p-value > 0.05) between upstream and downstream. Insufficient sample size (<3) for values above detection limits to complete analyses for total antimony and dissolved cobalt.

[a] ANOVA Conducted on the difference in $\log_{10}$ concentrations Upstream (RG_KERRRD) and Downstream to test for differences among stations (RG_DSELK, RG_GRASMERE, RG_USGOLD, RG_BORDER) of the Elk River ($\log_{10}$[DS]-$\log_{10}$[US]. If significant, each station was compared to Upstream separately.

[b] Post-hoc contrasts testing the difference in $\log_{10}$(DS)-$\log_{10}$(US) against zero with the magnitude of difference (MOD) calculated as (DS-US)/US*100% and application of geometric means for concentrations. Post-hoc tests were adjusted from the number of comparisons using Tukey's Honestly Significant Difference (HSD) tests.

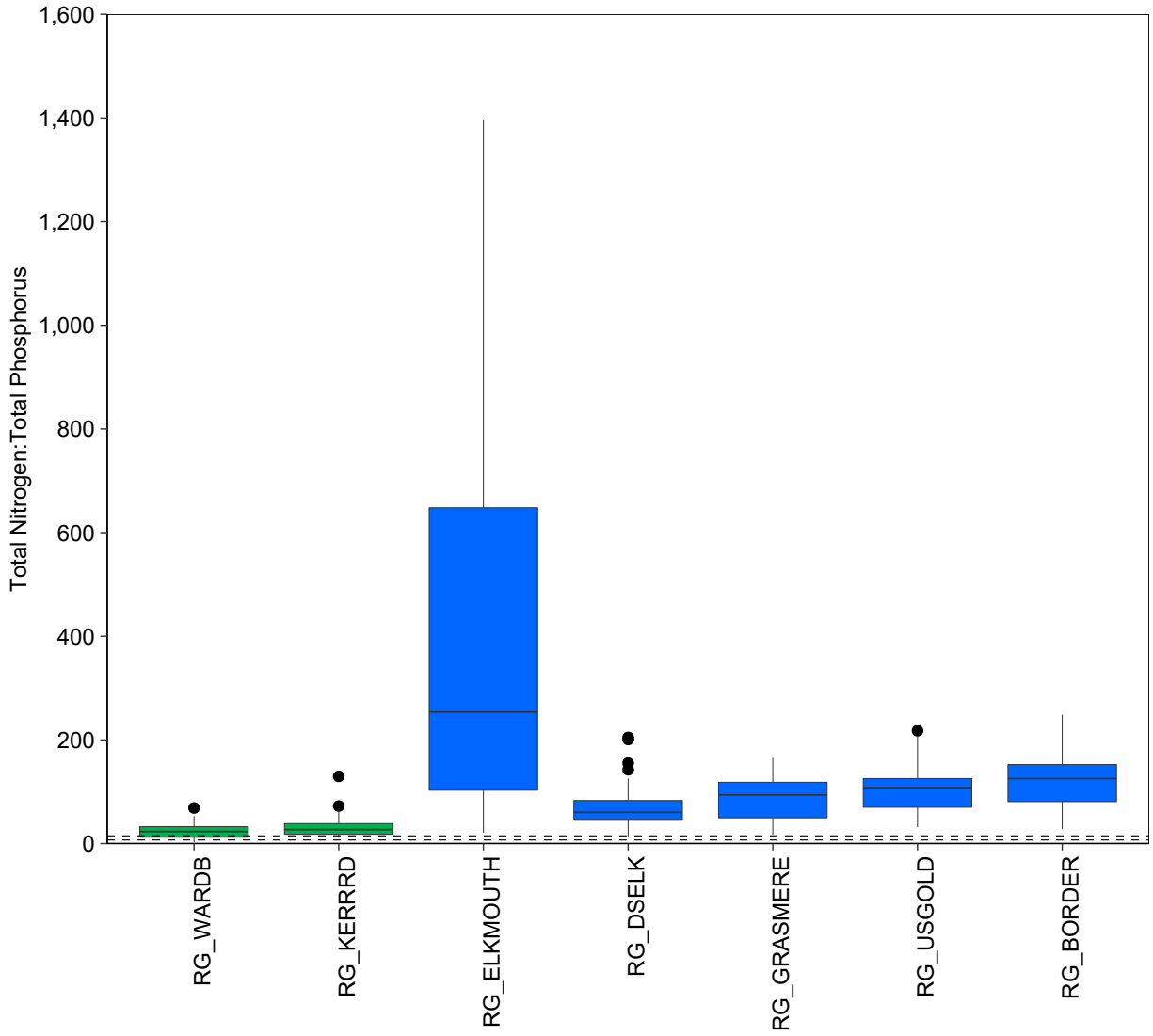


Figure 3.1: Ratio of Total Nitrogen to Total Phosphorus at Downstream (Blue) and Upstream (Green) Stations, Koocanusa Reservoir Monitoring Program, 2021

Notes: Concentrations are averaged across depths when data for multiple depths are available.
Total N:P ratios > 15 (hatched line) are indicative of phosphorus limited systems. Total N:P ratios < 7 (hatched line) are indicative of nitrogen limited systems. Total N:P ratios in between 7 and 15 indicate co-limitation.

(Table 3.3). Although assessment of productivity using Secchi depth suggested eutrophic conditions from late fall (December) through spring, and mesotrophic conditions over the rest of the year (Table 3.3), the reservoir trophic status based on Secchi depth should not be considered an accurate representation of the reservoir productivity. Rather, it is likely reflective of changes in turbidity associated with sediment loads introduced to the reservoir during the various seasons. Overall, the seasonal variability in the trophic status of the reservoir in 2021 was consistent with previous years and reflective of the rapid changes in water levels/flow characteristics that take place over the year including from April to June during freshet.

3.2.3 Loadings

Monthly nitrate and selenium loadings were estimated based on total monthly flow and monthly average nitrate and selenium concentrations at stations RG_ELKMOUTH (Elk River) and RG_WARDB (Kootenay River). In both the Elk River and the Kootenay River, highest average monthly loadings of each of nitrate and selenium occurred from May to July, with the peak occurring in June in 2021 (Table 3.4). Loadings of both nitrate and selenium to Koocanusa Reservoir were higher from the Elk River than from the Kootenay River on both a monthly and annual timescale in 2021. Qualitative comparisons indicated that loadings of both parameters in 2021 in the Elk River were similar to 2020, but higher to those observed in 2019, whereas in the Kootenay River, 2021 had similar loadings of both parameters compared to 2019, but lower than 2020 (Table 3.4).

3.3 *In Situ* Water Quality Profiles

In situ water quality profiles conducted in August 2021 under full-pool conditions indicated similar temperature changes through the top 10 m of the water column at both the downstream and upstream transect, but development of the thermocline at a greater depth (i.e., around 17 m) downstream of the Elk River compared to upstream (i.e., around 10 m; Figure 3.2). Dissolved oxygen concentration profiles were similar downstream and upstream of the Elk River and reflected well-oxygenated conditions throughout the entire water column (Figure 3.2). The profiles indicated similar changes in pH through the water column at both transects in August 2021, with higher pH observed near the surface and slightly decreasing pH occurring with greater depth below the epilimnion (Figure 3.2). Specific conductivity profiles were also similar between the downstream and upstream transects in 2021 (Figure 3.2). Temporally, water temperatures were cooler in the epilimnion in 2021 compared to 2019 and 2020 but were within the same range observed in the two previous years in the hypolimnion. Similarly, pH of the epilimnion in 2021 was lower than observed in 2019 and 2020 for both transects but was within range observed previously in the hypolimnion. Dissolved oxygen concentrations and specific

conductivity profiles at the downstream and upstream transects in August 2021 were comparable to profiles conducted in August of 2020 and 2019, respectively (Figure 3.2).

Table 3.3: Trophic Status Index Classification Using Monthly Means of Phosphorus, Chlorophyll-a, and Secchi Depth, Koocanusa Reservoir Monitoring Program, 2021

Unit	Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phosphorus TSI	RG_WARDB	**30.7**	**36.9**	87.7	**37.9**	**35.3**	60.2	51.4	25.2	**30.5**	**34.5**	22.2	25.8
	RG_KERRRD	-	42.0	**32.8**	41.5	43.8	40.7	21.7	26.4	19.4	24.1	**38.3**	29.2
	RG_ELKMOUTH	17.4	14.1	19.1	29.5	49.4	55.1	**31.5**	14.1	18.5	20.9	27.9	**33.8**
	RG_DSELK	25.5	21.8	27.4	**37.8**	43.0	45.4	23.7	28.3	25.7	17.4	25.1	**39.5**
	RG_GRASMERE	28.5	**31.8**	25.8	**35.7**	**38.2**	40.6	20.4	16.2	19.7	17.5	20.9	**33.6**
	RG_USGOLD	23.8	18.3	23.8	**32.0**	**35.5**	**36.3**	16.3	18.7	19.4	22.6	22.1	**38.1**
Chlorophyll TSI	RG_WARDB	-	-	-	-	-	-	-	-	-	-	-	-
	RG_KERRRD	-	**30.2**	**33.3**	**34.5**	**33.6**	19.0	29.4	**32.2**	**36.5**	**38.2**	**39.6**	**31.7**
	RG_ELKMOUTH	-	-	-	-	-	-	-	-	-	-	-	-
	RG_DSELK	26.2	27.8	**33.0**	**37.8**	**30.6**	**33.5**	**33.4**	**33.2**	**36.8**	**36.8**	42.3	27.9
	RG_GRASMERE	**30.6**	**32.0**	48.9	41.2	**33.1**	**38.4**	**32.8**	**35.3**	**37.5**	**37.8**	**38.2**	**39.0**
	RG_USGOLD	29.7	**37.4**	46.0	42.4	**31.3**	**39.4**	**32.1**	**32.6**	-14.6	40.2	40.9	42.3
	RG_BORDER	**36.0**	**38.0**	46.0	40.2	29.6	40.9	**34.5**	28.5	**34.3**	**36.0**	40.8	**39.2**
Secchi Depth TSI	RG_WARDB	-	-	-	-	-	-	-	-	-	-	-	-
	RG_KERRRD	-	-	-	71.0	77.1	69.4	50.0	44.7	**35.4**	**37.4**	60.0	54.2
	RG_ELKMOUTH	-	-	-	-	-	-	-	-	-	-	-	-
	RG_DSELK	-	-	-	70.7	76.2	55.0	44.7	**38.3**	**34.8**	**34.7**	40.0	65.1
	RG_GRASMERE	56.2	-	-	67.1	71.9	53.6	45.7	40.4	**34.2**	**35.7**	**37.5**	61.5
	RG_USGOLD	53.2	-	-	63.4	66.8	50.6	45.2	**39.0**	**33.9**	**38.3**	**38.3**	54.6
	RG_BORDER	48.6	-	-	53.4	59.4	50.3	45.3	44.7	**34.7**	**38.3**	41.0	53.7

Indicates oligotrophic status based on TSI < 30 based on Carlson (1977).

Indicates mesotrophic status based on 40 < TSI < 50 based on Carlson (1977).

Indicates eutrophic status based on 50 < TSI < 60 based on Carlson (1977).

Note: "-" = no data. Bolded values fall in between the oligotrophic and mesotrophic ranges (30 - 40) and were rounded up or down to classify them.

Table 3.4: Average Monthly Nitrate and Selenium Loadings to the Koocanusa Reservoir, 2019 to 2021

Source	Month	Average Nitrate (mg/L)			Average Selenium (mg/L)			Total Volume (m^3)			Nitrate Loadings (kg/day)			Selenium Loadings (kg/day)		
		2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021	2019	2020	2021
Elk River (RG_ELKMOUTH)	January	1.2	1.2	1.34	0.0067	0.0067	0.00698	41,006,976	48,394,337	64,988,801	1,256	2,286	2,225	7	12	11.5
	February	1.3	1.1	1.48	0.0074	0.0058	0.00840	25,089,073	56,775,739	44,707,887	1,073	2,226	2,620	6	12	14.9
	March	1.3	1.3	1.74	0.0072	0.0070	0.00850	46,239,045	52,504,309	76,160,216	2,048	2,532	3,896	11	13	19
	April	0.91	1.31	1.50	0.0056	0.0067	0.00770	106,686,508	106,641,372	132,515,186	2,949	4,558	5,452	18	23	28
	May	0.68	0.88	1.02	0.0038	0.0045	0.00498	276,188,619	484,319,053	499,136,356	5,821	11,803	11,712	32	59	58
	June	0.74	0.73	0.978	0.0036	0.0035	0.00445	421,070,214	773,942,850	738,472,331	10,700	20,277	18,899	51	101	86
	July	0.96	0.87	1.16	0.0046	0.0044	0.00558	297,267,032	334,850,680	267,942,826	9,590	11,136	9,906	46	56	48
	August	1.2	1.0	1.30	0.0059	0.0052	0.00626	149,747,763	136,535,838	166,877,672	6,009	5,977	5,815	30	31	28
	September	1.2	1.3	1.65	0.0061	0.0063	0.00790	98,566,165	84,817,692	109,068,998	4,029	4,224	5,309	20	20	25
	October	1.3	1.3	1.47	0.0066	0.0067	0.00742	82,005,592	72,923,120	94,856,565	3,613	2,918	3,694	19	15	19
	November	1.2	1.4	0.795	0.0065	0.0074	0.00352	54,291,842	82,188,770	169,187,952	2,559	2,970	2,422	14	16	11
	December	1.1	1.3	0.734	0.0066	0.0072	0.00357	60,114,499	59,893,579	157,389,247	2,073	2,773	4,207	12	16	20
Kootenay River (RG_WARDB)	January	0.15	0.15	0.139	0.00014	0.00015	0.000121	112,819,052	123,777,596	144,468,909	470	462	666	0.46	0.64	0.58
	February	0.15	0.16	0.170	0.00014	0.00014	0.000115	77,486,057	118,503,031	107,048,522	284	546	713	0.27	0.51	0.48
	March	0.15	0.11	0.135	0.00012	0.00015	0.000122	116,675,008	114,618,235	132,039,997	612	424	508	0.47	0.56	0.45
	April	0.14	0.10	0.100	0.00011	0.00011	0.000108	267,887,635	208,341,668	257,804,963	1,191	905	796	0.97	0.80	0.83
	May	0.18	0.23	0.183	0.00009	0.00010	0.0000880	947,360,464	1,262,368,091	1,343,839,932	6,262	8,712	5,964	2.7	3.6	2.9
	June	0.11	0.09	0.108	0.000081	0.000130	0.0000960	1,370,615,445	2,341,943,377	2,321,325,566	5,448	8,200	6,489	4.0	12.8	5.8
	July	0.13	0.08	0.0797	0.000110	0.000088	0.0000870	941,856,710	1,266,608,591	896,088,077	4,223	3,801	2,220	3.4	4.0	2.4
	August	0.059	0.056	0.0337	0.00011	0.00009	0.0000820	482,055,684	489,963,503	446,737,017	1,093	1,322	478	2.0	2.2	1.2
	September	0.082	0.053	0.0294	0.000095	0.000109	0.000116	359,498,669	261,827,109	308,221,117	991	525	236	1.15	1.07	0.9
	October	0.072	0.061	0.0448	0.000103	0.000125	0.000101	267,152,361	229,833,222	282,626,496	751	449	388	1.07	0.92	0.9
	November	0.11	0.05	0.0782	0.000111	0.000139	0.0000710	171,424,041	235,085,097	343,172,443	765	330	549	0.78	0.85	0.50
	December	0.16	0.11	0.164	0.00015	0.00012	0.0000960	147,008,197	145,291,916	351,453,995	638	547	1,912	0.60	0.57	1.12

Note: "-" indicates no available data. Values below LRL were subbed in at the detection limit.

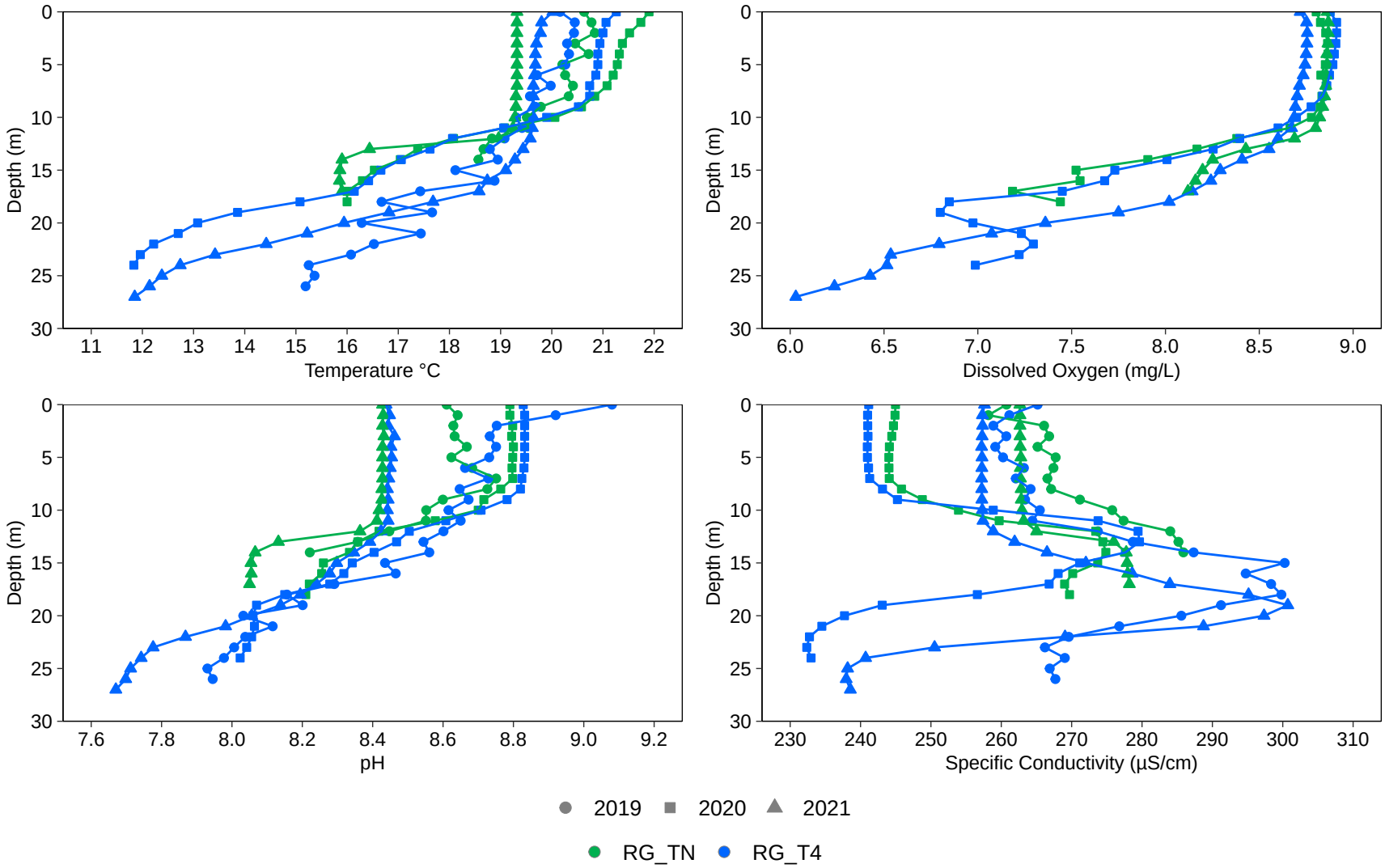


Figure 3.2: Mean Cross−Transect (n=5 Stations per Transect) In Situ Water Quality Profiles Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2019 to 2021

Note: Dissolved oxygen data for 2019 unavailable.

4 SEDIMENT QUALITY

4.1 Overview

Sediment samples were collected from five profundal stations along transects located downstream (RG_T4) and upstream (RG_TN) of the Elk River confluence with Koocanusa Reservoir in August 2021.

4.2 Sediment Particle Size and Chemistry

Sediment both downstream and upstream of the Elk River was primarily composed of silt-sized material, a moderate proportion of clay-sized material, and minor amount of sand- and gravel-sized material in August 2021 (Figure 4.1). Significantly lower proportion of silt-sized material and significantly higher proportion of clay-sized material occurred in sediment downstream of the Elk River compared to upstream, but no significant differences in the proportion of sand-sized material or TOC were indicated between areas (Table 4.1).

Metals occurring at concentrations elevated above the lower working sediment quality guidelines (WSQG) at two or more stations downstream of the Elk River included arsenic, cadmium, chromium, copper, iron, manganese, nickel, selenium, and zinc (Appendix Table C.1). Of these metals, concentrations of arsenic, iron, and manganese were also elevated above the upper WSQG in sediment from at least one station downstream of the Elk River. Upstream of the Elk River, iron, manganese, and nickel concentrations were also elevated above the lower WSQG in sediment at two or more stations, but concentrations of all metals were below the upper WSQG (Appendix Table C.1). Downstream of the Elk River, concentrations of the PAHs 2-methylnaphthalene and phenanthrene were also elevated above the lower WSQG at four and five of the stations, respectively, but were below the upper WSQG (Appendix Table C.1). Significantly higher concentrations of several metals (antimony, barium, cadmium, mercury, molybdenum, selenium, and thallium) and PAHs (benz(a)anthracene, benzo(b&j)fluoranthene, benzo(e)pyrene, chysene, fluoranthene, 2-methylnaphthalene, naphthalene, perylene, phenanthrene, and pyrene) occurred in sediment downstream of the Elk River compared to upstream suggesting an Elk River source for these parameters (Table 4.1; Figure 4.2).

Quantitative temporal comparisons of concentrations of metals that were elevated relative to guidelines indicated that in August 2021, concentrations of arsenic, cadmium, chromium, copper, iron, manganese, nickel, selenium, and zinc were higher than previously observed downstream of the Elk River, but that concentrations in sediment in the upstream areas were within respective ranges shown in 2019 and 2020 (Figure 4.2). Concentrations of 2-methylnaphthalene and phenanthrene in sediment in 2021 were comparable to those measured in 2019 and 2020 (Figure 4.2).

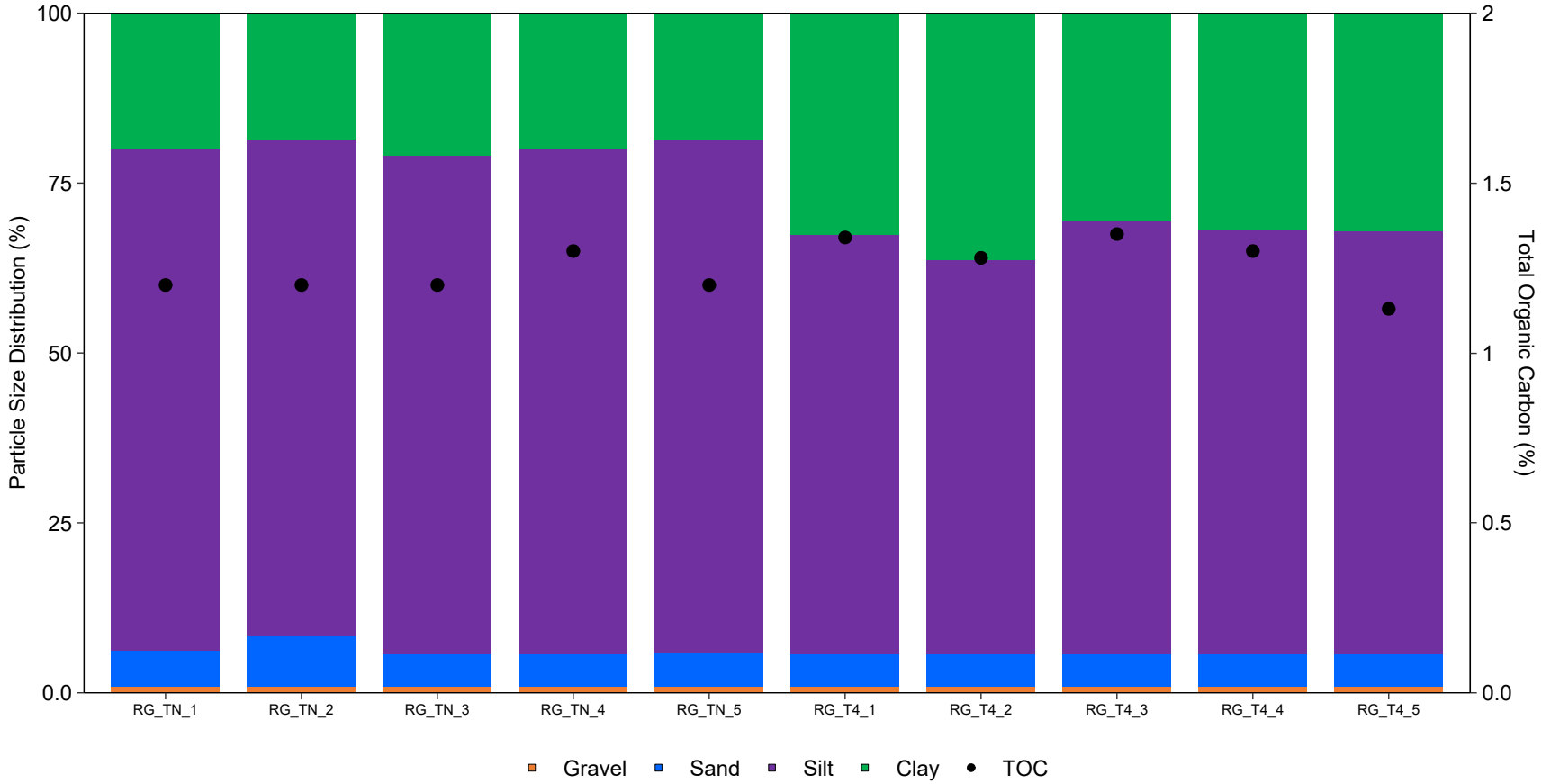


Figure 4.1: Sediment Particle Size Distribution and Total Organic Carbon (TOC) Content Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Notes: Particle groups were summed and concentrations below the laboratory reporting limit (LRL) were substituted by the detection limit.

Table 4.1: Statistical Comparisons of Physical Properties and Concentrations of Metals and PAHs in Sediment Between Areas Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2021

Parameter	Units	Test [a]	Summary Statistics	Test P-value	Measure of Central Tendency		Magnitude of Difference [b]
					RG_TN	RG_T4	
Moisture	%	tequal	Mean	0.012	41.2	44.5	8.1
pH	pH unit	tequal	Mean	0.084	8.55	8.63	ns
Clay	%	tequal	Mean	0.001	20.6	34.6	68
Sand	%	M-W	Median	0.072	1.30	1.00	ns
Silt	%	tequal	Mean	0.001	77.6	65.1	-16
Total Organic Carbon	%	tequal	Mean	0.213	1.22	1.28	ns
Aluminum	mg/kg	tequal	Geometric Mean	0.178	12,875	18,615	ns
Antimony	mg/kg	tequal	Mean	0.044	0.238	0.620	161
Arsenic	mg/kg	tequal	Mean	0.074	4.89	10.8	ns
Barium	mg/kg	tequal	Mean	0.026	77.2	271	251
Beryllium	mg/kg	tequal	Mean	0.057	0.354	0.852	ns
Bismuth	mg/kg	M-W	Median	0.180	0.200	0.200	ns
Cadmium	mg/kg	tequal	Mean	0.020	0.175	0.799	357
Calcium	mg/kg	tequal	Mean	0.287	117,600	158,700	ns
Chromium	mg/kg	tequal	Geometric Mean	0.164	17.7	25.6	ns
Cobalt	mg/kg	tequal	Mean	0.162	8.88	14.2	ns
Copper	mg/kg	tequal	Mean	0.113	14.3	25.3	ns
Iron	mg/kg	tequal	Mean	0.174	22,340	34,660	ns
Lead	mg/kg	tequal	Mean	0.152	12.5	20.6	ns
Lithium	mg/kg	tequal	Mean	0.227	24.4	36.0	ns
Magnesium	mg/kg	tequal	Geometric Mean	0.351	23,478	29,309	ns
Manganese	mg/kg	tequal	Mean	0.064	459	1,081	ns
Mercury	mg/kg	tequal	Mean	0.006	0.0257	0.0339	32
Molybdenum	mg/kg	tequal	Mean	0.043	0.594	1.45	144
Nickel	mg/kg	tequal	Geometric Mean	0.113	19.5	29.6	ns
Phosphorus	mg/kg	tequal	Mean	0.064	481	1,060	ns
Potassium	mg/kg	tequal	Mean	0.056	772	2,336	ns
Selenium	mg/kg	M-W	Median	0.007	0.200	0.740	270
Sodium	mg/kg	tequal	Mean	0.123	85.0	162	ns
Strontium	mg/kg	tequal	Mean	0.629	281	316	ns
Thallium	mg/kg	tequal	Mean	0.039	0.0740	0.235	217
Tin	mg/kg	M-W	Median	1.000	5.00	5.00	ns
Titanium	mg/kg	tequal	Mean	0.986	75.8	75.3	ns
Uranium	mg/kg	tequal	Geometric Mean	0.101	0.595	0.940	ns
Vanadium	mg/kg	tequal	Mean	0.060	12.7	31.3	ns
Zinc	mg/kg	tequal	Mean	0.095	65.5	124	ns
Zirconium	mg/kg	tequal	Mean	0.415	1.42	1.82	ns
Anthracene	mg/kg	nt	nt	nt	nt	nt	nt
Benz(a)anthracene	mg/kg	M-W	Median	0.424	0.0100	0.0100	ns
Benzo(b&j)fluoranthene	mg/kg	M-W	Median	0.025	0.0100	0.0130	30
Benzo(e)pyrene	mg/kg	M-W	Median	0.025	0.0100	0.0130	30
Chrysene	mg/kg	M-W	Median	0.007	0.0100	0.0250	150
Fluoranthene	mg/kg	M-W	Median	0.007	0.0100	0.0160	60
2-Methylnaphthalene	mg/kg	M-W	Median	0.007	0.0100	0.0440	340
Naphthalene	mg/kg	M-W	Median	0.007	0.0100	0.0170	70
Perylene	mg/kg	M-W	Median	0.025	0.0100	0.0120	20
Phenanthrene	mg/kg	M-W	Median	0.007	0.0100	0.0490	390
Pyrene	mg/kg	M-W	Median	0.007	0.0100	0.0140	40
d10-Acenaphthene	mg/kg	tequal	Mean	0.283	89.5	91.9	ns
d12-Chrysene	mg/kg	tequal	Mean	0.249	88.4	90.8	ns
d8-Naphthalene	mg/kg	tequal	Mean	0.066	86.1	88.8	ns
d10-Phenanthrene	mg/kg	tequal	Mean	0.465	89.8	91.1	ns
IACR (CCME)	mg/kg	M-W	Median	0.025	0.150	0.160	6.7

Indicates significant difference between study areas at a P-value < 0.05.

Pairwise comparison is significant (α = 0.05) and magnitude of difference is positive.

Pairwise comparison is significant (α = 0.05) and magnitude of difference is negative.

Notes: ns = not significant; tequal = T-test for equal variances, M-W = Mann–Whitney U test.

[a] Some parameters were not tested because more than 80% of the values were below the laboratory detection limit. These parameters are not shown.

[b] Magnitude of difference calculated as $(MCT_{downstream} - MCT_{upstream})/(MCT_{upstream})\times 100\%$, where MCT is the measure of central tendency = mean (ANOVA, tunequal, and tequal), geometric mean ($ANOVA_{log}$), or median (Mann–Whitney or KW tests).

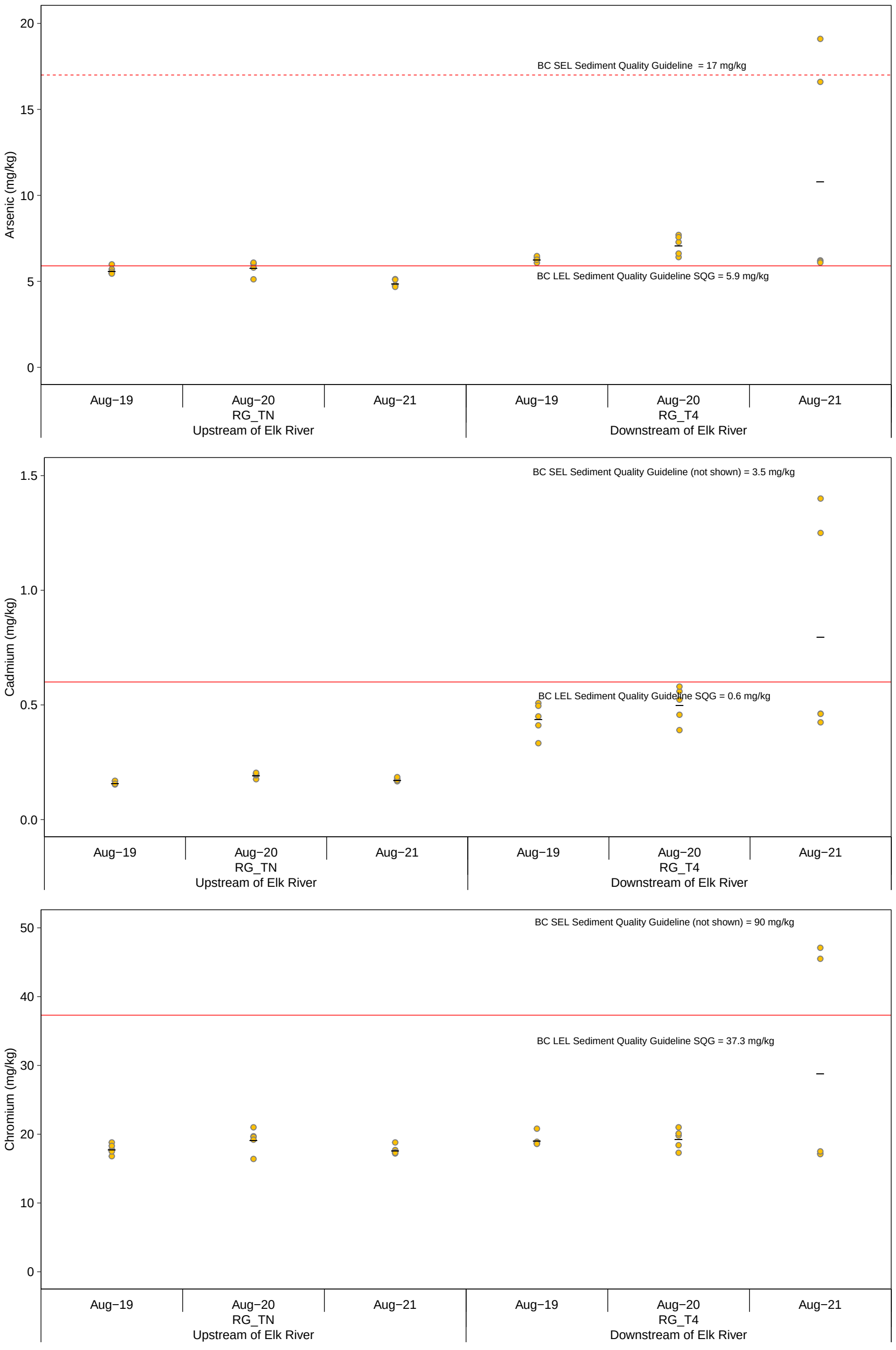
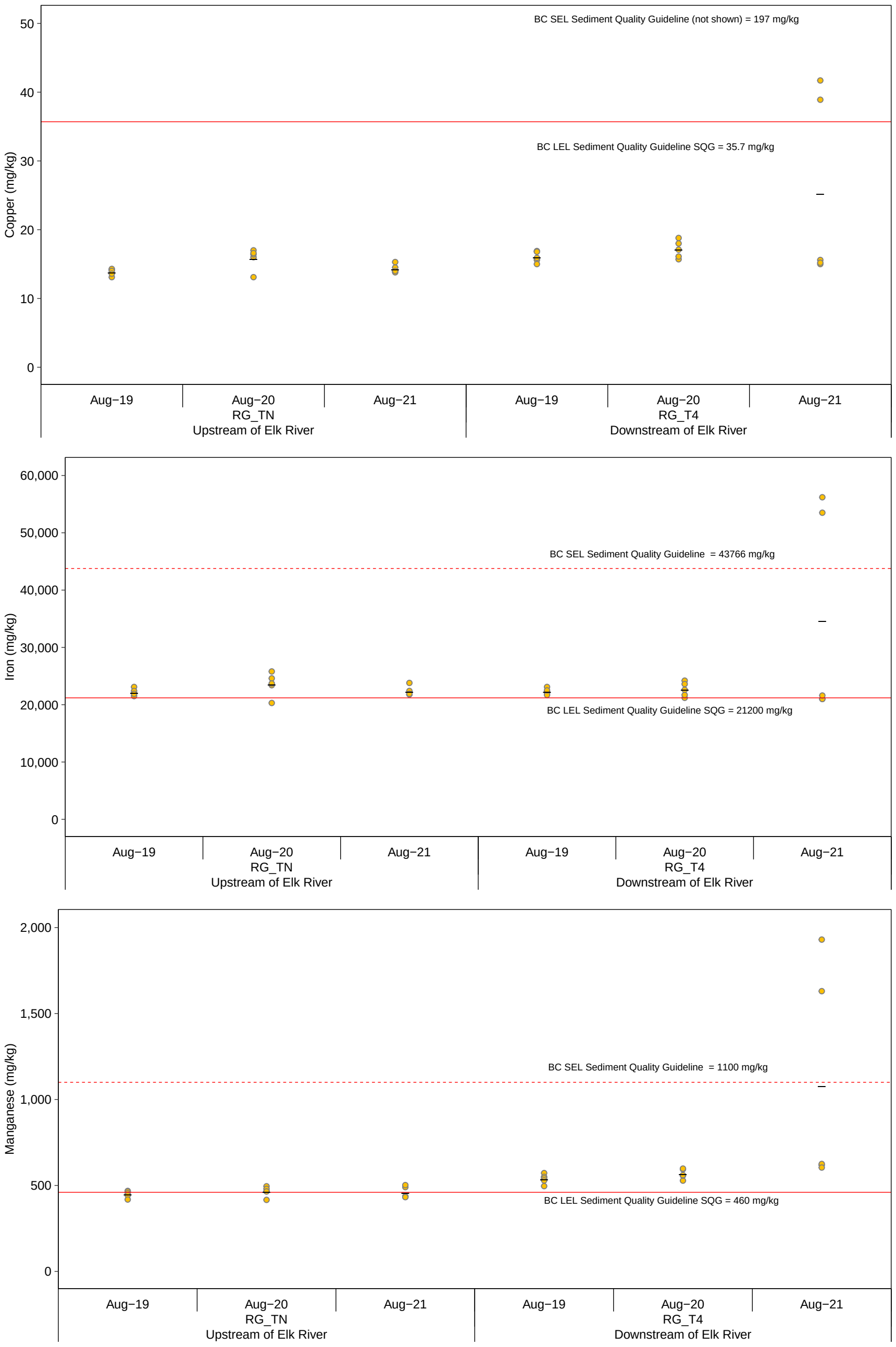


Figure 4.2: Parameter Concentrations in Sediment for those Parameters Occurring at Concentrations that Exceeded Sediment Quality Guideline Lowest Effects Level (LEL), Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Individual values are plotted. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1.



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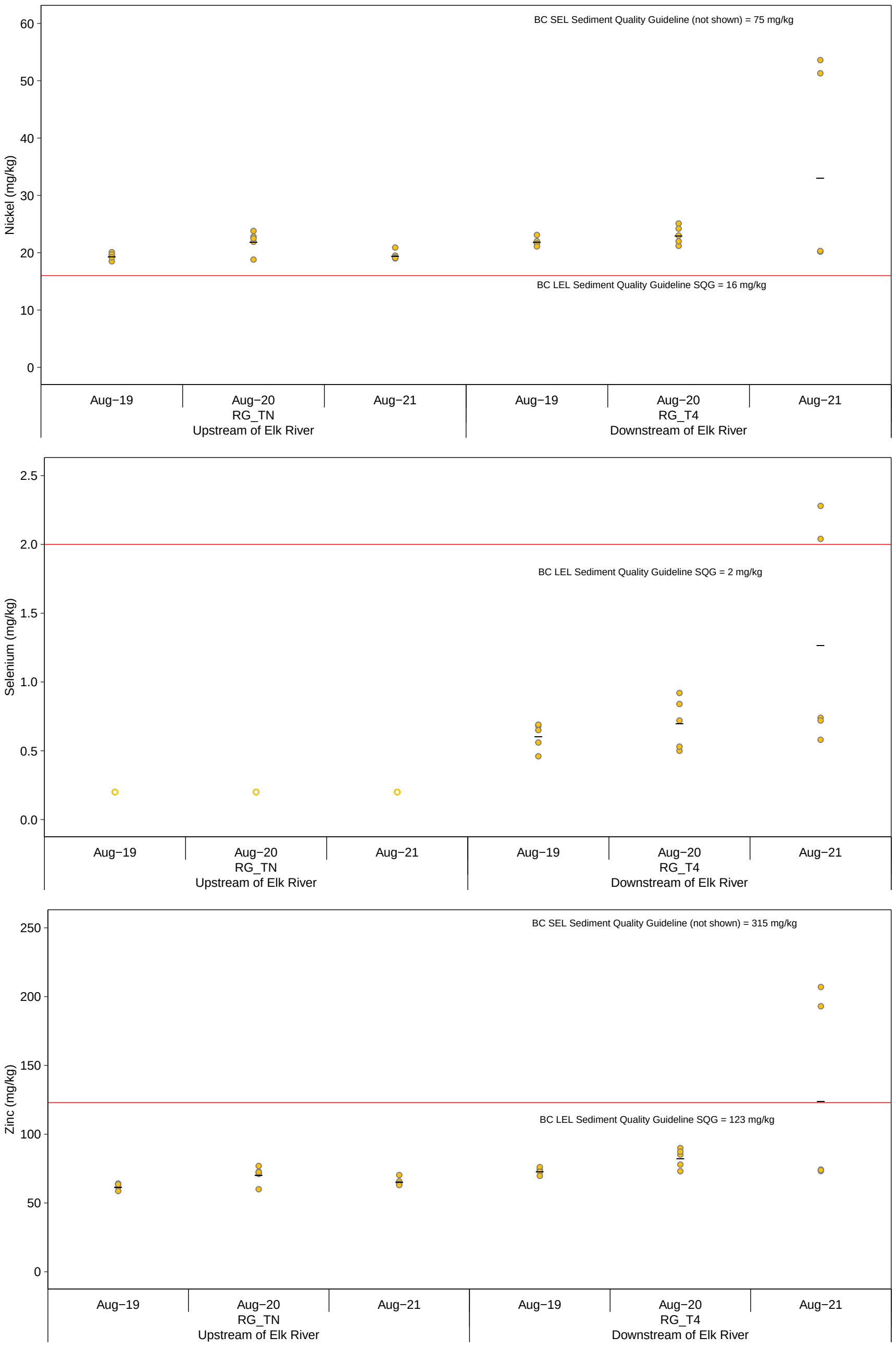

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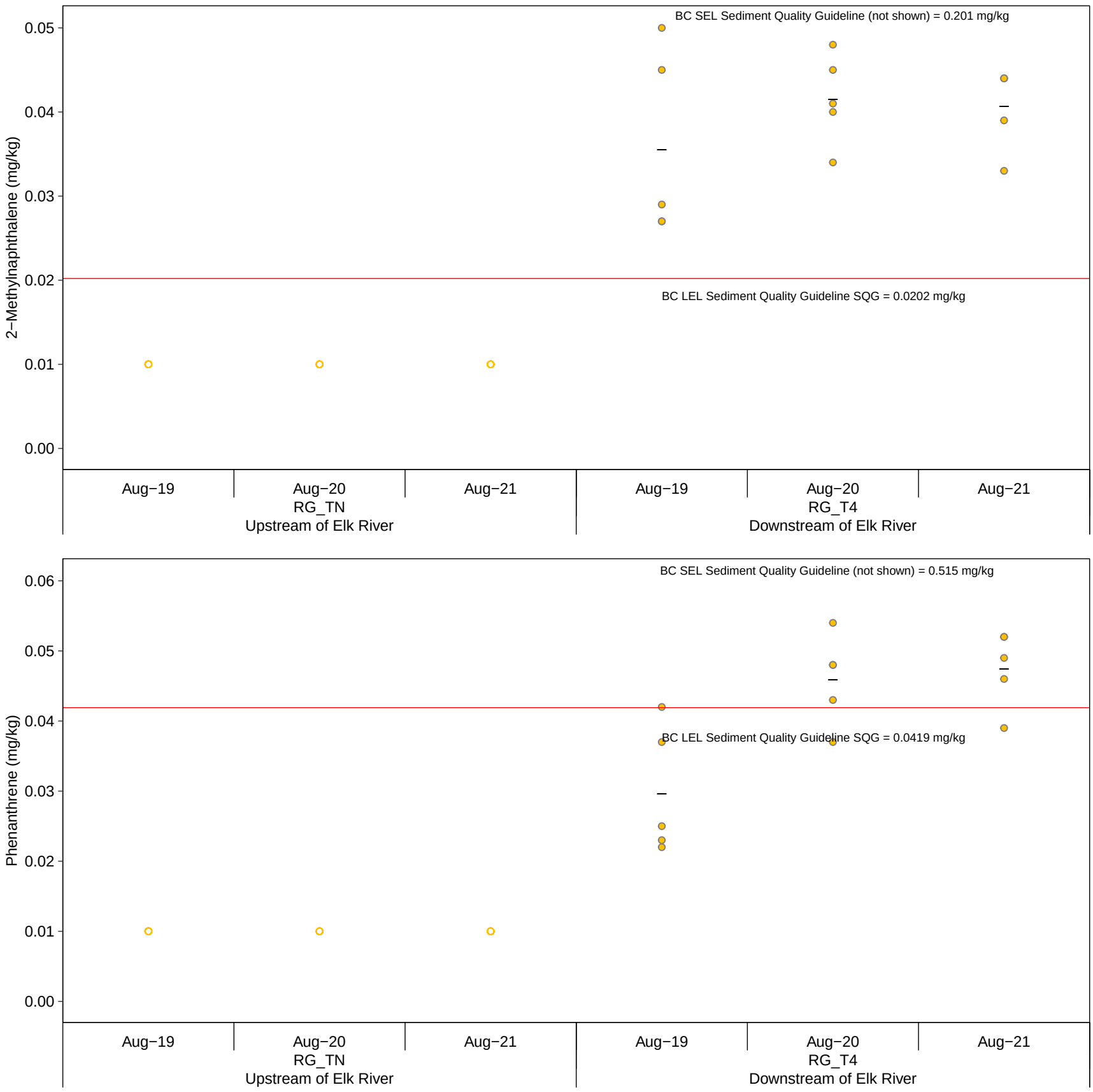

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Notes: Individual values are plotted. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1.

5 ZOOPLANKTON

5.1 Overview

Zooplankton community composition was assessed in August, and zooplankton tissue selenium concentrations were assessed in June and August, downstream (RG_T4) and upstream (RG_TN) of the Elk River in 2021. The zooplankton community and tissue chemistry samples reflected vertical tows through the entire water column depth at five stations along each transect.

5.2 Community Composition

In August 2021, when the reservoir was at full pool, the zooplankton community was primarily dominated by Copepoda both downstream and upstream of the Elk River (Figure 5.1). Spatially, no significant differences in overall density, biomass, and richness of the community, or absolute density and biomass of the major zooplankton groups (i.e., Cladocera, Copepoda, and Rotifera) were indicated between transects located downstream and upstream of the Elk River (Table 5.1; Figure 5.2). Relative biomass of Cladocera and Rotifera was significantly higher, whereas the relative biomass of Copepoda was significantly lower, downstream of the Elk River compared to upstream (Table 5.1; Figure 5.2). The NMDS analysis indicated that zooplankton community assemblages differed between the two transects based on MDS axis 2 (Table 5.1). Although MDS axis 2 differed, stations scores showed considerable overlap between downstream and upstream transects suggesting that community composition differences between the areas was minor (Figure 5.3). Qualitative comparisons of temporal changes (based on August data) indicated that density, biomass, and richness of the overall zooplankton community, as well as density and biomass of all dominant taxonomic groups, was lower at the downstream transect in 2021 than in 2019 and 2020, but that a similar change had also occurred at the upstream transect in 2021 compared to 2019 and 2020 (Figure 5.2). The similar directional change in zooplankton community composition in 2021 compared to 2019 and 2020 both downstream and upstream of the Elk River suggested that the changes were unrelated to mine operations. Overall, zooplankton communities were similar downstream and upstream of the Elk River in August 2021.

5.3 Tissue Selenium Concentrations

Selenium concentration in zooplankton tissue collected from Koocanusa Reservoir downstream of the Elk River were below the BC chronic interim guideline and the EVWQP Level 1 benchmarks for dietary effects to fish and to invertebrate reproduction in both June and August 2021 (Figure 5.4). Spatially, there were no significant differences in selenium concentrations of zooplankton tissue between the downstream and upstream areas in either June or August 2021,

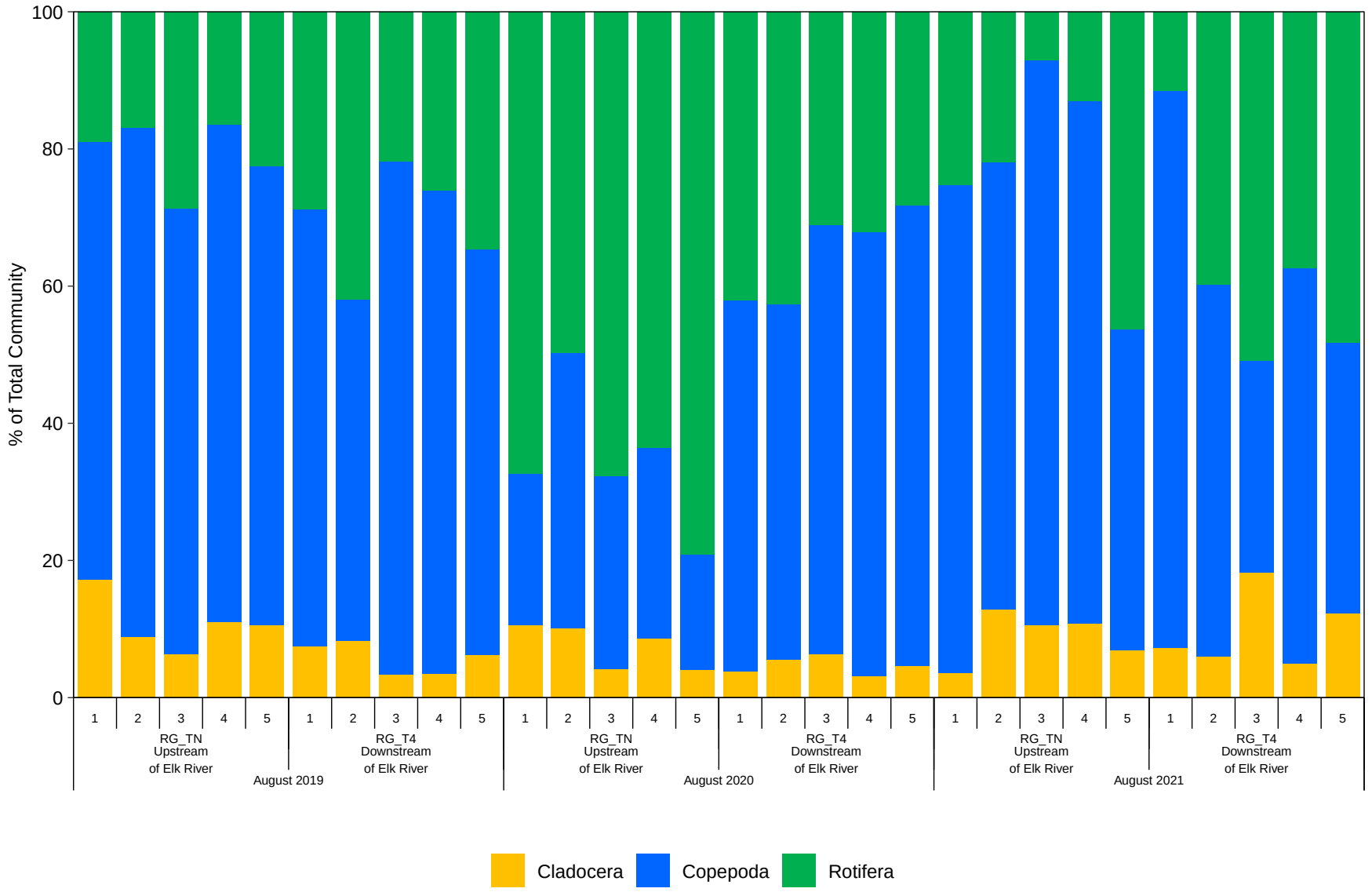


Figure 5.1: Relative Density of Major Zooplankton Groups Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Table 5.1: Spatial Differences in Zooplankton Community Endpoints Between Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2021

Endpoint	Transformation	MCT[a]		Area P-Value	Magnitude of Difference[b]
		RG_TN	RG_T4		
Density (ind/L)	log10	2.05	2.06	0.993	ns
Biomass (µg/L)	log10	37.8	25.0	0.365	ns
Richness (# Taxa)	log10	10.7	11.4	0.418	ns
Cladocera (ind/L)	log10	0.168	0.178	0.872	ns
Copepoda (ind/L)	log10	1.38	1.03	0.616	ns
Rotifera (ind/L)	log10	0.386	0.689	0.259	ns
Cladocera (% ind)	log10	0.0818	0.0866	0.868	ns
Copepoda (% ind)	log10	0.671	0.499	0.163	ns
Rotifera (% ind)	none	0.227	0.375	0.164	ns
Cladocera (µg/L)	none	8.86	9.31	0.879	ns
Copepoda (µg/L)	log10	29.2	14.9	0.227	ns
Rotifera (µg/L)	log10	0.110	0.240	0.213	ns
Cladocera (% biomass)	none	0.217	0.374	0.089	1.8
Copepoda (% biomass)	log10	0.775	0.597	0.078	-2.3
Rotifera (% biomass)	log10	0.00290	0.00962	0.072	1.2
MDS1	none	0.00914	-0.00914	0.910	ns
MDS2	none	-0.0879	0.0879	0.035	1.3
MDS3	none	0.0121	-0.0121	0.780	ns

P-value < 0.1

MOD > 0, and RG_T4 is significantly higher than RG_TN

MOD < 0, and RG_T4 is signficantly lower than RG_TN

[a] Measure of Central Tendency (MCT) = geometric mean for log10-transformed, median for rank-transformed and mean for untransformed data from the full ANOVA model.

[b] Magnitude of Difference (MOD) = $MCT_{downstream}$ - $MCT_{upstream}/SD_{upstream}$, where $MCT_{downstream}$ and $MCT_{upstream}$ are the measures of central tendency for the downstream and upstream sites, respectively.

Notes: ns = non-significant

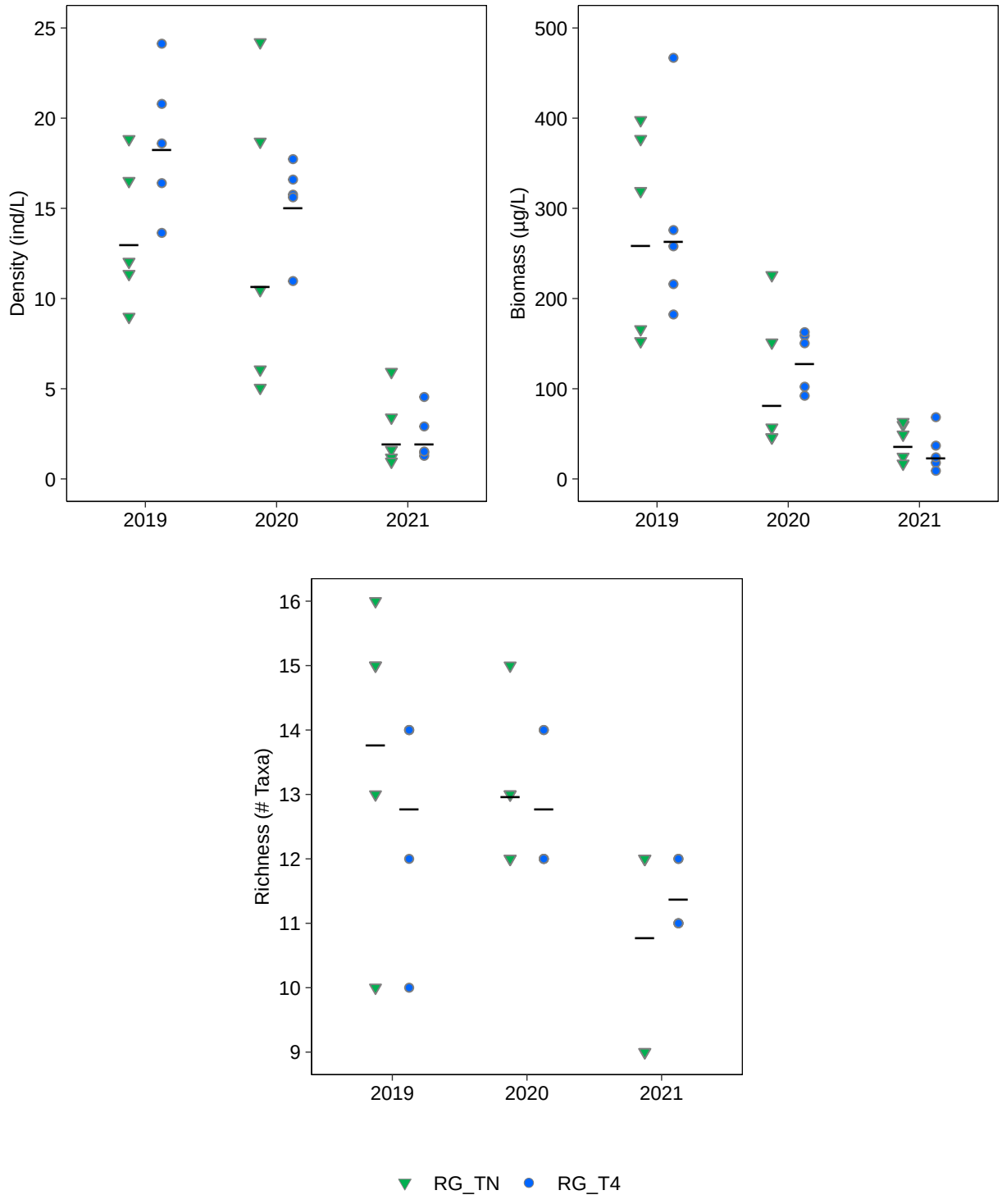


Figure 5.2: Zooplankton Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River in August, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Measures of Central Tendency (geometric mean for biomass and density, otherwise mean) are plotted as horizontal lines.

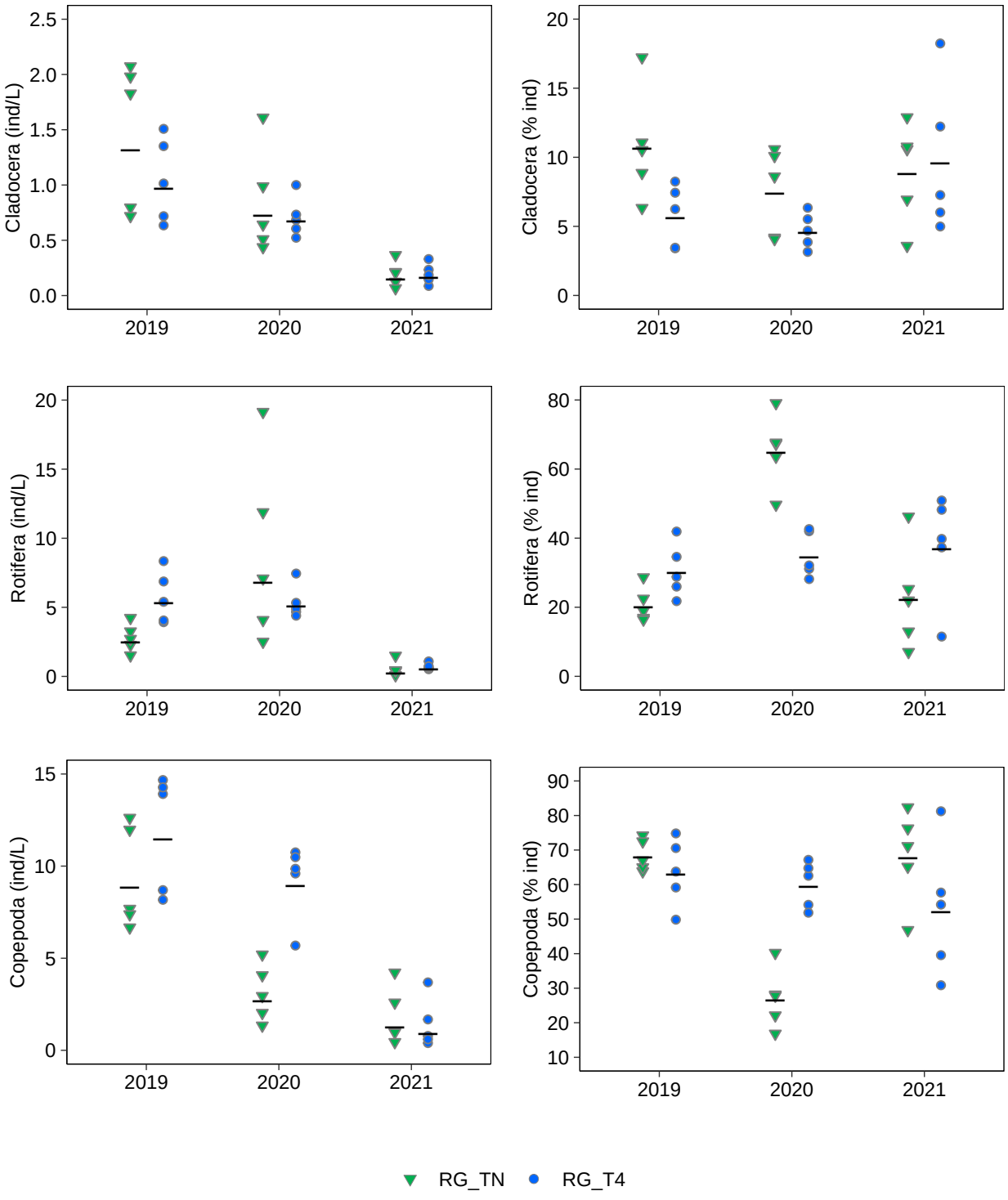


Figure 5.2: Zooplankton Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River in August, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Measures of Central Tendency (geometric mean for biomass and density, otherwise mean) are plotted as horizontal lines.

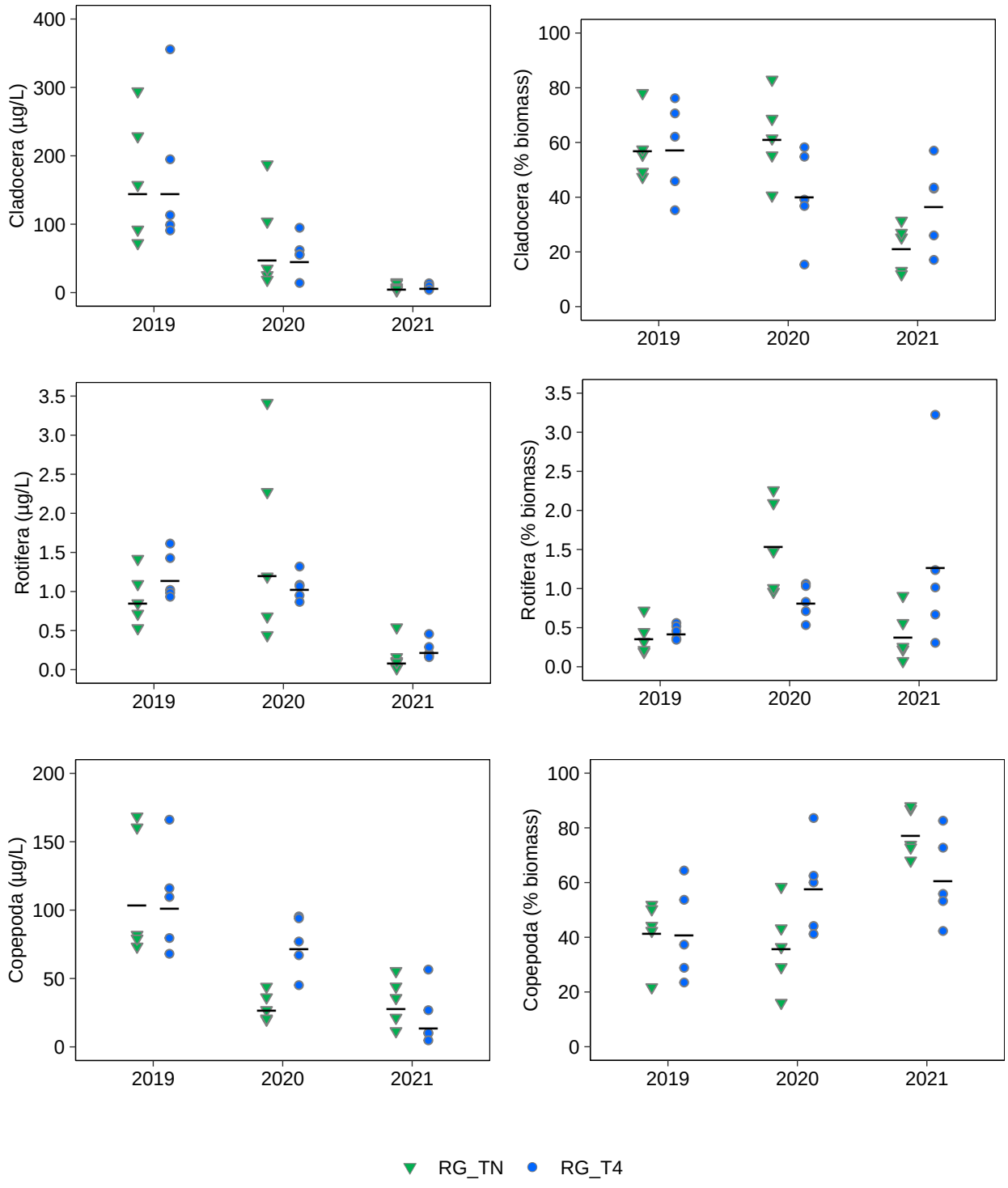


Figure 5.2: Zooplankton Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River in August, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Measures of Central Tendency (geometric mean for biomass and density, otherwise mean) are plotted as horizontal lines.

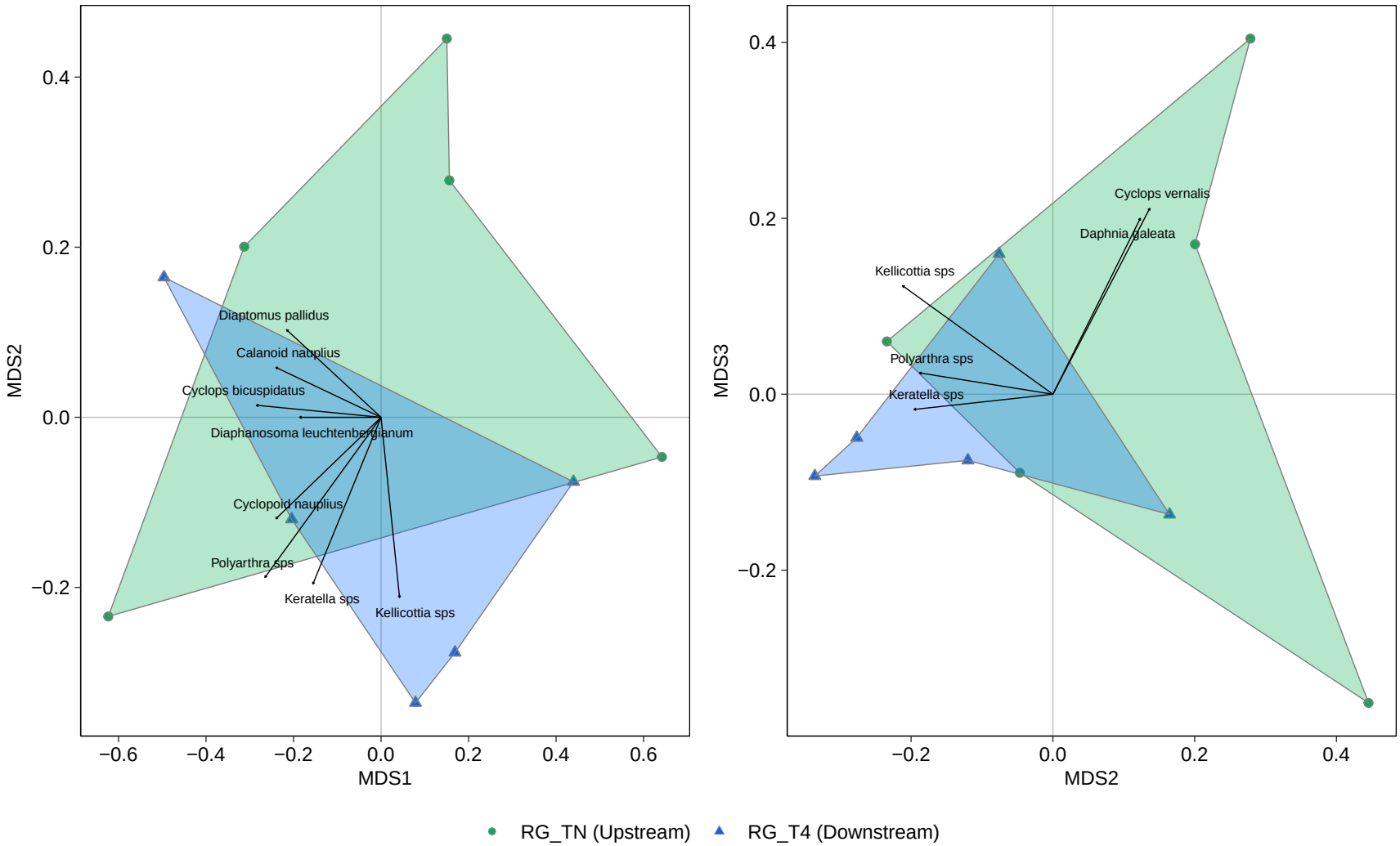


Figure 5.3: Non-Metric Multidimensional Scaling (NMDS) Scores for Major Zooplankton Taxa Downstream (RG_T4) and Upstream (RG_TN) of the Elk RIver, Koocanusa Reservoir Monitoring Program, 2021

Notes: Arrows drawn for taxa with correlation p−value =< 0.1.

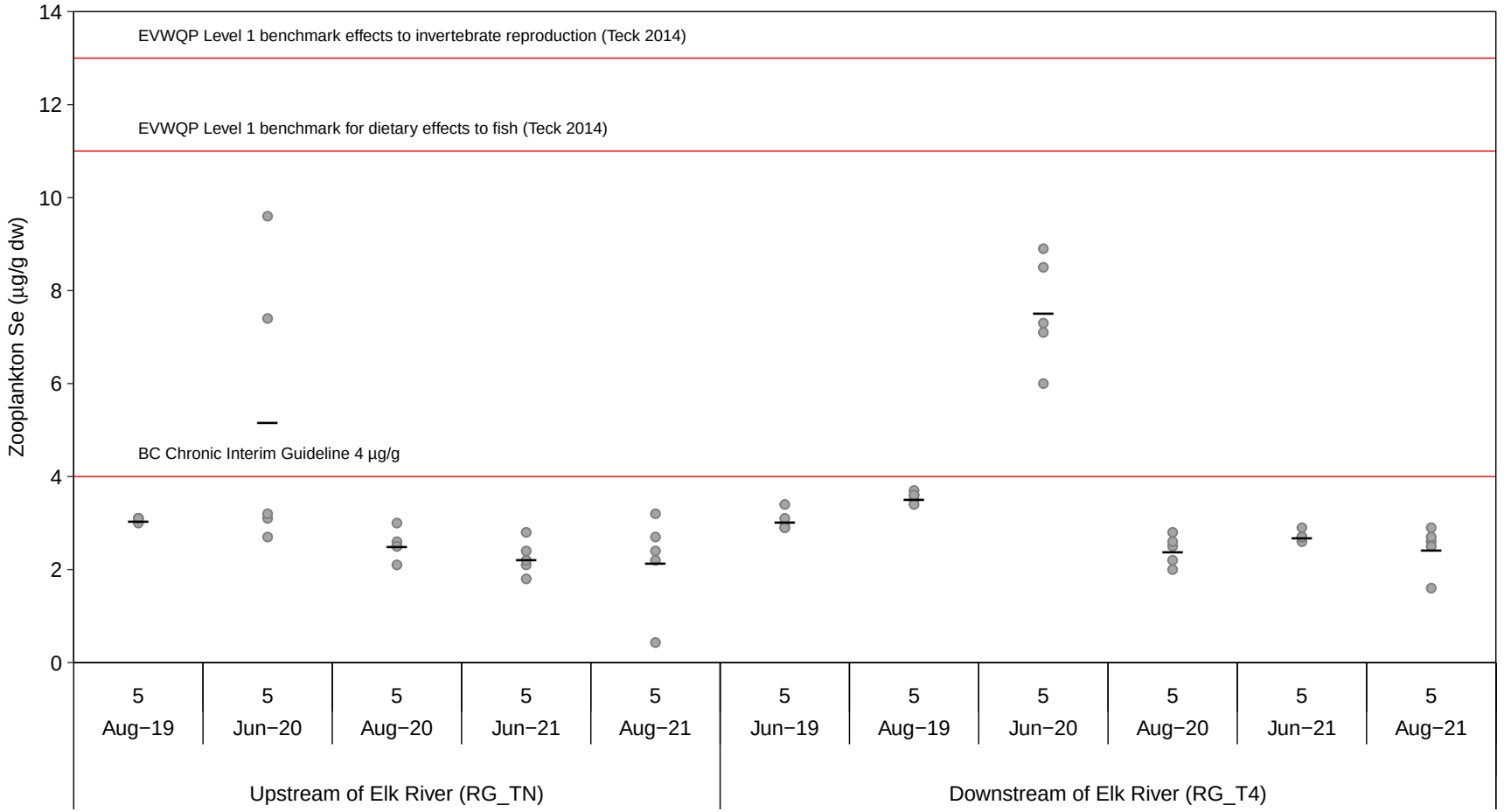


Figure 5.4: Concentration of Selenium (µg/g dw) in Zooplankton Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Note: Individual values are plotted. Means are plotted as horizontal lines. EC refers to sampling the entire water column, 10 m refers to the top 10 meters of the water column. Sufficient sample sizes could not be collected from upstream of Elk River in June 2019.

nor were there temporal differences in selenium concentrations of zooplankton tissue within areas between June and August (Table 5.2). Temporal comparison of zooplankton tissue chemistry indicated lower selenium concentrations in June 2021 compared to June 2020 both downstream and upstream of the Elk River, but comparable to 2019 (Minnow 2020a), which suggested that zooplankton tissue selenium concentrations in June 2020 reflected an anomaly. Overall, selenium concentrations in zooplankton tissue in August 2021 in the Koocanusa Reservoir downstream of the Elk River were comparable to concentrations previously reported, suggesting no changes over time (Figure 5.4).

Table 5.2: Spatial and Temporal Zooplankton Community Tissue Selenium Concentration Comparisons, Koocanusa Reservoir Monitoring Program, June and August 2021

ANOVA Model[a]				MCT[b]				Temporal Post-doc[c]: Difference between June vs August	Spatial Post-hoc[d]: Difference between TN vs T4
				June		August			
Transformation	Station	Month	Station x Month	RG_TN	RG_T4	RG_TN	RG_T4		
rank	0.140	0.819	0.294	8.80	12.80	8.20	12.20	ns	ns

P-value < 0.05.

P-value for post-hoc paired-wise comparison < 0.05 and MOD > 0.

P-value for post-hoc paired-wise comparison < 0.05 and MOD < 0.

[a] P-values from Analysis of Variance (ANOVA) including the terms Station, Month and Station x Month

[b] MCT = black transformed for estimated marginal means when log10 and none transformed and median when rank transformed from the full ANOVA model.

[c] Magnitude of Difference (MOD) = $(MCT_{August} - MCT_{June}/MCT_{June})*100\%$. MCT stands for measure of central tendency.

[d] Magnitude of Difference (MOD) = $(MCT_{downstream} - MCT_{upstream}/MCT_{upstream})*100\%$. MCT stands for measure of central tendency.

6 BENTHIC INVERTEBRATES

6.1 Overview

Benthic invertebrate community samples were collected in August 2021, and benthic invertebrate tissue samples were collected in April, May, and August 2021 from profundal areas downstream (RG_T4) and upstream (RG_TN) of the Elk River.

6.2 Community Composition

In August 2021, benthic invertebrate richness and density were significantly higher downstream than upstream of the Elk River (Table 6.1; Figure 6.1). No significant difference was observed in Shannon's Diversity between downstream and upstream of the Elk River. The benthic invertebrate community was primarily dominated by Oligochaeta (mostly Tubificinae) and Insecta (various species of chironomids, but mainly *Chironomus* and *Procladius*) both downstream (RG_T4) and upstream (RG_TN) of the Elk River(Figure 6.2; Appendix Table E.3). Evaluation of community composition indicated significantly higher absolute density of Chironomidae, Bivalvia, Oligochaeta, and Ostracoda downstream of the Elk River compared to upstream. However, among the dominant taxonomic groups, only the relative abundance of Bivalvia was significantly higher downstream compared to upstream of the Elk River suggesting similar overall structure of the benthic invertebrate community between transects (Table 6.1; Figure 6.2). The NMDS analysis indicated that the community assemblage differed between the two areas based on MDS axis 1 (Table 6.1). These differences were primarily driven by the presence and/or greater density of *Pisidium* (Bivalvia), *Heterotrissocladius* (Chironomidae), *L. hoffmeisteri*, and immature Tubificinae (Oligochaeta), and Ostracoda downstream of the Elk River, and *L. udekemianus* (Oligochaeta) upstream of the Elk River (Figure 6.3).

Temporally, benthic invertebrate richness, density, Shannon's diversity, and the absolute and relative densities of major taxonomic groups in 2021 were generally within respective ranges shown historically in 2016 and 2018 for each individual study area (Figure 6.2) suggesting no substantial changes in benthic invertebrate community composition over time at either transect.

6.3 Tissue Selenium Concentrations

Benthic invertebrate tissue collected downstream of the Elk River in April 2021 contained a selenium concentration that was above the BC guideline (4 µg/g dw) and greater than that in benthic invertebrate tissue collected upstream of the Elk River (Figure 6.4). The selenium concentration in the benthic invertebrate tissue sample collected upstream of the Elk River in April 2021 was also elevated relative to the BC guideline (Figure 6.4). In May, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated

Table 6.1: Statistical Comparison of Benthic Invertebrate Community Endpoints between Transects Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2021

Endpoint	Transformation	Test	MCT[a]		Area P-Value	MOD[b]
			RG_TN	RG_T4		
Richness (# Taxa)	none	tequal	8.80	10.8	0.090	1.1
Density (ind/m²)	log10	tequal	1,506	3,517	<0.001	8.8
Shannon's Diversity	none	tequal	1.54	1.69	0.172	ns
Nematoda (ind/m²)	log10(x+1)	tequal	8.02	20.0	0.251	ns
Oligochaeta (ind/m²)	none	tequal	1,025	2,257	<0.001	5.1
Ostracoda (ind/m²)	none	tequal	150	460	<0.001	5.0
Chironomidae (ind/m²)	log10	tequal	266	630	0.038	1.2
Bivalvia (ind/m²)	log10(x+1)	tunequal	0	98.7	<0.001	-
Nematoda (%)	log10(x+1)	tequal	0.00880	0.00681	0.650	ns
Oligochaeta (%)	none	tequal	0.682	0.639	0.609	ns
Ostracoda (%)	none	tequal	0.0976	0.134	0.237	ns
Chironomidae (%)	log10	tequal	0.177	0.179	0.970	ns
Bivalvia (%)	log10(x+1)	tunequal	0	0.0361	0.029	-
MDS1	none	tequal	0.345	-0.345	<0.001	-3.9
MDS2	none	tequal	-0.0462	0.0462	0.594	ns

P-Value <0.1

Absolute Value of MOD > 2

[a] MCT = Measure of Central Tendency (mean for unstransformed data, geometric mean for log10 transformed data and median for rank transformed data)

[b] Magnitude of Difference (MOD) = MCT_{RG_T4}-RCT_{RG_TN}/SD_{RG_TN}, where MCT is the measure of central tendency and SD is standard deviation.

Notes: "-" indicates MOD could not be calculated because SD_{RG_TN} = 0, ns= non-significant

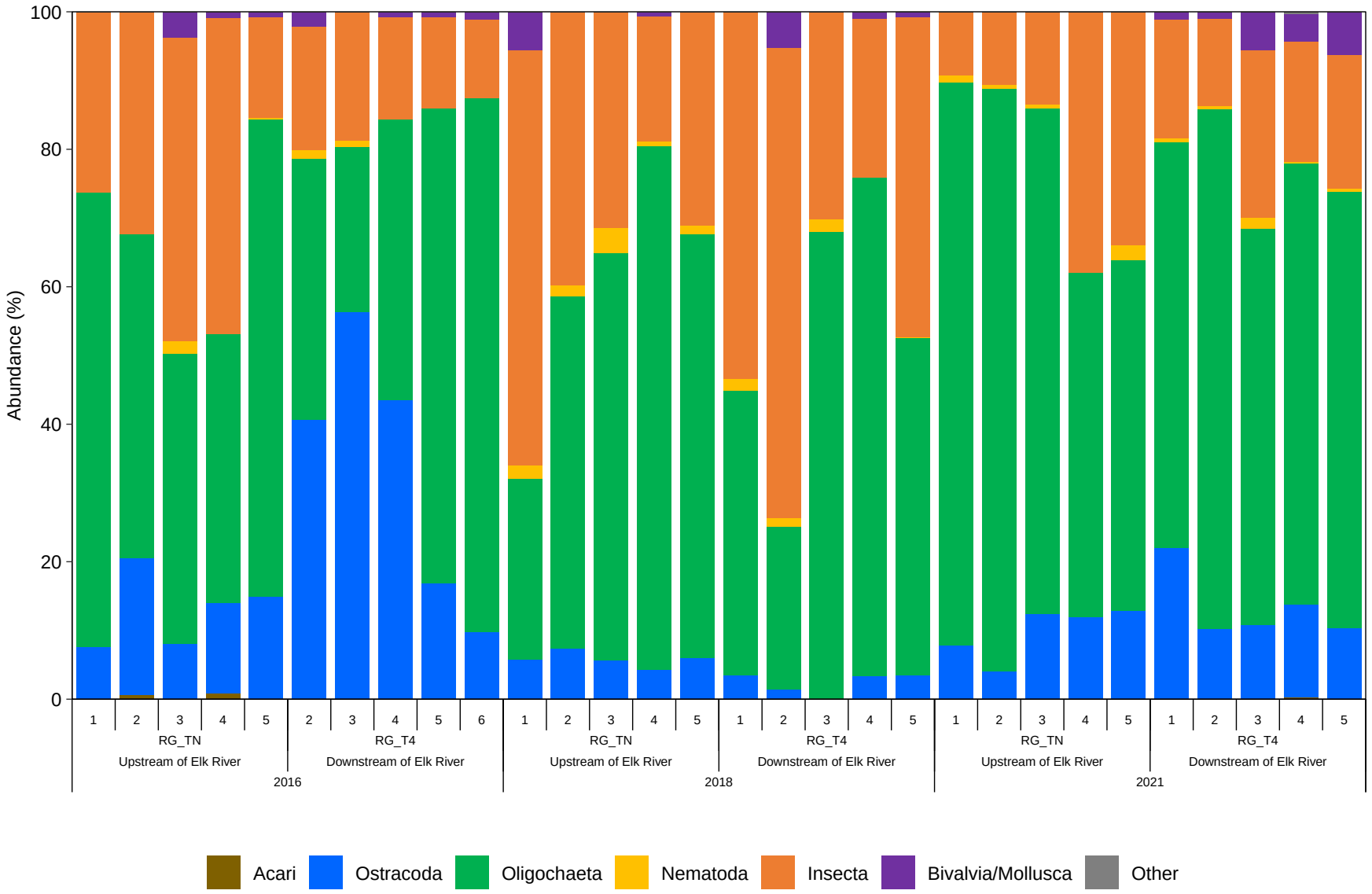


Figure 6.1: Relative Density of Major Benthic Invertebrate Community Groups Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2016 to 2021

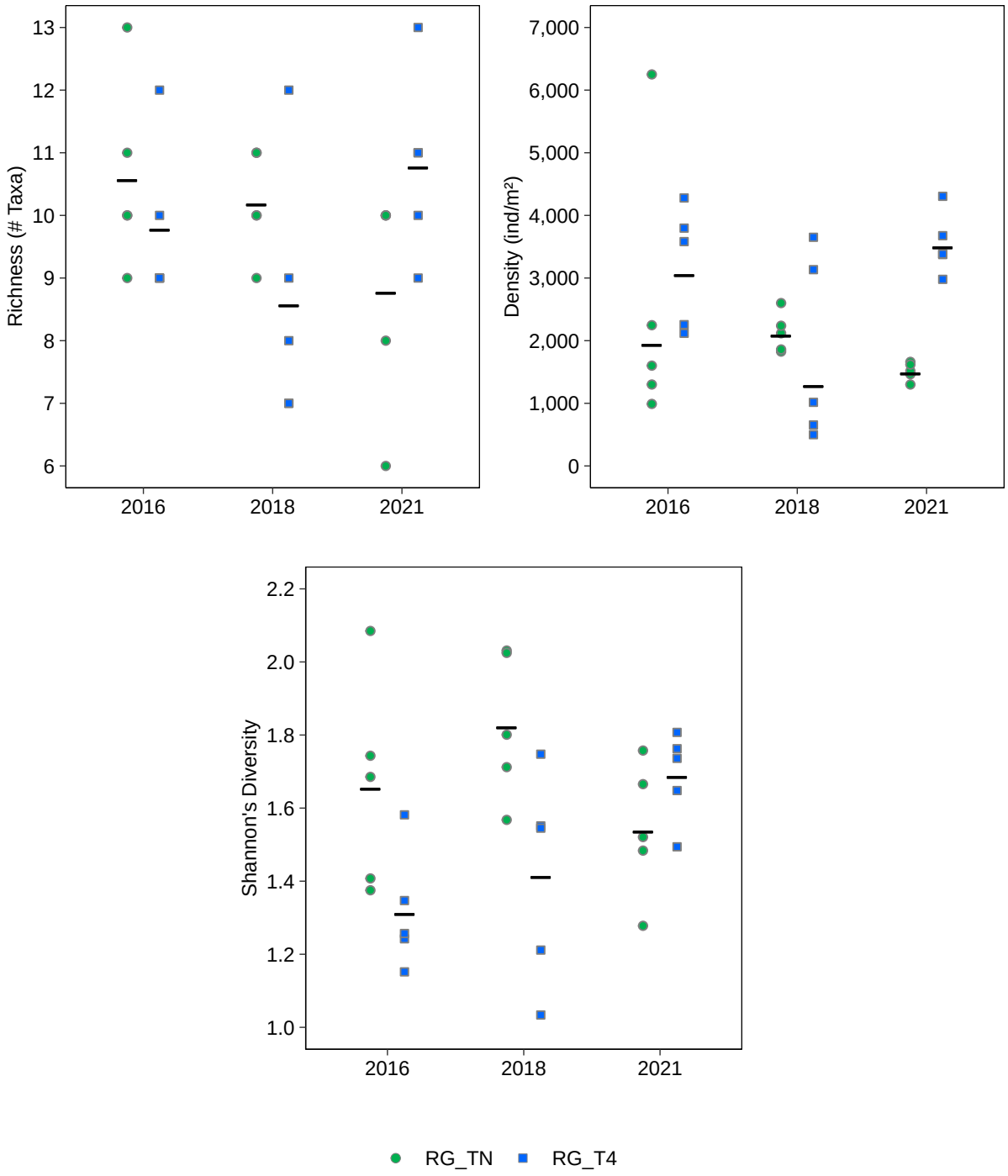


Figure 6.2: Benthic Invertebrate Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2016 to 2021

Notes: Measures of Central Tendency are plotted as horzontal lines.

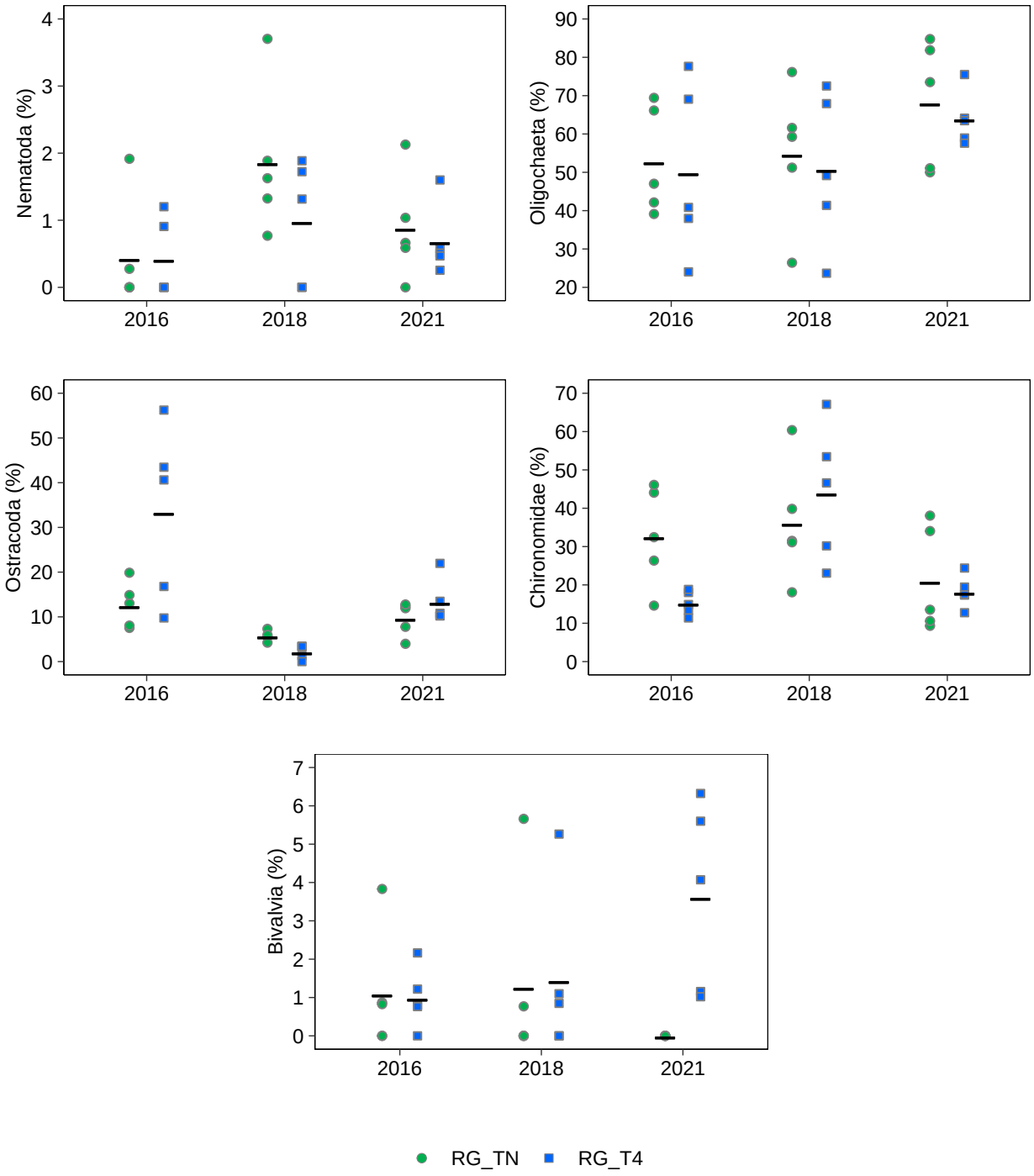


Figure 6.2: Benthic Invertebrate Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2016 to 2021

Notes: Measures of Central Tendency are plotted as horzontal lines.

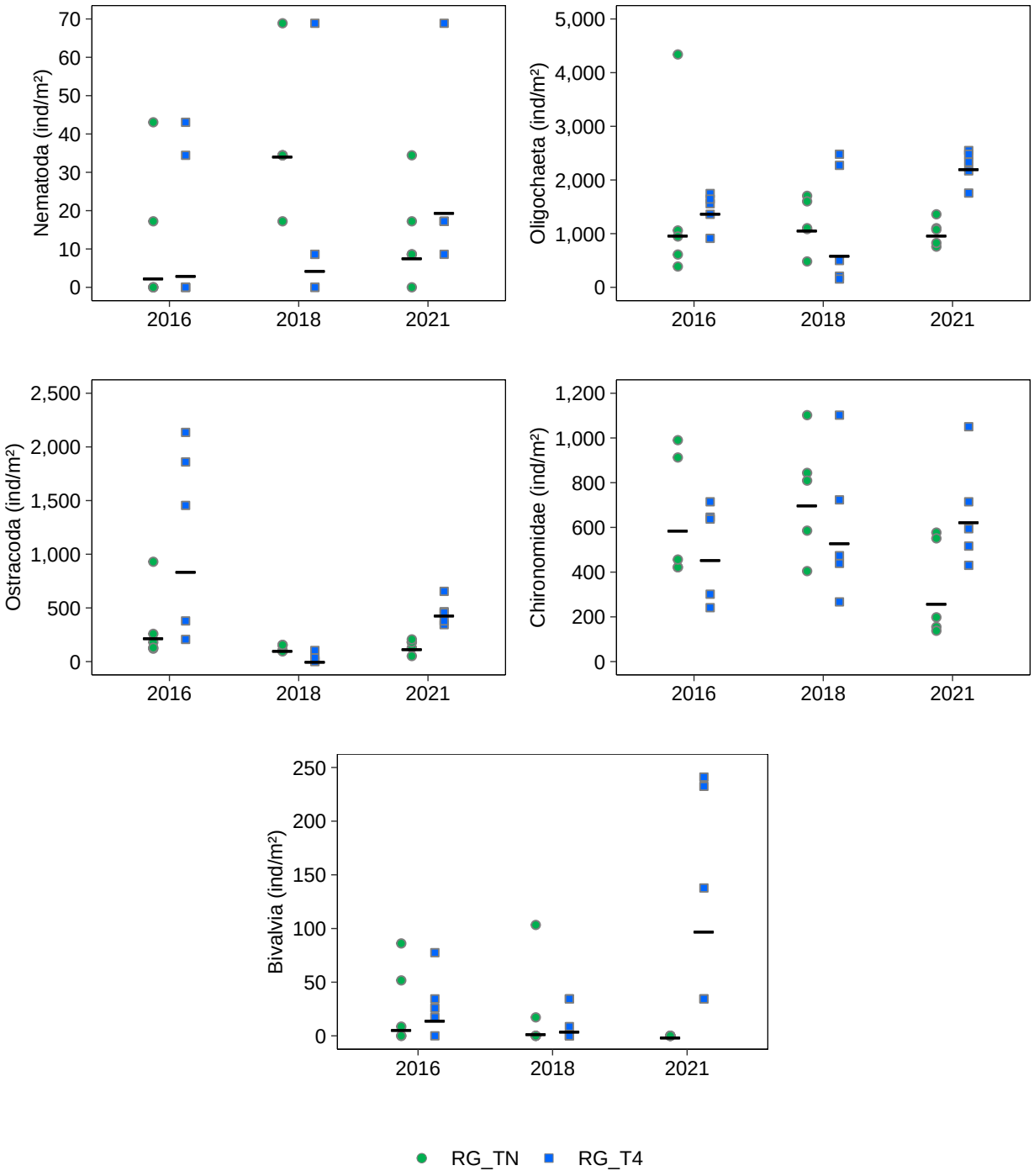


Figure 6.2: Benthic Invertebrate Community Endpoints from Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2016 to 2021

Notes: Measures of Central Tendency are plotted as horzontal lines.

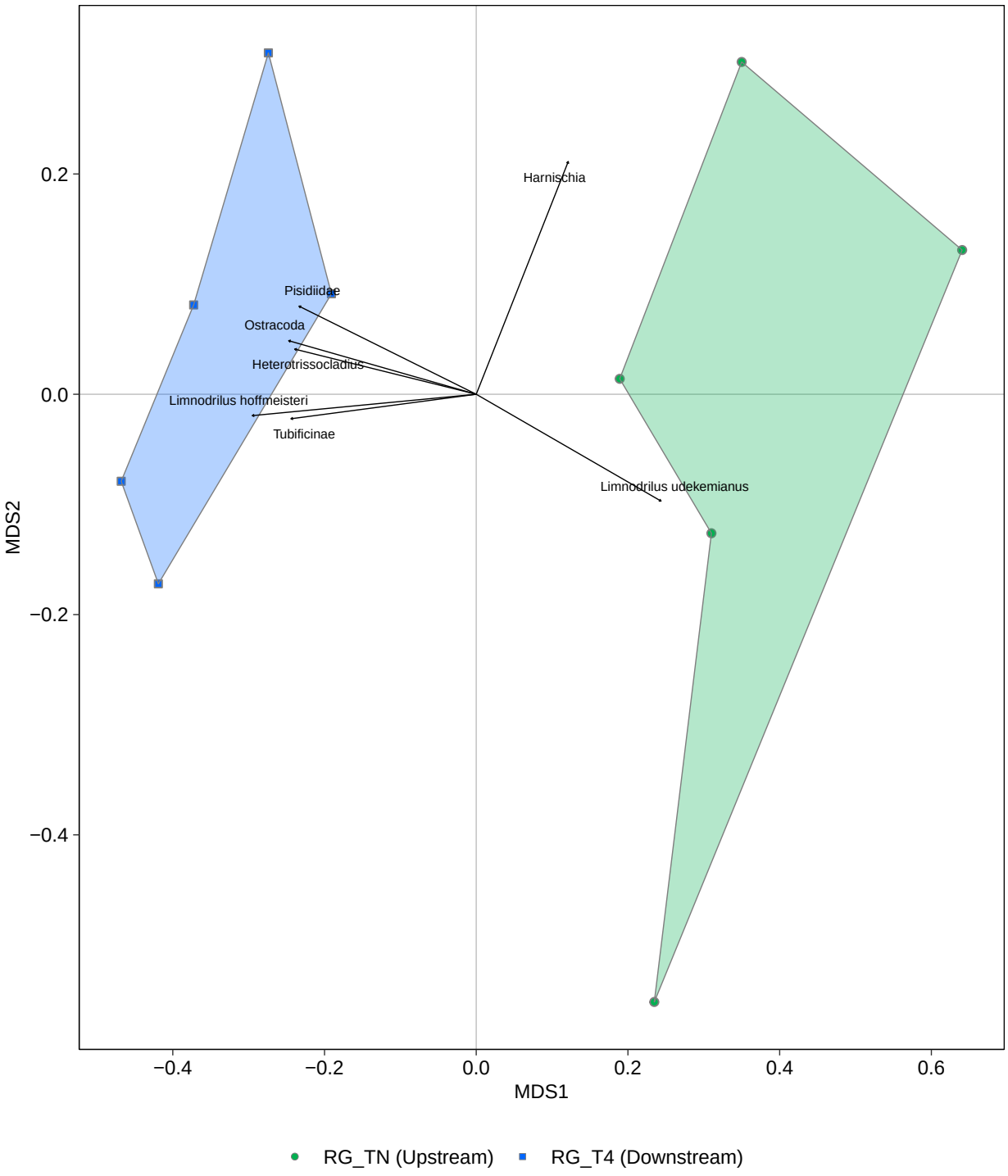


Figure 6.3: Non-Metric Multidimensional Scaling (NMDS) Scores for Major Benthic Invertebrate Taxa Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Notes: Arrows drawn for taxa with correlation p−value =< 0.1.

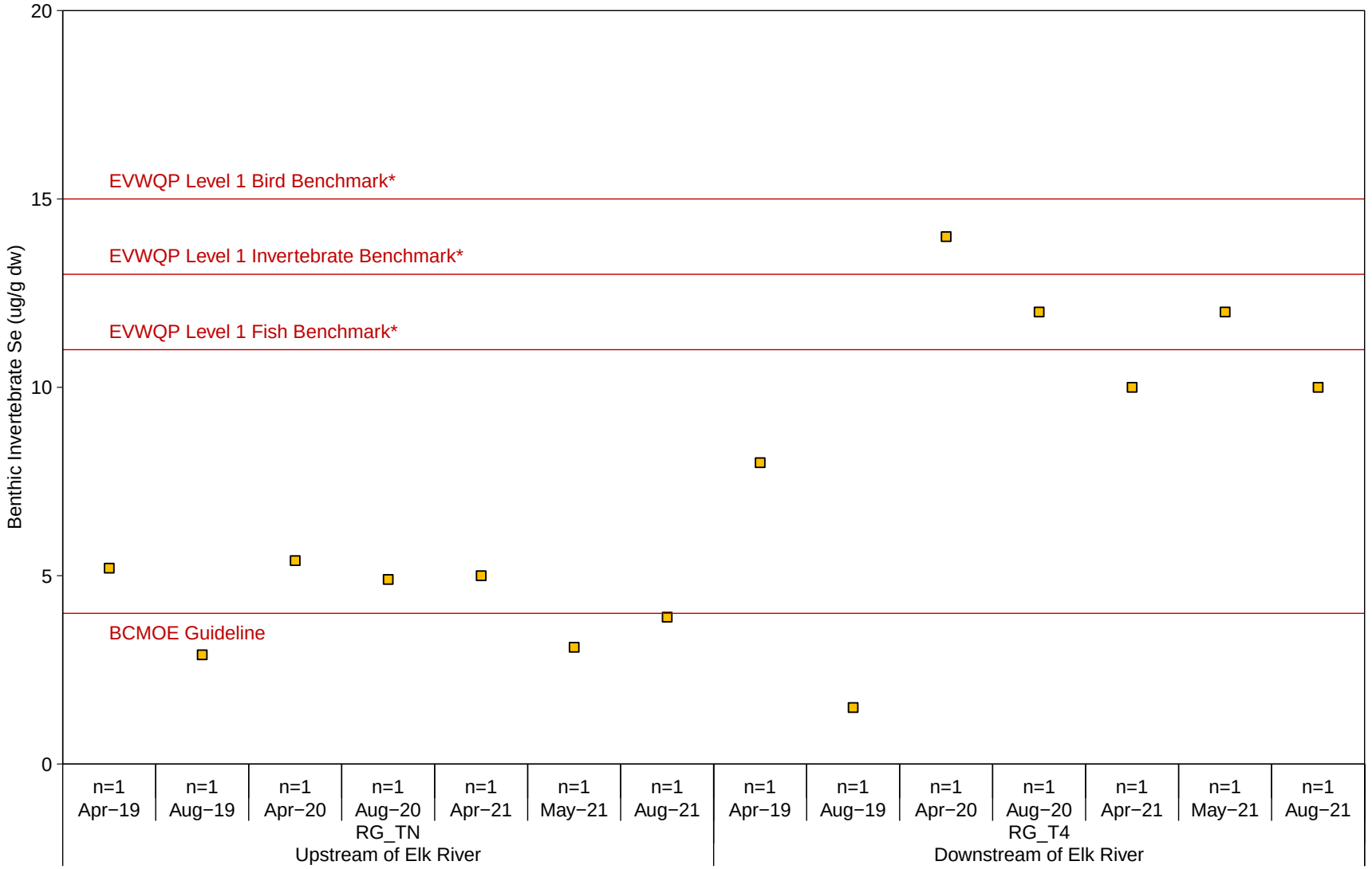


Figure 6.4: Selenium Concentration in Composite Benthic Invertebrate Tissue Samples Downstream (RG_T4) and Upstream (RG_TN) of the Elk RIver, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Means of individual values are plotted as horizontal lines when n > 1. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. * 15 µg/g Level 1 Benchmark for dietary effects to juvenile birds; 13 µg/g Level 1 Benchmark for growth, reproduction, and survival of benthic invertebrates; 11 µg/g Level 1 Benchmark for dietary effects to juvenile fish (Elk Valley Water Quality Plan [EVWQP]; Golder, 2014); 4 µg/g BC Chronic Interim Guideline for dietary effects to benthic invertebrates (BCMOE 2006).

above the EVWQP Level 1 fish benchmark (11 µg/g dw), and higher than concentrations observed upstream of the Elk River, which remained below the BC guideline (Figure 6.4). In August, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated above the BC guideline but remained below the guideline upstream of the Elk River (Figure 6.4).

Temporally, concentrations of selenium in benthic invertebrate tissue downstream of the Elk River appeared to be higher than the concentration previously observed in 2019, but lower than concentrations observed 2020 for both April and August, whereas concentrations upstream of the Elk River remained within historical ranges (Figure 6.4). Selenium concentrations in benthic invertebrate tissues were higher downstream compared to upstream of the Elk River in both 2020 and 2021, unlike in 2019 when selenium concentrations downstream were comparable to upstream of the Elk River.

7 FISH

7.1 Overview

In April 2021, PCC and RSC were collected near the mouths of Sand Creek, Elk River, and Gold Creek (RG_SC, RG_ER, and RG_GC respectively; Figure 2.1), prior to fish spawning, to evaluate fish health. Additionally, PCC were collected in April, May, and June 2021, and RSC were collected in June 2021, for fish tissue assessment specifically targeting gravid females. Sport fish tissue samples were also collected using nonlethal methods (i.e., muscle plug) from April to August for tissue chemistry analyses, as well as samples collected during the Northern Pikeminnow fishing programs conducted by Minnow in June and July 2021.

7.2 Fish Health Assessment

7.2.1 Peamouth Chub

A total of 15 female PCC were collected at each of the three Koocanusa Reservoir study areas in April. No significant differences were observed for any other measured health endpoint between the downstream and upstream of the Elk River (Table 7.1; Figure 7.1; Appendix Table F.24).

A total of 20 male PCC were collected at each of the three study areas in April. Although the mean age of males ranged from 6 to 7 years among the three study areas, males sampled from downstream of Gold Creek (RG_GC) were significantly older than males sampled upstream (RG_SC; Table 7.1, Figure 7.2; Appendix Table F.24). Male PCC from both areas downstream of the Elk River were significantly longer, and those from downstream of Gold Creek also significantly heavier, compared to those sampled upstream (Table 7.1; Figure 7.2; Appendix Table F.24). For length-at-age relationship, a significant interaction indicated younger individuals from both areas downstream of the Elk River were significantly longer than individuals of the same age upstream of the Elk River (Table 7.1; Figure 7.2; Appendix Table F.24). A similar relationship was observed in the weight-at-age endpoint in males between RG_GC and RG_SC (Table 7.1; Figure 7.2; Appendix Table F.24). No significant differences in relative gonad weight, relative liver weight, and condition were indicated for males captured at either downstream area compared to the upstream area (Table 7.1; Figure 7.2; Appendix Table F.24). Overall, differences observed in both female and male PCC were within their respective CES indicating the results were not ecologically meaningful.

Qualitative temporal comparisons of the occurrence and direction of significant differences in fish health endpoints did not indicate any consistent trends in differences for either female or male

Table 7.1: Summary of Fish Health Endpoint Assessment, Koocanusa Reservoir Monitoring Program, 2021

Endpoint	Peamouth Chub				Redside Shiner			
	Female		Male		Female		Male	
	RG_ER	RG_GC	RG_ER	RG_GC	RG_ER	RG_GC	RG_ER	RG_GC
Age	-	-	-	Yes (+14)	-	-	-	-
Fork Length	-	-	Yes (+2.4)	Yes (+2.8)	-	-	-	-
Body Weight	-	-	-	Yes (+8.9)	-	-	Yes (-12)	Yes (-11)
Length at Age	-	-	Yes (+11 / -7.4)	Yes (+9.5 / -8)	Yes (-3.9)	-	-	-
Weight at Age	-	-	Yes (+24 / - 24)	Yes (+27 / -19)	Yes (-13)	-	Yes (-9.6)	Yes (-11)
Relative Gonad Weight	-	-	-	-	-	Yes (-38)	-	-
Relative Liver Weight	-	-	-	-	-	Yes (-28)	Yes (-18)	Yes (-17)
Condition	-	-	-	-	-	-	Yes (-8.6)	Yes (-6.3)

Note "-" means no significant difference identified

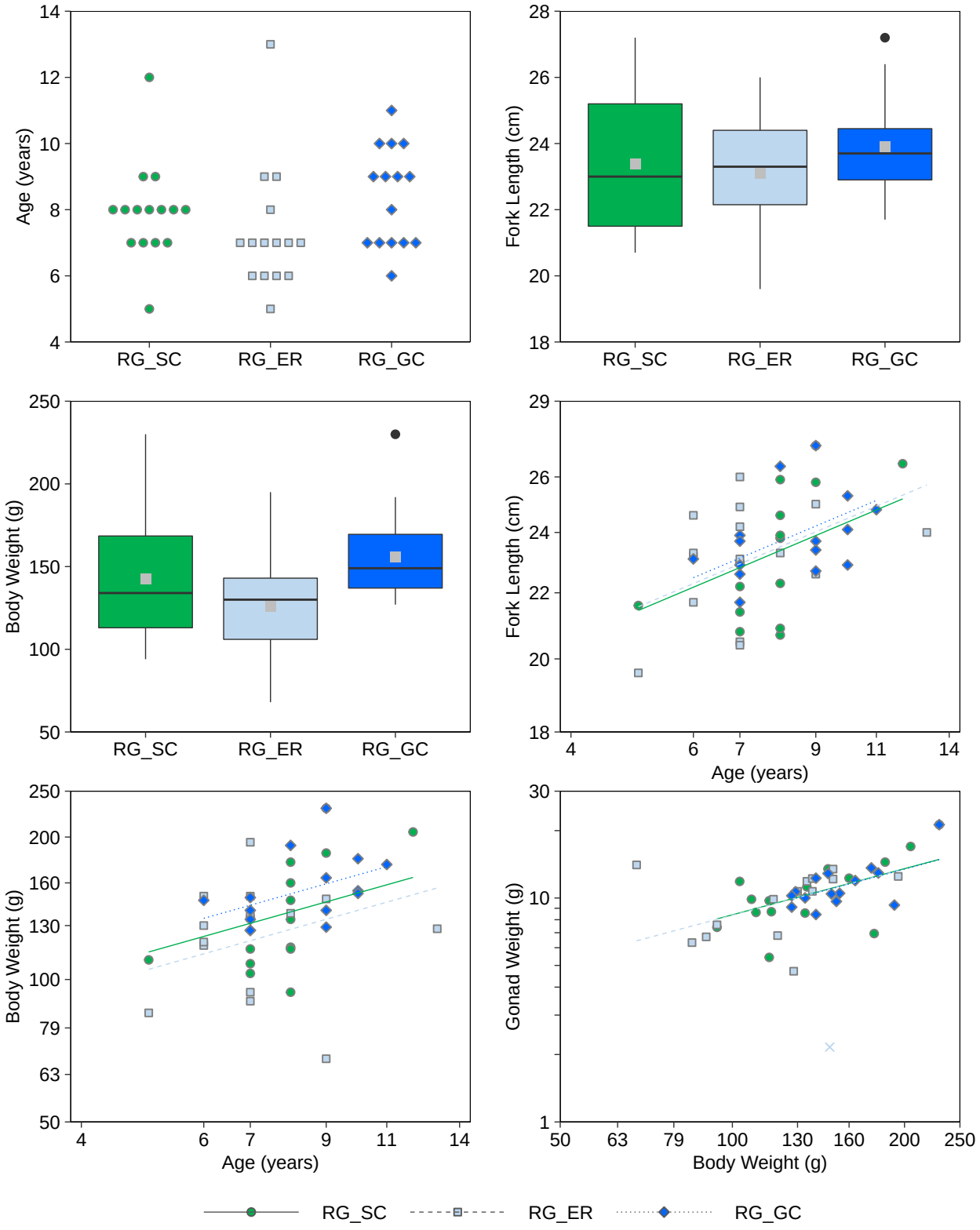


Figure 7.1: Fish Health Endpoints for Female Peamouth Chub, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

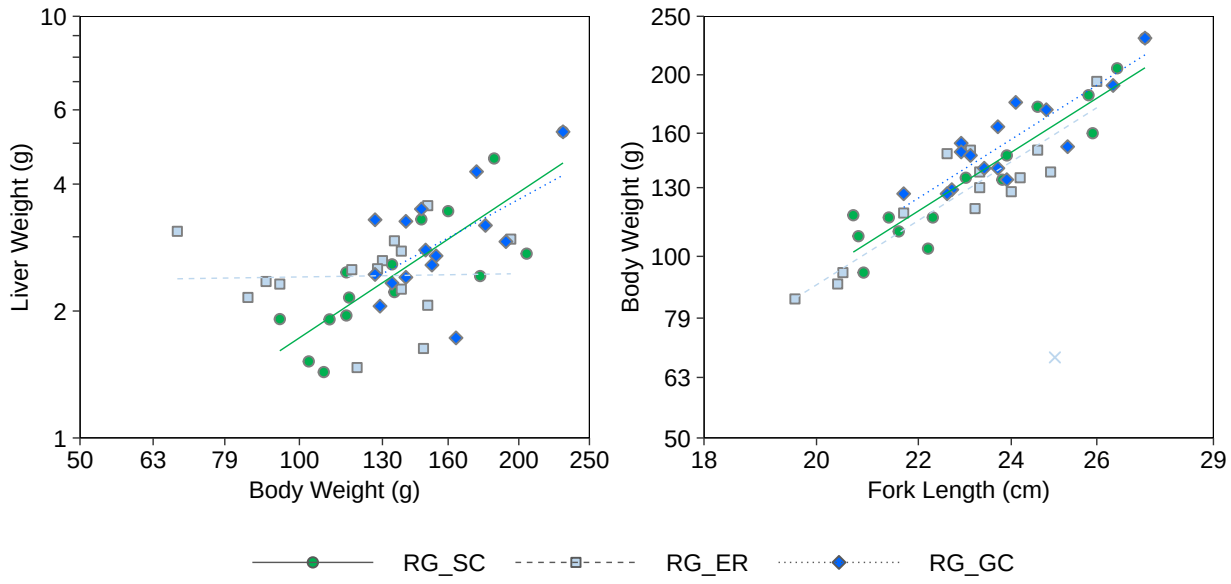


Figure 7.1: Fish Health Endpoints for Female Peamouth Chub, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

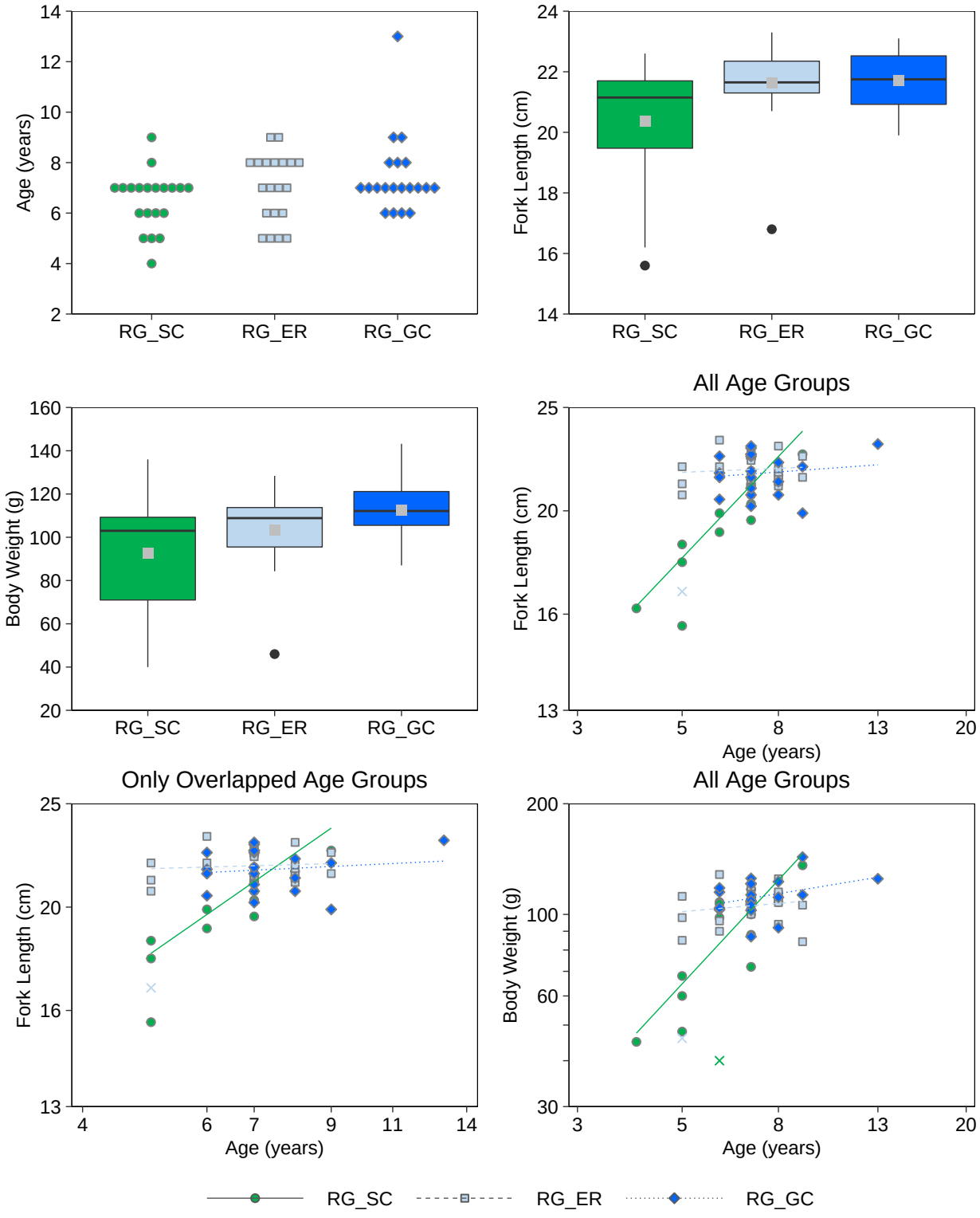


Figure 7.2: Fish Health Endpoints for Male Peamouth Chub, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

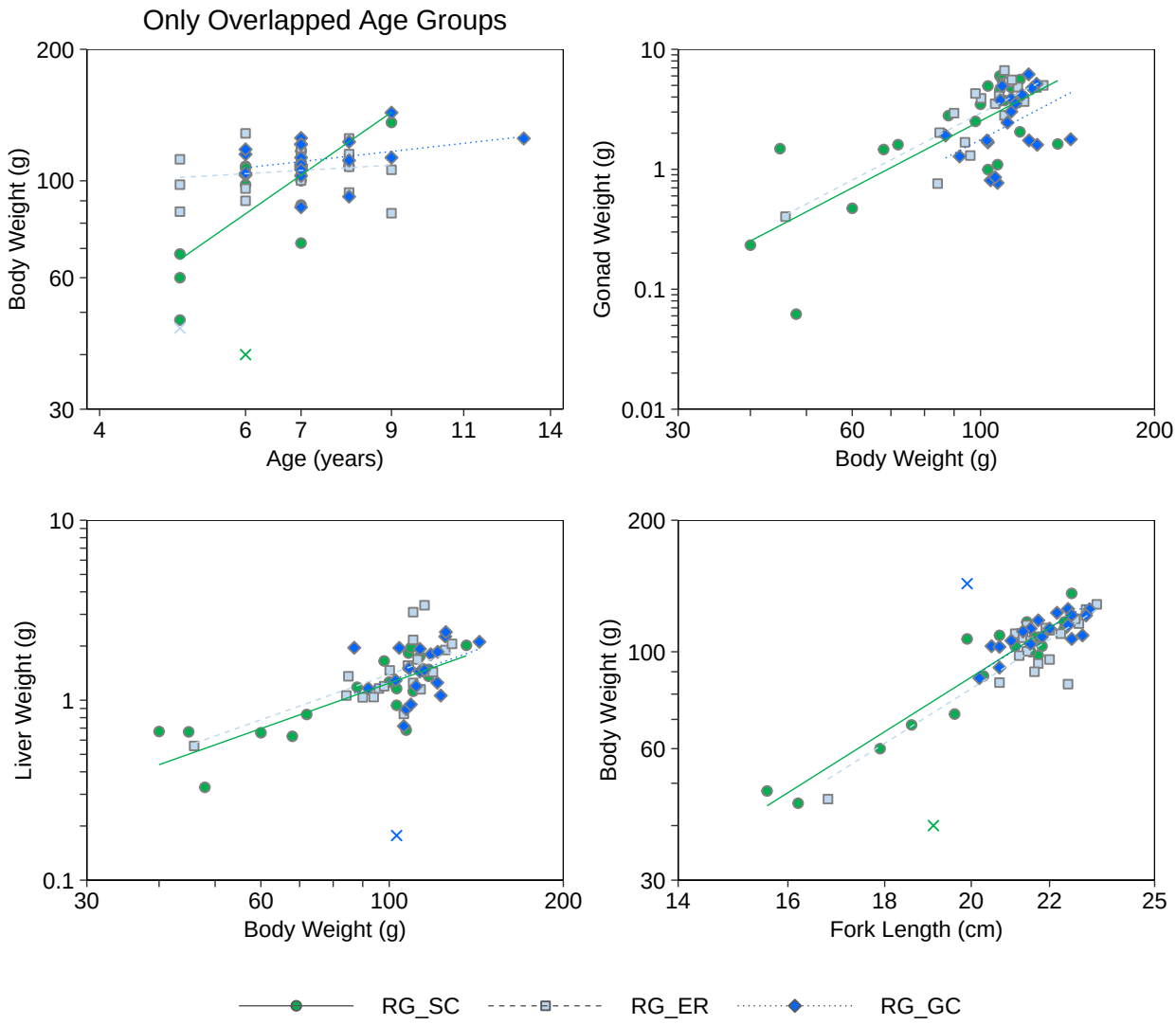


Figure 7.2: Fish Health Endpoints for Male Peamouth Chub, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

PCC at both downstream study areas compared to the mouth of Sand Creek (upstream) study area from 2014 to 2021 (Table 7.2).

7.2.2 Redside Shiner

A total of 40 female RSC were collected from each of the three study areas in April. Female RSC from RG_ER had significantly slower growth compared to females collected from the upstream area (RG_SC; Table 7.1; Figure 7.3; Appendix Table F.25). Females from RG_GC had significantly lighter relative gonad weight (MOD of -38 %) and liver weight (MOD of -28 %) compared to upstream of the Elk River, both of which were outside of the CES of ±25 % indicating the results were ecologically meaningful (Table 7.1; Figure 7.3; Appendix Table F.25).

A total of 40 male RSC were collected from each of the three study areas in April. Males from both downstream areas were significantly lighter and lighter-at-age compared to males collected upstream of the Elk River (Table 7.1; Figure 7.4; Appendix Table F.25) indicating slower growth of males at the downstream areas. Relative liver weight and condition were also significantly lower in males collected downstream of the Elk River (RG_ER and RG_GC) compared to upstream (Table 7.1; Figure 7.4; Appendix Table F.25). However, for all endpoints that differed significantly between the downstream and upstream areas, the magnitudes of these differences were within respective CES indicating that the differences were not ecologically meaningful.

Qualitative temporal comparisons of the occurrence and direction of significant differences in fish health endpoints did not indicate any consistent trends in differences for either female or male RSC at both downstream study areas compared to the mouth of Sand Creek (upstream) study area from 2016 to 2021 (Table 7.2).

7.3 Tissue Selenium Concentrations

7.3.1 Muscle

Mean selenium concentration in the muscle of all fish species sampled (PCC and RSC, BT, KO, MW, RB, NSC, WCT, Largescale Sucker [LSU], Slimy Sculpin [CCG] and Yellow Perch [YP]) in 2021 were below the BC guideline (4 µg/g dw) and the US EPA criterion (11.3 µg/g dw) for selenium (Figure 7.5; Appendix Tables G.2 to G.5) except for CCG, which were elevated above the BC guideline but below the US EPA criterion at all three study areas for sampling conducted in April (Figure 7.5; Appendix Tables G.2 to G.5). Among fish species captured in 2021 for which sample sizes were sufficient to allow downstream to upstream comparisons (i.e., PCC, RSC, BT, MW, and YP), PCC sampled downstream at RG_ER and RG_GC, and RSC sampled downstream at RG_ER, had significantly higher selenium concentrations in muscle tissue than for each respective species sampled upstream at RG_SC (Table 7.3). Among sport

Table 7.2: Summary of Statistical Results for Fish Health Endpoints, 2014 to 2016, 2018, and 2021

Sex	Response	Endpoint	Peamouth Chub					Redside Shiner		
			2014	2015	2016	2018	2021	2016	2018	2021
Female	Survival	Mean age	↑ O	O O	O ↓	O O	O O	O O	O O	O O
	Energy Use - Growth	Adjusted body weight-at-age	↑ O	O ↓	↓ ↓	O O	O O	O O	O ↑	↓ O
	Energy Use - Reproduction	Gonad weight-at-adjusted body weight	↓ O	O O	↑ ↑	O O	O O	O O	O O	O ↓
	Energy Storage	Condition (Adjusted body weight-at-fork length)	O ↓	O O	O O	↓ ↓	O O	O O	O O	O O
		Liver weight-at-adjusted body weight	O ↑	↓ ↓	↑ ↑	O ↑	O O	↑ ↑	↑ O	O ↓
Male	Survival	Mean age	↑ O	O O	O ↓	↓ O	O ↑	O O	O O	O O
	Energy Use - Growth	Adjusted body weight-at-age	O ↑	O O	O ↓	O O	X X	O O	O O	↓ ↓
	Energy Use - Reproduction	Gonad weight-at-adjusted body weight	O O	O -	↑ O	O O	O O	O O	O O	O O
	Energy Storage	Condition (Adjusted body weight-at-fork length)	↑ O	O O	O O	O O	O O	↓ O	O O	↓ ↓
		Liver weight-at-adjusted body weight	O ↑	O O	O O	↓ O	O O	O ↑	O ↑	↓ ↓

O : no significant difference
X : difference in slope of the relationship between areas
↓ : downstream fish significantly lower
↑ : downstream fish significantly higher
- : not assessed

Blue symbols: Fish collected in Elk River relative to Sand Creek
Red symbols: Fish collected in Gold Creek relative to Sand Creek

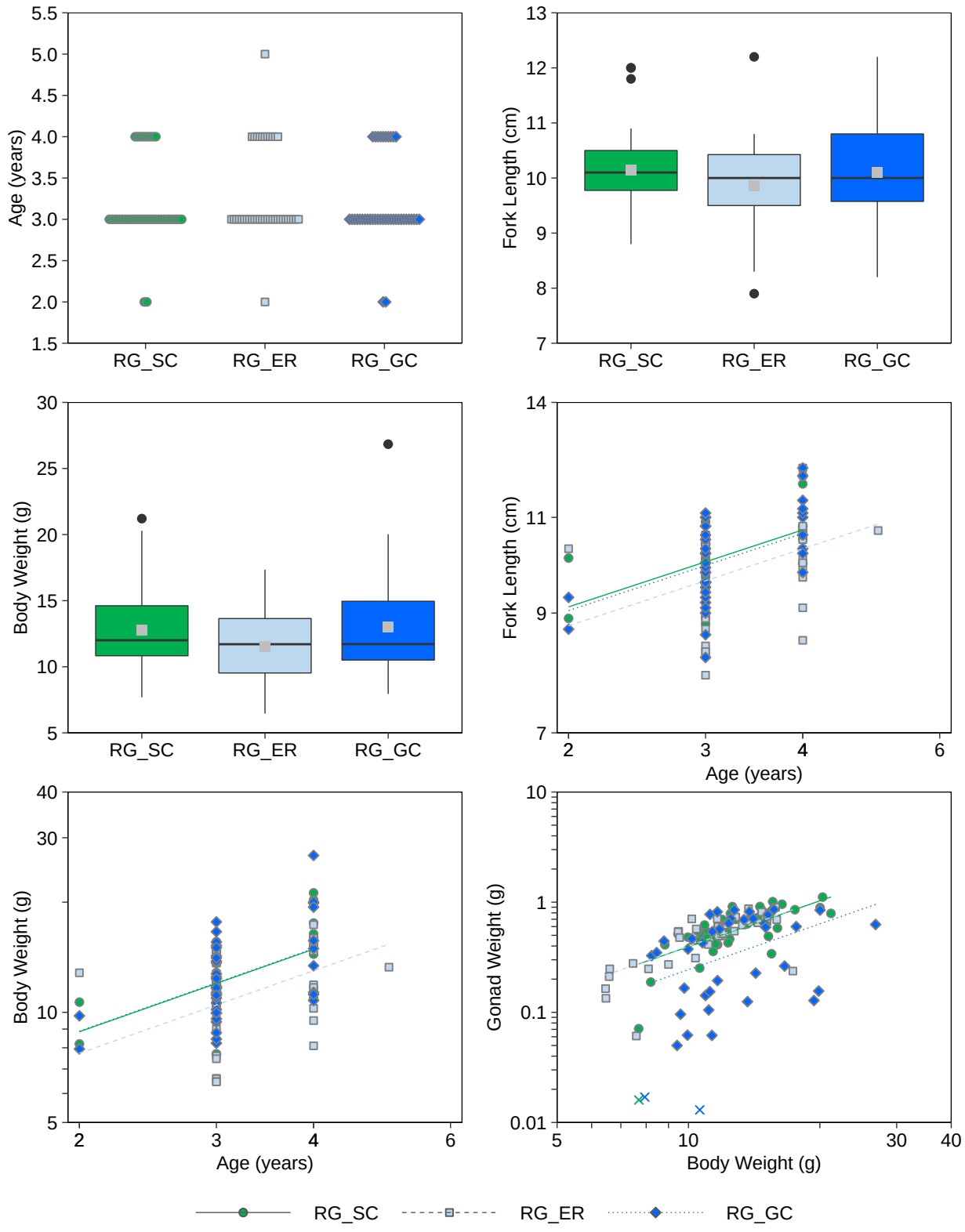


Figure 7.3: Fish Health Endpoints for Female Redside Shiner, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

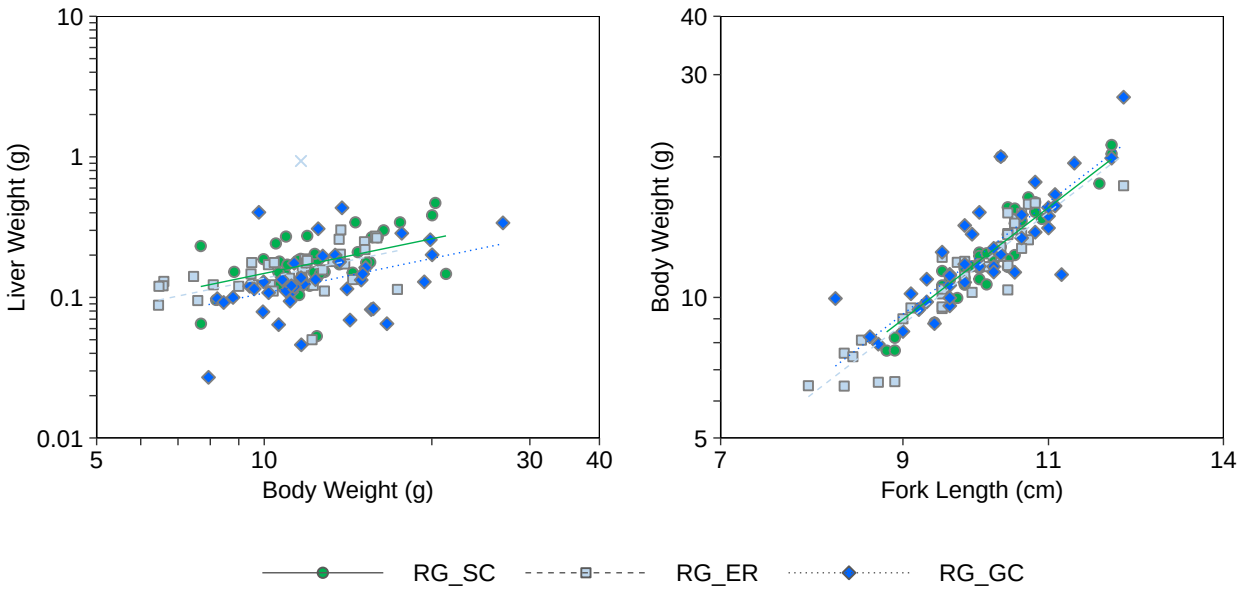


Figure 7.3: Fish Health Endpoints for Female Redside Shiner, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

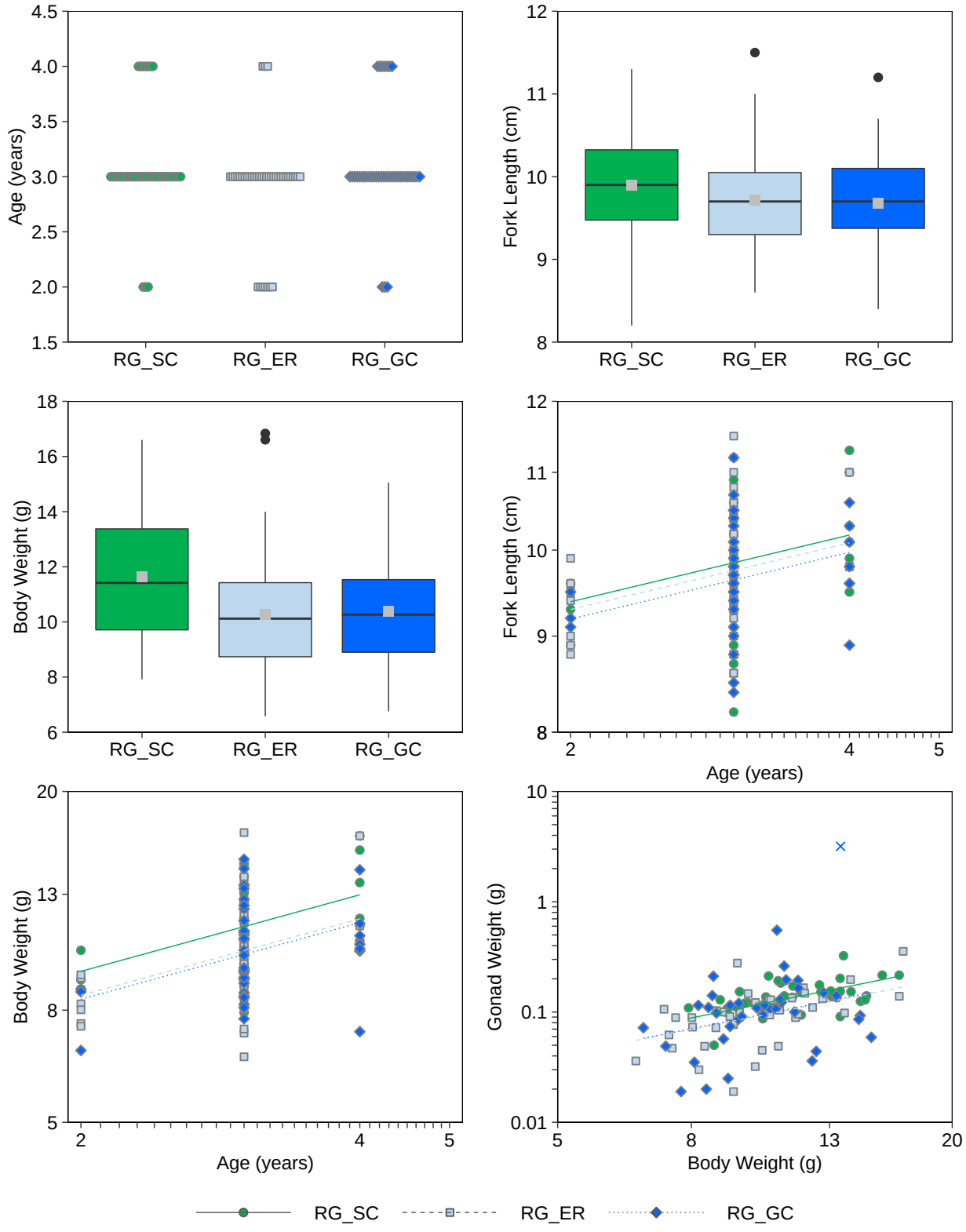


Figure 7.4: Fish Health Endpoints for Male Redside Shiner, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

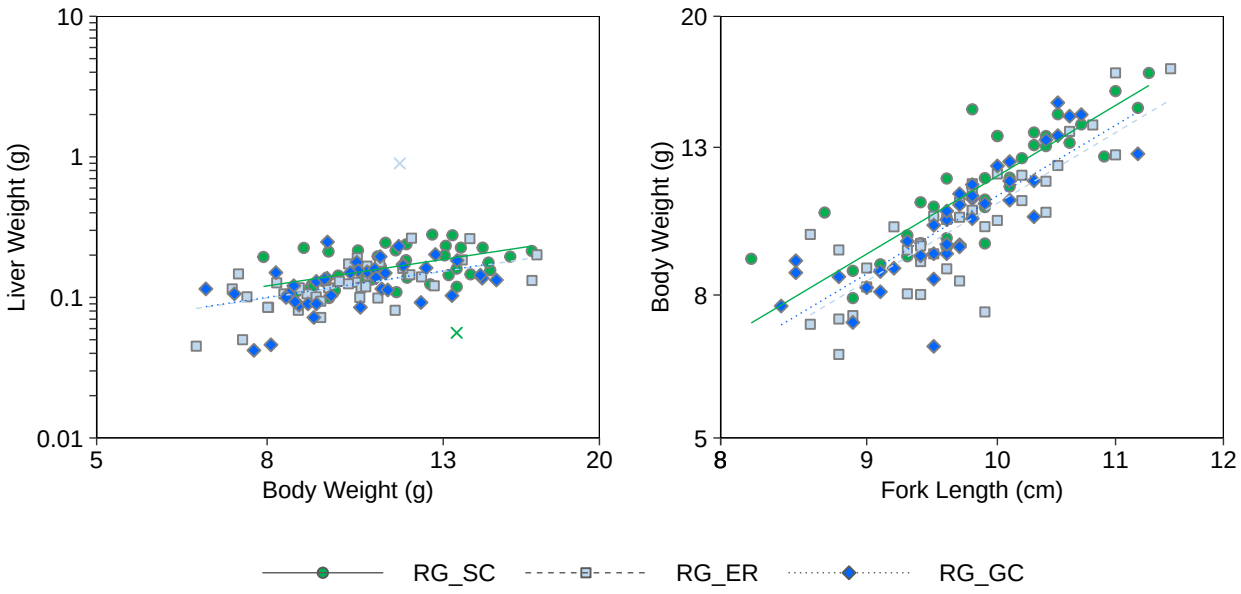


Figure 7.4: Fish Health Endpoints for Male Redside Shiner, Spring 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Outliers removed from the analysis are plotted as an X.

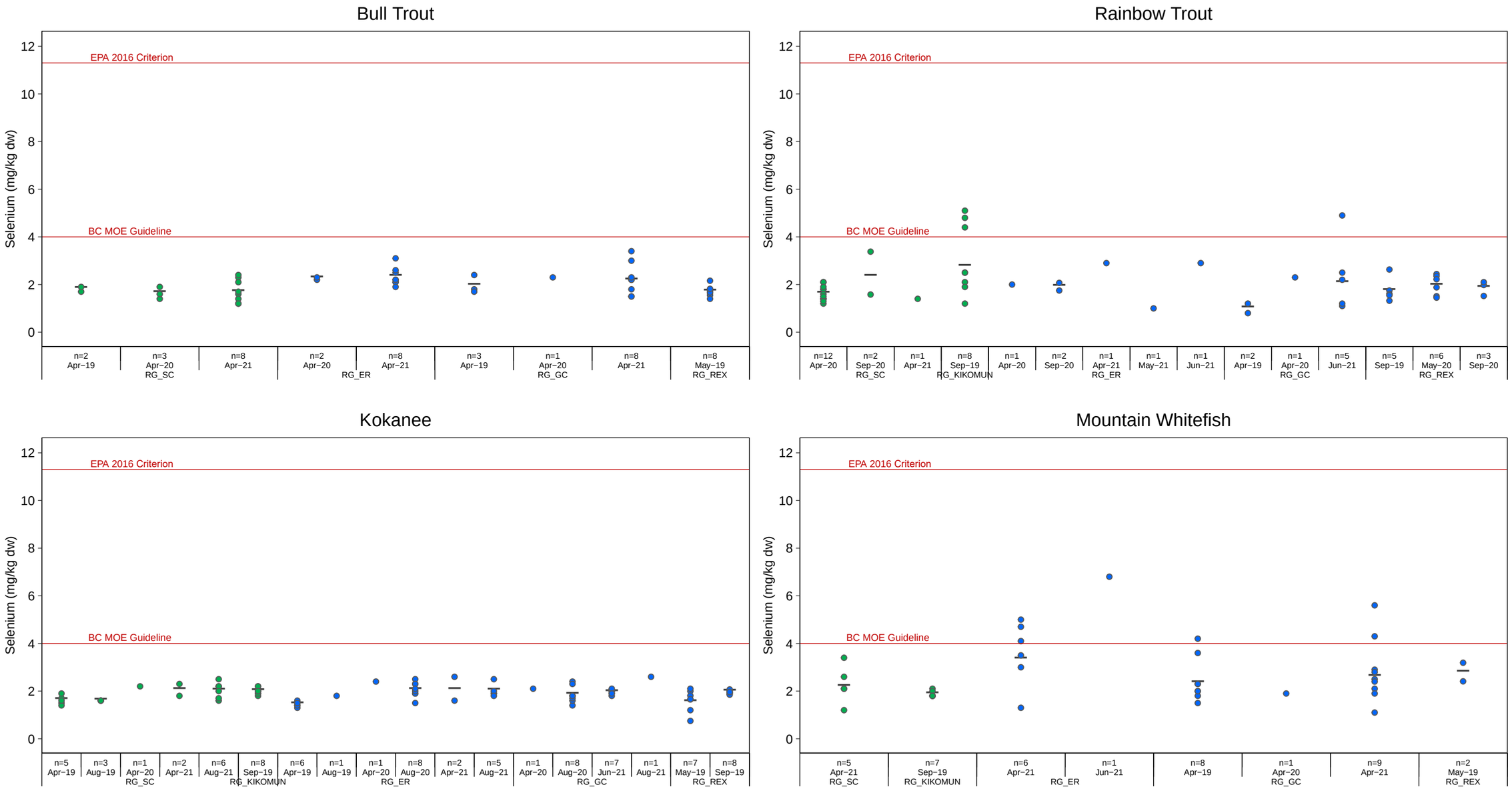
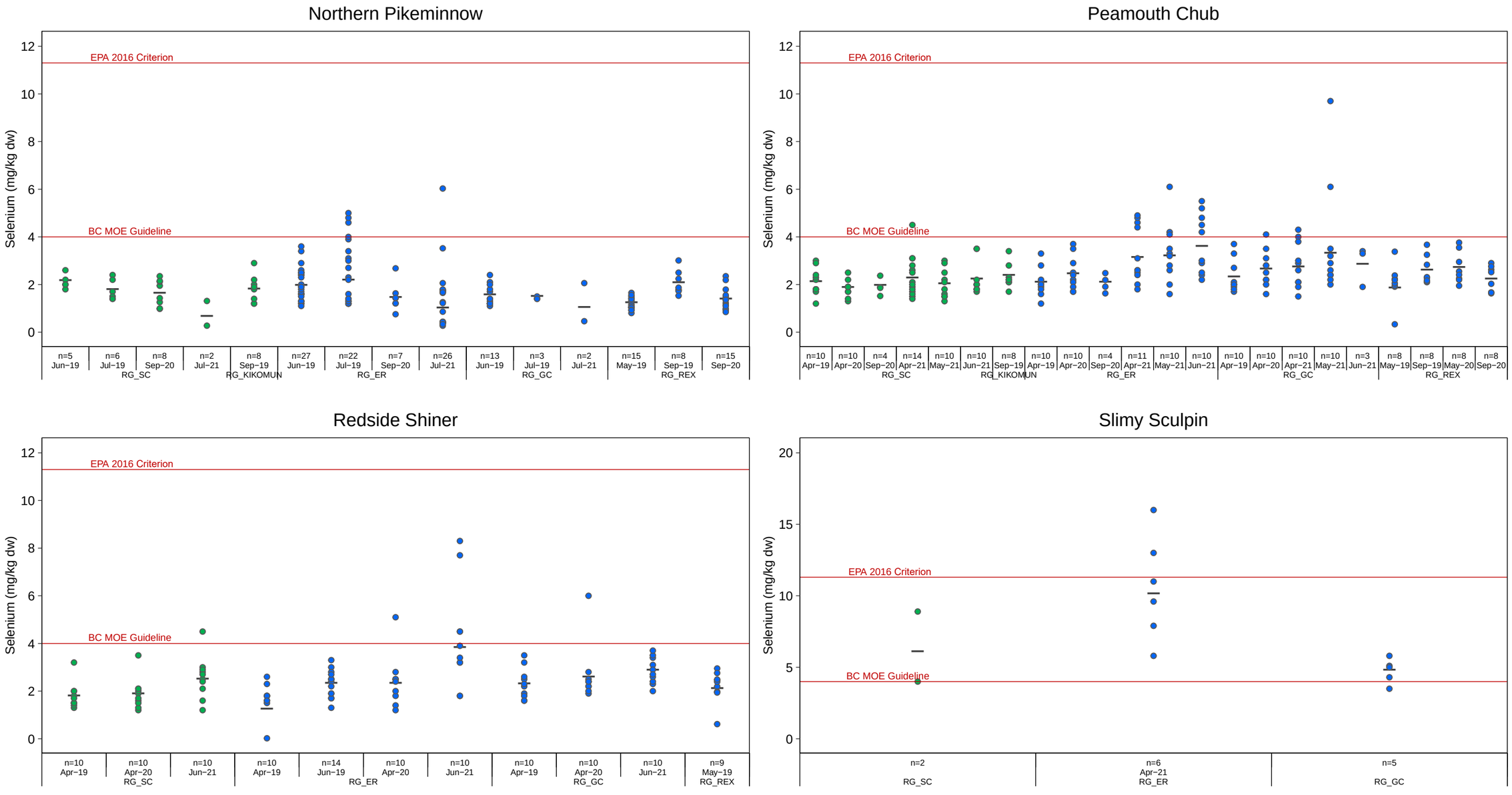


Figure 7.5: Concentrations of Selenium (mg/kg dw) in Fish Muscle Tissue, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Individual values from muscle or filet are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MFWP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MFWP.



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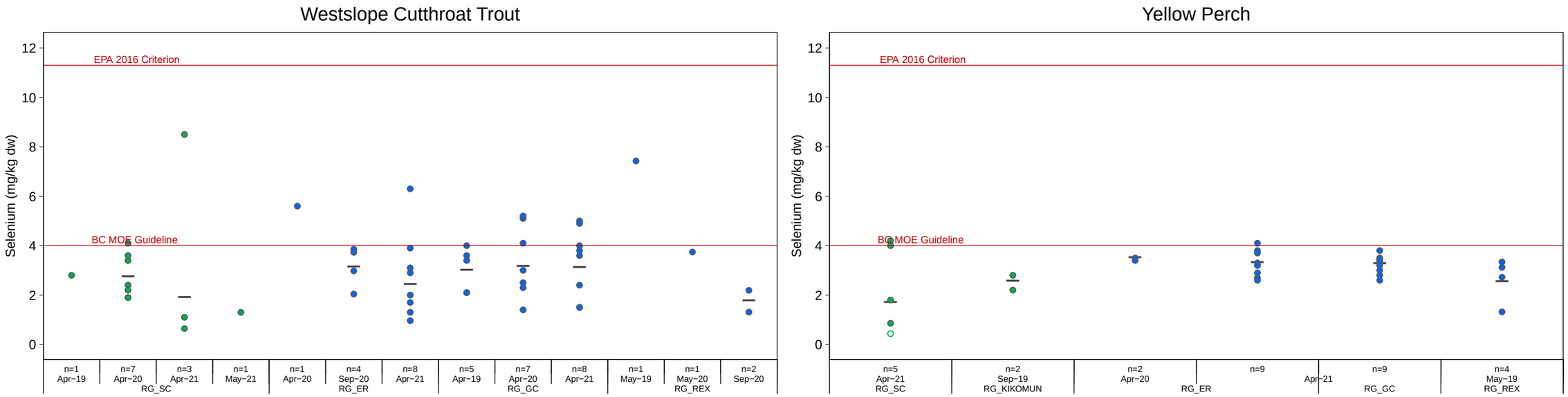
Notes: Individual values from muscle or filet are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MFWP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MFWP.



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Notes: Individual values from muscle or filet are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MFWP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MFWP.

Table 7.3: Statistical Summary of Spatial Differences in Fish Tissue Selenium Concentrations Downstream (Elk River and Gold Creek) Compared to the Upstream (Sand Creek) of the Elk River, Koocanusa Reservoir Monitoring Program, Spring 2021

Fish Species	Tissue Type	Test	Sample Size			MCT[a]			P-Value	Contrasts			Sand Creek vs Elk River		Sand Creek vs Gold Creek	
			Sand Creek	Elk River	Gold Creek	Sand Creek	Elk River	Gold Creek		Sand Creek	Elk River	Gold Creek	P-Value	MOD[b]	P-Value	MOD[b]
Peamouth Chub	Muscle	ANOVA	35	32	23	2.09	3.26	2.92	0.001	B	A	A	<0.001	56	0.002	40
Redside Shiner	Muscle	ANOVA	11	11	11	2.44	3.66	2.72	0.040	B	A	AB	0.037	50	0.758	12
	Ovary	ANOVA	11	11	11	10.4	13.2	13.6	0.239	A	A	A	ns	ns	ns	ns
Bull Trout	Muscle	ANOVA	8	8	8	1.74	2.34	2.24	0.073	A	A	A	0.082	34	0.164	29
Mountain Whitefish	Muscle	ANOVA	5	7	9	2.28	4.06	2.84	0.097	A	A	A	ns	ns	ns	ns
Yellow Perch	Muscle	ANOVA	5	9	9	2.26	3.28	3.22	0.108	A	A	A	ns	ns	ns	ns

Indicates significant difference between study areas at a P-value < 0.05.

Comparison to upstream (RG_SC) is significant, and magnitude of difference (MOD) is positive.

Comparison to upstream (RG_SC) is significant, and MOD is negative.

Notes: "-" indicates no data were collected for this species in the given year. "ns" indicates non-significant value across stations. ANOVA = Analysis of Variance test.

[a] The measure of central tendency (MCT) reported is based on the applied data-transformation, as follows: mean for no transformation; geometric mean for $\log_0$-transformation; and, median for rank-transformation.

[b] Magnitude of difference (MOD) = $(MCT_{downstream}-MCT_{upstream})/MCT_{upstream}*100$.

fish species, only BT from RG_ER had significantly higher selenium concentrations in muscle tissue compared to those sampled from RG_SC (Table 7.3). On average, selenium concentrations in muscle tissue of PCC, RSC, and all sport fish were below applicable guidelines, and therefore the occurrence of significantly higher concentrations of selenium in muscle tissue of PCC, RSC, and/or BT at the downstream study area (or areas) compared to upstream was not ecologically significant.

Concentrations of selenium in muscle tissue of all fish species sampled in 2021 appeared to be within respective ranges shown in previous years for like-species suggesting no substantial changes in selenium concentrations in muscle tissue over time at Koocanusa Reservoir downstream and upstream of the Elk River.

7.3.2 Ovary

Mean selenium concentrations in the ovaries of PCC sampled at RG_ER (May and June) and RG_GC (June) were greater than the BC ovary tissue guideline (11 µg/g dw), but less than the US EPA criterion (15.1 µg/g dw) and the EVWQP Level 1 benchmark for reproductive effects to fish (18 µg/g dw; Figure 7.6; Appendix Tables G.2 to G.5). Selenium concentrations in well-developed (i.e., ripe) ovary tissue provide the most direct predictor for potential reproductive effects in fish (Janz et al. 2010, DeForest and Adams 2011) and are also the basis for the development of the guidelines for chronic effects related to selenium. Ovaries of PCC are considered to be ripe based on a GSI between 13 and 15% (Gray and Dauble 2001). The mean GSI for PCC ranged from 7.1% to 8.5% in April, 8.6% to 12.7% in May, and 5.9%[18] to 11.7% in June among the three study areas. Ovary GSI from PCC collected in 2021 were greater than in females collected in April 2020 (6.4 to 7.1% GSI; Minnow 2021b). Correlation between GSI and ovary tissue selenium concentrations indicated lower concentrations of selenium in ovary tissue associated with higher GSI values (Figure 7.7). Spatially, mean GSI for female PCC did not differ significantly between RG_ER and RG_SC, however, female PCC from RG_GC had significantly lower GSI compared to RG_SC across all three months of sampling in 2021 (Table 7.4). Among months, mean GSI was significantly lower in April compared to mean GSI measured in May and June for each respective study area (Table 7.4). Although there was no significant difference in the GSI of female PCC between May and June at each study area, fish from RG_GC had begun to spawn prior to the late June sampling event. These results suggest that the month of May provided a better opportunity to capture gravid female PCC in the Koocanusa Reservoir compared to April and June in 2021. Considering selenium concentrations relative to GSI,

[18] The average 5.9% was based on three individuals sampled at the mouth of Gold Creek study area. By the time sampling occurred in June, many of the female PCC caught at the mouth of Gold Creek study area had already spawned, potentially indicating a difference in the timing of spawning for PCC among areas within the reservoir.

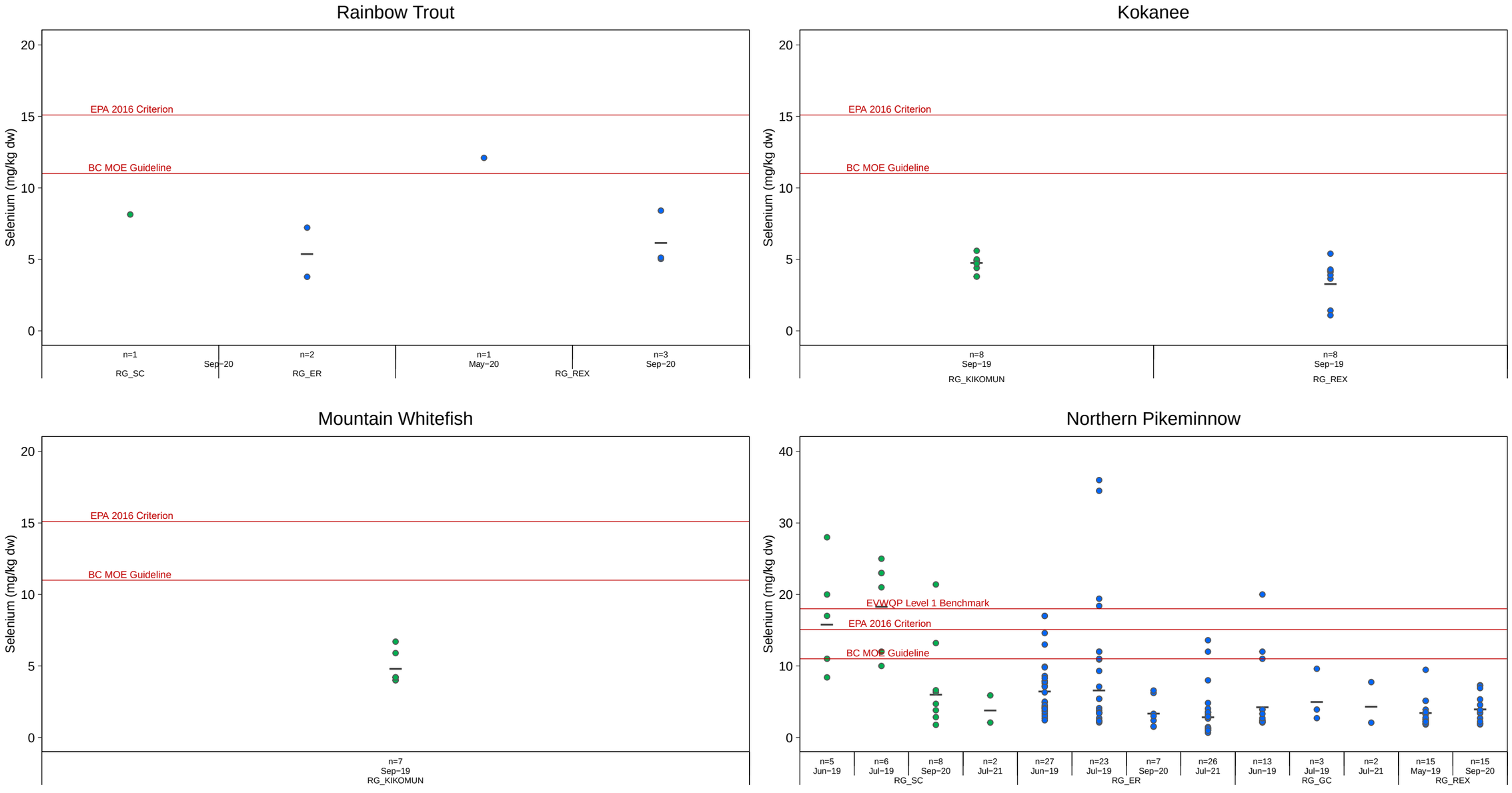


Figure 7.6: Concentrations of Selenium (mg/kg dw) in Fish Ovary Tissue, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Individual values from ovaries are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. GSI for peamouth chub, redside shiner, and northern pikeminnow were all well below gonadosomatic indices representative of ripe ovaries, therefore, sample selenium concentrations should be interpreted with caution when comparing to guidelines and benchmarks. Therefore Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MWFP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MWFP.

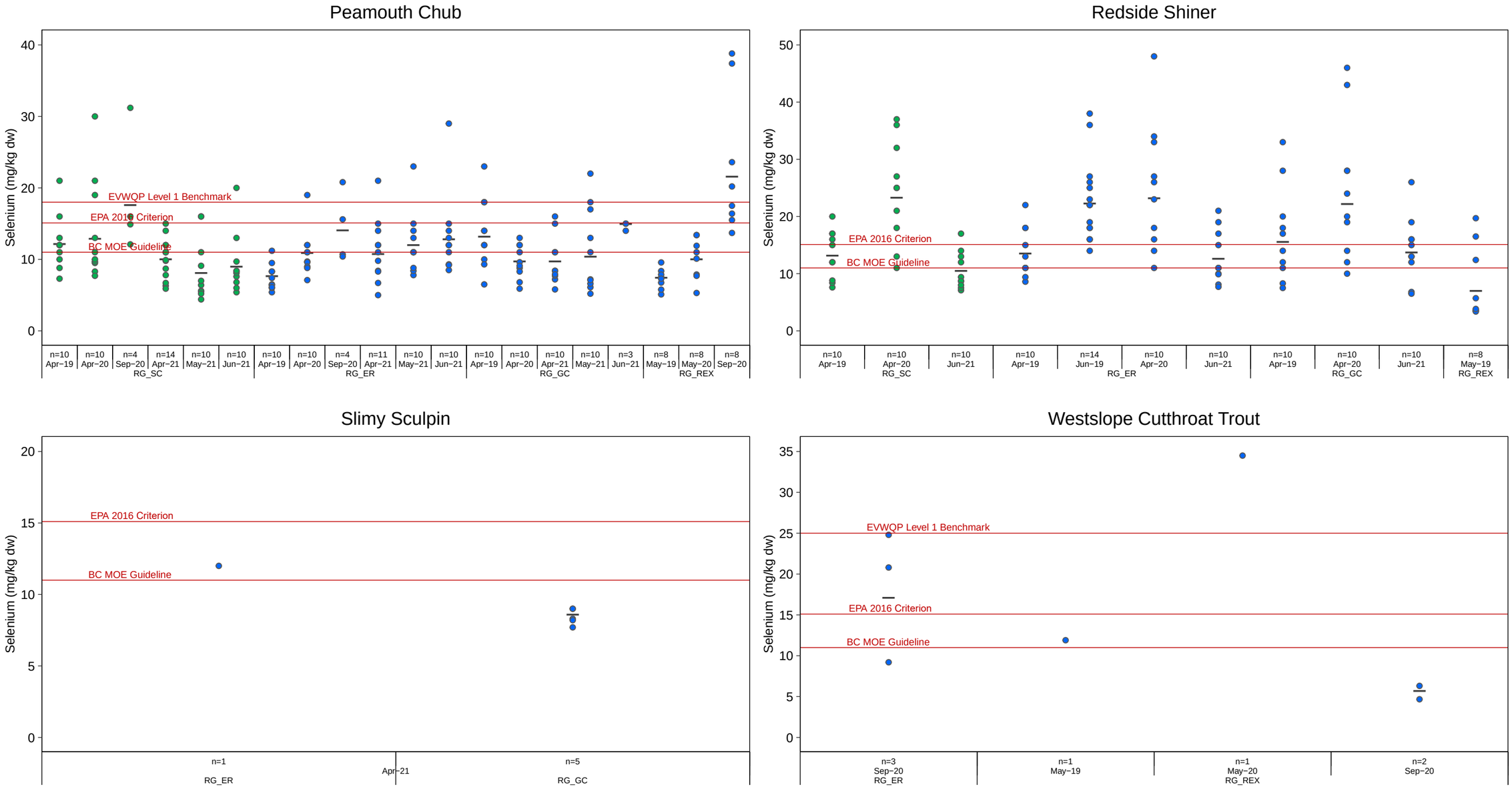


Figure 7.6: Concentrations of Selenium (mg/kg dw) in Fish Ovary Tissue, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Individual values from ovaries are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. GSI for peamouth chub, redside shiner, and northern pikeminnow were all well below gonadosomatic indices representative of ripe ovaries, therefore, sample selenium concentrations should be interpreted with caution when comparing to guidelines and benchmarks. Therefore Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MWFP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MWFP.

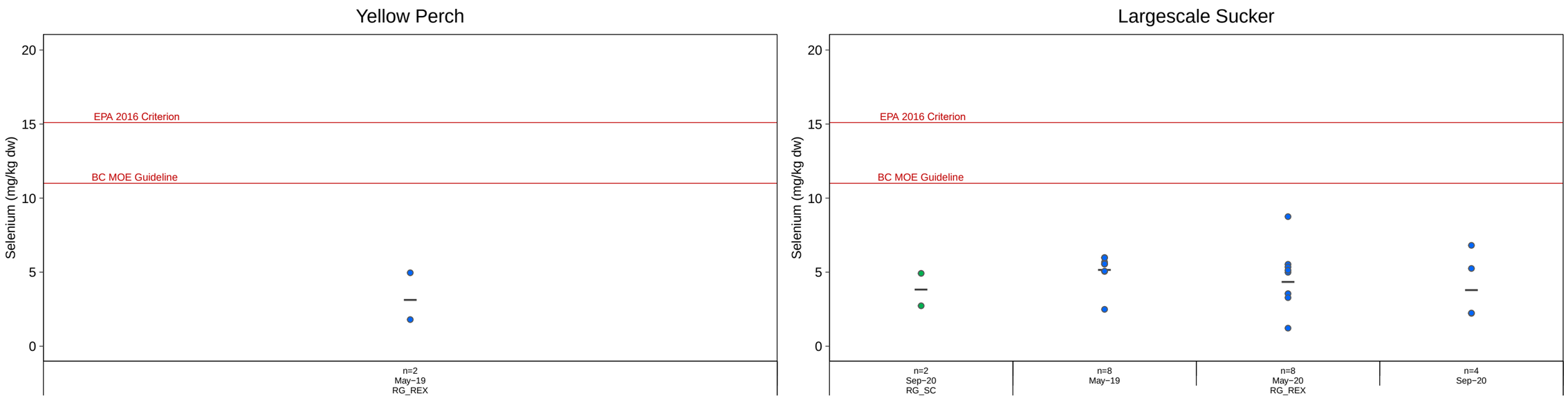


Figure 7.6: Concentrations of Selenium (mg/kg dw) in Fish Ovary Tissue, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Notes: Individual values from ovaries are plotted. Reference areas are shown in green exposed in blue. Concentrations below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Means are plotted as horizontal lines when n > 1. GSI for peamouth chub, redside shiner, and northern pikeminnow were all well below gonadosomatic indices representative of ripe ovaries, therefore, sample selenium concentrations should be interpreted with caution when comparing to guidelines and benchmarks. Therefore Sand Creek study area is upstream of the Elk River confluence, while the Elk River and Gold Creek study areas are downstream of the Elk River. Sand Creek, Elk River, and Gold Creek samples were collected by Teck, with the exception of some samples for Sand Creek that were collected by MWFP. All other sampling areas in the Koocanusa Reservoir are in the United States and samples were collected by MWFP.

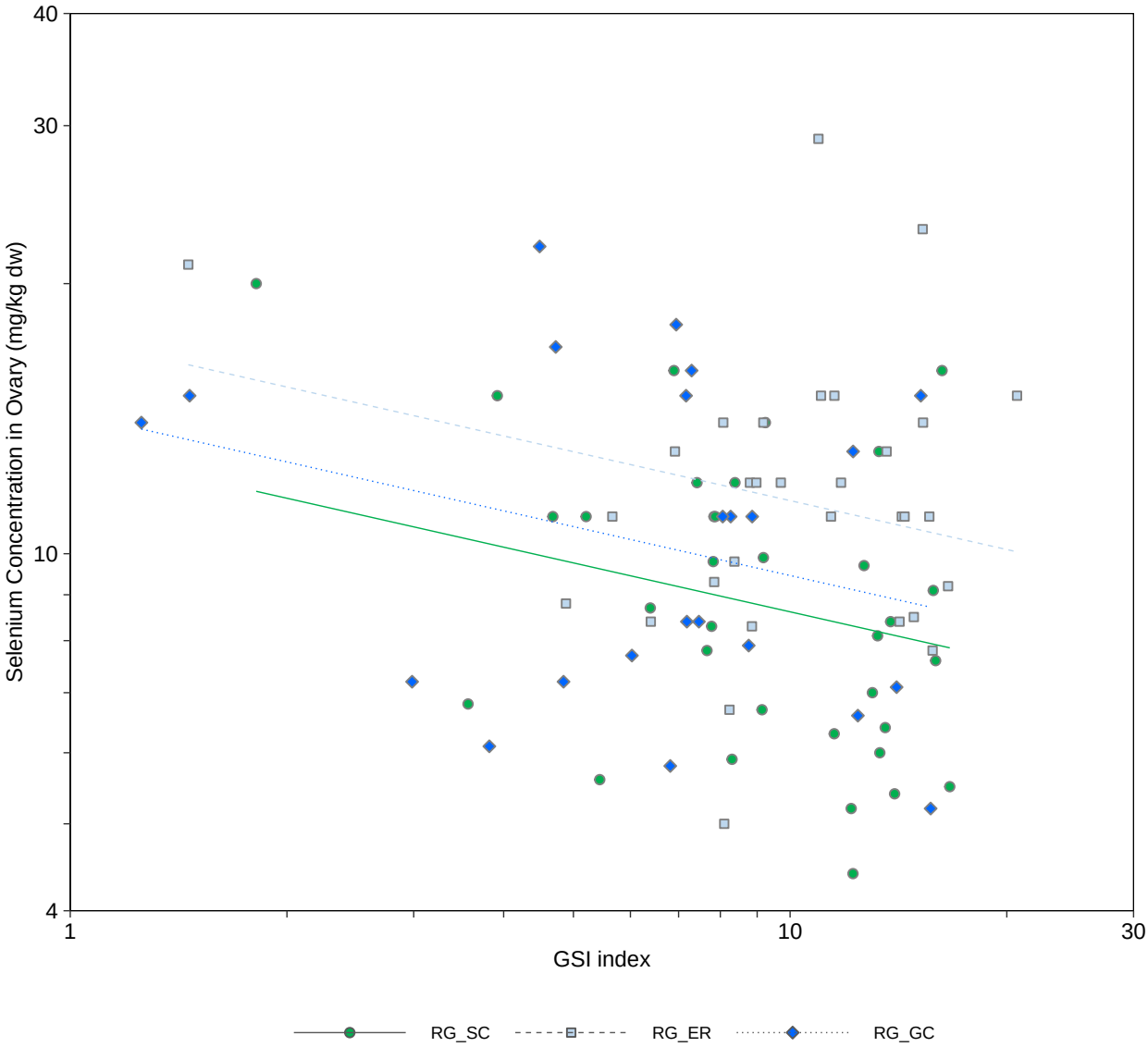


Figure 7.7: Regression Ovary Tissue Selenium Concentrations against Peamouth Chub Female GSI index, 2021

Notes: Scatterplot x− and y−axes are log10−scaled. Green represents reference area and blue represents exposed areas. The full ANCOVA models included GSI, month, station and their interactions. Interaction and Month terms were insignificant and therefore removed. The final model included GSI index and stations. No significant interaction was found but Area and GSI index were both significantly different.

Table 7.4: Statistical Summary of Spatial Differences in Female Peamouth Chub GSI Index Downstream (Elk River and Gold Creek) Compared to the Upstream (Sand Creek) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

ANOVA Model[a]					Station		Temporal Post-hoc[b]			Spatial Post-hoc[c]		
										RG_SC versus Downstream		
Parameter	Trans	Area	Month	Month x Area			April vs May	April vs June	May vs June	April	May	June
GSI Index	none	0.014	0.003	0.549	Reference	RG_SC	42	30	ns	-		
					Mine-exposed	RG_ER				ns		
						RG_GC				-23		

P-value < 0.1

Post-hoc comparison is significant and magnitude of difference (MOD) is positive.

Post-hoc comparison is significant and magnitude of difference (MOD) is negative.

[a] P-values from Analysis of Variance (ANOVA) including the terms Area, Month and Month x Area.

[b] Magnitude of Difference (MOD) was calculated as $(MCT_{Month2} - MCT_{Month1})/MCT_{Month1} * 100$ using the measure of central tendency related to the statistics. MCT stands for measure of central tendency.

[c] Magnitude of Difference (MOD) was calculated as (MCTdownstream-MCTupstream)/MCTupstream*100 using the measure of central tendency related to the statistics. MCT stands for measure of central tendency.

Note: '"-" = not applicable comparison.

selenium concentrations in PCC ovary tissue were significantly higher downstream of the Elk River (RG_ER) compared to upstream (RG_SC; Table 7.5). No significant difference in selenium concentrations were observed for PCC ovary tissues sampled between RG_GC and RG_SC study areas for the pooled April, May, and June data (Table 7.5).

Mean selenium concentrations in the ovaries of RSC collected downstream of the Elk River (RG_ER and RG_GC) in June 2021 were greater than the BC guideline but below the US EPA criterion (Figure 7.6). Ovary samples collected from RSC in June showed mean GSI ranging from 8% to 15% among the three study areas. For female RSC, GSI near 14% reflect fully mature ovaries at the time of spawning (Golder 2020), and therefore the GSI information suggested that comparisons to the BC guideline were relevant for a high proportion of samples collected from Koocanusa Reservoir in June 2021. The GSI from female RSC collected in June 2021 were greater than those reported from April 2020 (mean range from 4 to 4.5%; Minnow 2021b) for all study areas, indicating females collected in June 2021 had more developed ovaries. Spatially, no significant differences in selenium concentrations in RSC ovary tissue were indicated for study areas located downstream of the Elk River (RG_ER and RG_GC) compared to upstream (RG_SC) of the Elk River (Table 7.3). Northern pikeminnow ovaries sampled in July as part of the Northern Pikeminnow Selenium Toxicity study showed mean selenium concentrations below the BC guideline at all sampled areas (Figure 7.6).

In general, PCC and RSC females with higher GSIs were collected in 2021 compared to previous years. However, concentrations of selenium in ovary tissues observed in 2021 should not be compared to concentrations previously observed without taking historical gonadal development into consideration. This will be explored during the three-year temporal analysis.

7.4 Tissue Mercury Concentrations

Mercury concentrations in muscle from all fish sampled downstream and upstream of the Elk River in 2021 were above the BC guideline for the protection of wildlife (0.165 µg/g dw[19]) with the exception of a few individual MW, RBT, SS, WCT, and YP samples (Figure 7.8). Sample sizes were sufficient to allow for statistical comparison of mercury concentrations in tissues of PCC, RSC, BT, MW, and YP between study areas located downstream and upstream of the Elk River in 2021. Relative mercury concentrations in RSC muscle tissue (i.e., mercury concentration-at-length relationship) were significantly higher downstream (RG_ER and RG_GC) compared to upstream (RG_SC) of the Elk River in 2021 (Table 7.6). For YP, despite a significant interaction suggesting higher mercury concentrations in muscle were observed in larger

[19] The BC guideline for the protection of wildlife (0.033 µg/g ww) was converted to a dry weight basis using the average moisture content in fish muscle in Koocanusa Reservoir of approximately 80%.

Table 7.5: Statistical Comparison of Selenium Concentration in Peamouth Chub Between Downstream (Elk River and Gold Creek) and Upstream (Sand Creek) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Tissue	Sample Size			ANCOVA Model Statistics[a]		Measure of Central Tendency[c]				Pairwise Comparisons			
				Interaction Model	Parallel Slope Model					Sand Creek vs. Elk River		Sand Creek vs. Gold Creek	
	Sand Creek	Elk River	Gold Creek	Interaction P-value	Covariate P-value	Statistic	Sand Creek	Elk River	Gold Creek	P-value	MOD (%)[d]	P-value	MOD (%)[d]
Ovary	34	31	23	0.318	0.016	Adjusted Mean	8.87	11.8	9.73	0.007	33	0.635	ns

Significant P-value (Interaction P-value < 0.05; Area P-value <0.1; Pairwise P-value < 0.1).

Covariate P-value > 0.05.

Magnitude of Difference > 25%.

Notes: "-" indicates the value is not applicable. A full ANCOVA model included GSI index, Months, Areas, and their interactions was tested, insignificant terms were dropped and the final model included GSI index and Areas for Ovary. ANCOVA tests were conducted on log10-tranformed selenium concentrations.

[a] A full ANCOVA model included GSI index, Months, Areas, and their interactions. Insignificant terms were dropped and the final model included GSI index and Areas for Ovary. ANCOVA tests were conducted on log10-tranformed variables (Selenium concentration and GSI index).

[b] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[c] The geometric means for $\log_{10}$-transformed variables, and the adjusted means for ANCOVA where a significant covariable occurs.

[d] Magnitude of Difference (MOD) calculated as the difference in Measure of Central Tendency (MCT) between areas (downstream minus upstream), expressed as a percentage of the upstream area MCT.

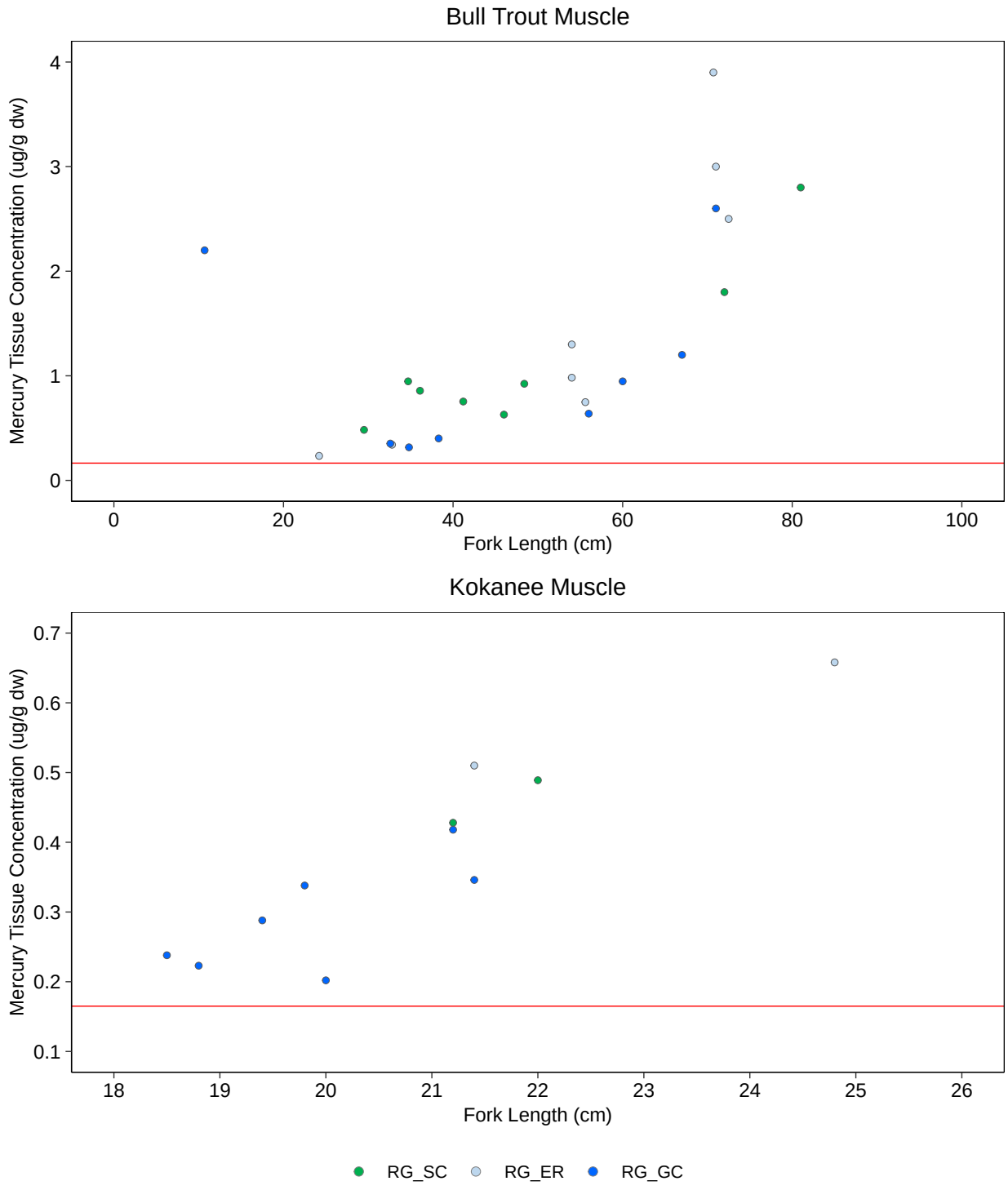
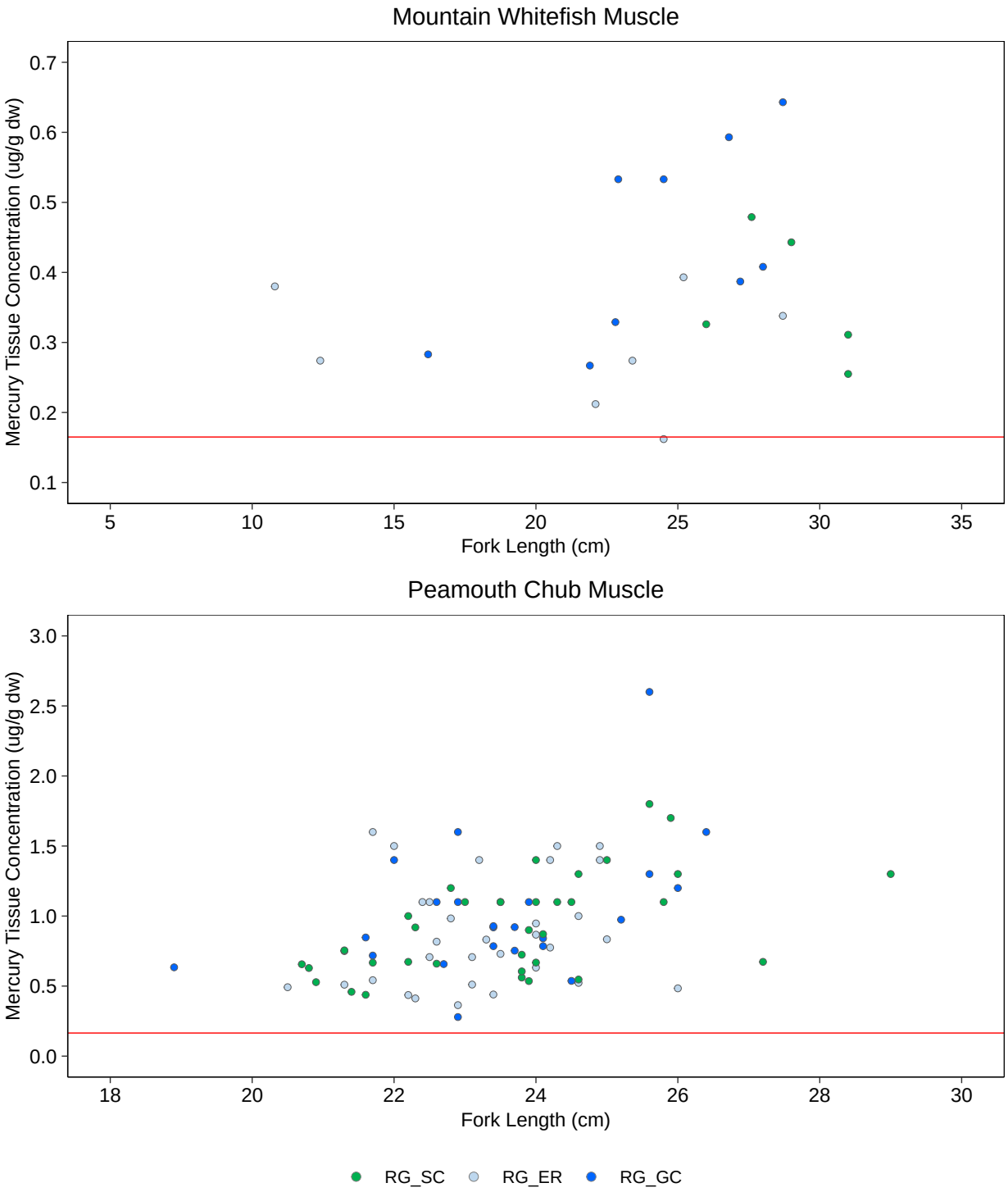


Figure 7.8: Mercury Concentrations (µg/g dw) in Fish Tissue Relative to Fork Length (cm) for all Species, Koocanusa Reservoir Monitoring Program, Spring 2021

Notes: Open symbols are values at the Laboratory Reporting Limit. Red line = BC Guideline for the Protection of Wildlife = 0.165.



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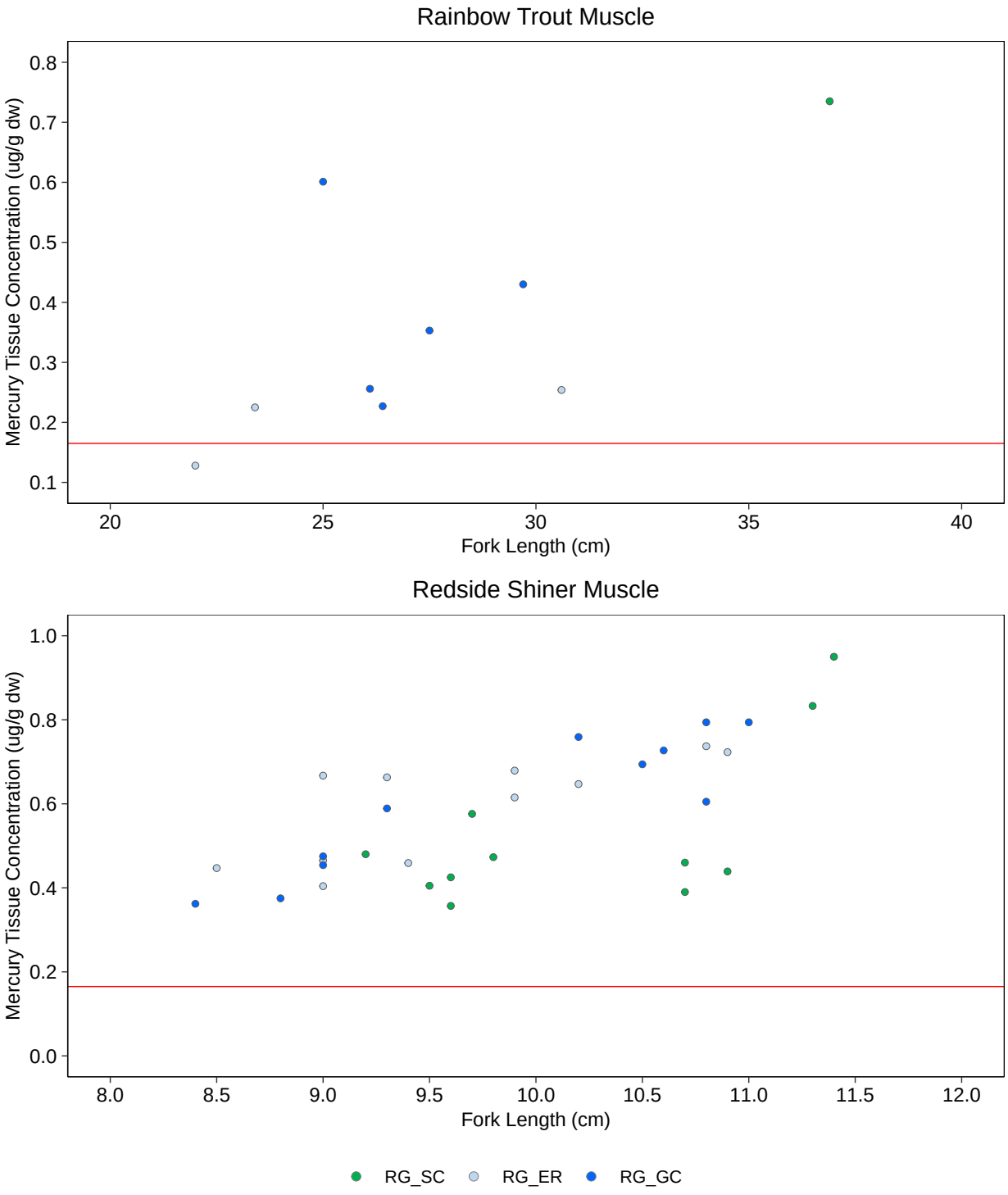

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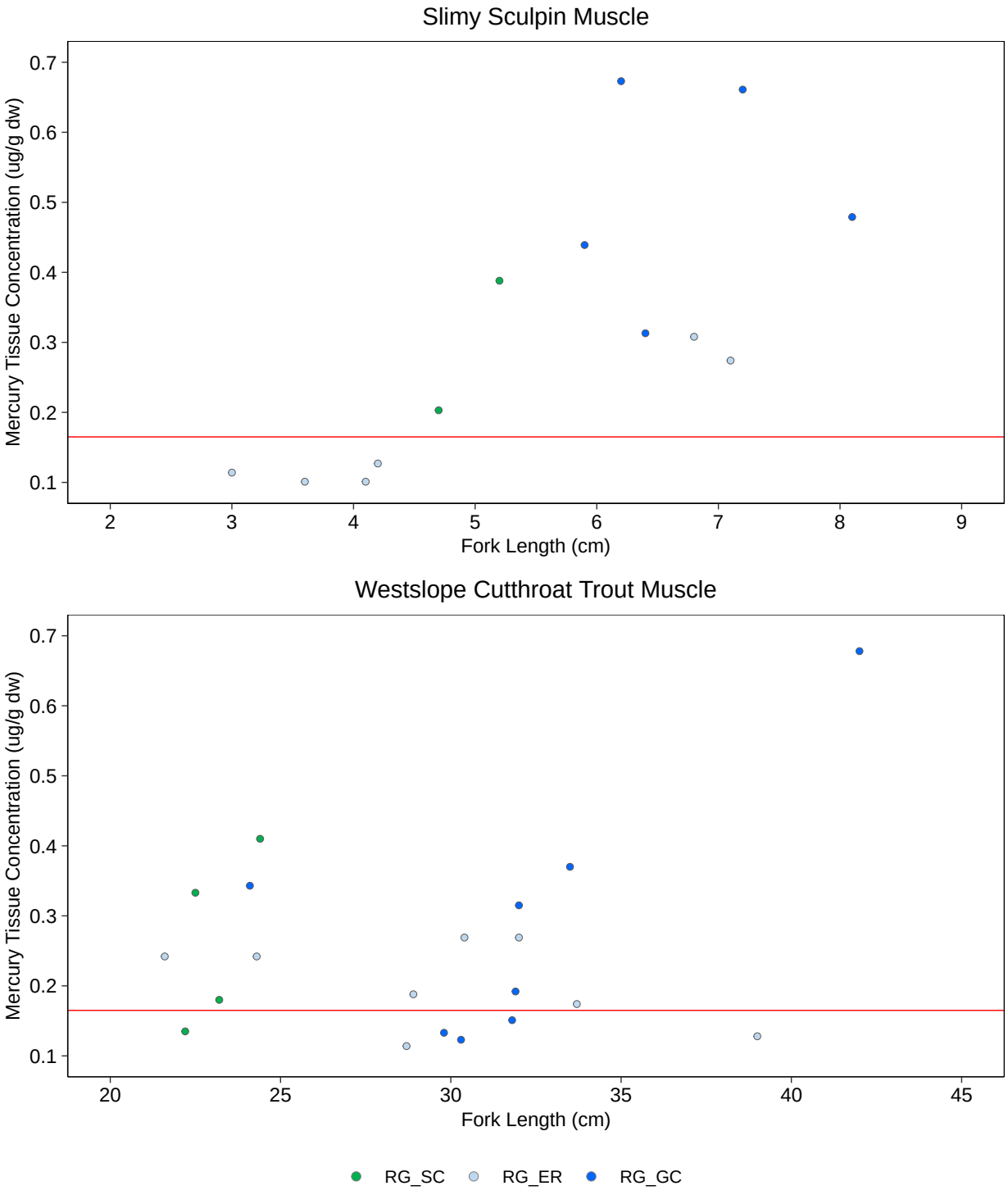

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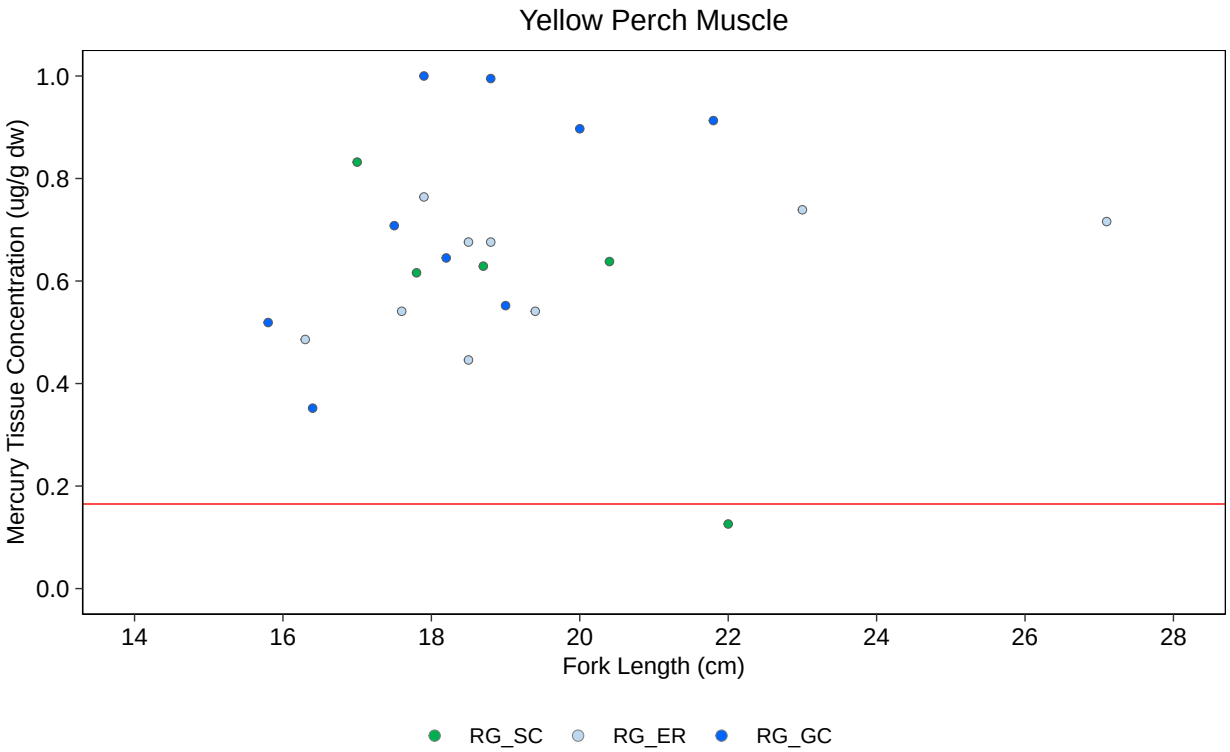

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Notes: Open symbols are values at the Laboratory Reporting Limit. Red line = BC Guideline for the Protection of Wildlife = 0.165.

Table 7.6: Statistical Comparison of Mercury Concentration in Muscle Tissue Between Downstream (Elk River and Gold Creek) and Upstream (Sand Creek) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Species	Sample Size			ANCOVA Model Statistics			Measure of Central Tendency[b]				Overall Test P-value (Area)	Pairwise Comparisons			
				Interaction Model	Parallel Slope Model	Covariate Value for Comparisons[a]						Sand Creek vs. Elk River		Sand Creek vs. Gold Creek	
	Sand Creek	Elk River	Gold Creek	Interaction P-value	Covariate P-value		Statistic	Sand Creek	Elk River	Gold Creek		P-value	MOD (%)[c]	P-value	MOD (%)[c]
Bull Trout	8	8	8	0.003	0.007	29.5	Predicted Mean	0.521	0.292	0.823	0.908	0.465	ns	0.118	ns
						71.0		1.83	2.45	0.788	0.908	0.465	ns	0.118	ns
Mountain Whitefish	5	7	9	0.105	0.791	-	Mean	0.363	0.290	0.442	0.051	0.533	ns	0.442	ns
Peamouth Chub	35	32	23	0.788	0.001	23.4	Adjusted Mean	0.852	0.811	0.931	0.426	ns	ns	ns	ns
Redside Shiner	11	11	11	0.751	0.001	9.86	Adjusted Mean	0.463	0.619	0.588	0.003	0.004	34	0.015	27
Yellow Perch	5	9	9	0.001	0.778	17.0	Predicted Mean	0.962	0.558	0.584	0.126	0.002	-42	<0.001	-39
						21.8		0.219	0.657	1.05		0.002	200	<0.001	378

Significant P-value (Interaction P-value < 0.05; Area P-value <0.1; Pairwise P-value < 0.1).

Covariate P-value > 0.05.

Magnitude of Difference > 25%.

Notes: "-" indicates the value is not applicable.

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The means for untransformed variables, geometric means for $\log_{10}$-transformed variables, adjusted means where a significant covariable occurs, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs where a significant interaction (i.e., different slopes) occurs.

[c] Magnitude of Difference (MOD) calculated as the difference in Measure of Central Tendency (MCT) between areas (downstream minus upstream), expressed as a percentage of the upstream area MCT.

fish downstream (RG_ER and RG_GC) compared to upstream (Table 7.6), a high degree of overlapping data points was observed between the downstream areas with the upstream suggesting no substantial differences in mercury concentrations in muscle of YP among areas (Figure 7.8). No significant differences in relative mercury concentrations were indicated for muscle tissue collected from PCC, BT, or MW between study areas located downstream and upstream of the Elk River in 2021 (Table 7.6).

8 SUMMARY

The Koocanusa Reservoir Monitoring Program was conducted in 2021 to assess spatial differences in physico-chemical and biological conditions in Koocanusa Reservoir. In accordance with this monitoring program and conditions of British Colombia Ministry of Environment and Climate Change Strategy Permit 107517 (Section 9.8), this annual report provides an overview of the environmental monitoring activities conducted in Koocanusa Reservoir, together with a summary of the associated results. The principal findings from the Koocanusa Reservoir Monitoring Program in 2021 are summarized below.

Water Quality

Reservoir levels in 2021 were well within normal ranges observed in previous years. During the low-pool in April 2021, the reservoir was fully wetted and not indicative of riverine conditions that have been observed in previous years (i.e., 2014, 2017, and 2018).

Order constituents (except for selenium), as well as non-order constituents selected for assessment, had monthly average concentrations below or equal to applicable BC water quality guidelines and applicable SPOs throughout 2021 at all permitted water quality stations. Monthly mean concentrations of selenium in water were elevated relative to guidelines on at least one occasion at RG_GRASMERE and RG_USGOLD, and exceeded the SPO in January and April at RG_DSELK.

Productivity assessment indicated annual median N:P ratios were consistently 15 or more throughout the water column at all permitted water quality stations in 2021, and thus indicative of phosphorous limitation. Phosphorus limitation can result in a lack of plant and algal growth throughout this system, however, this effect is confounded by the seasonal drawdown that occurs. Trophic status classification suggest Koocanusa Reservoir was primarily oligotrophic to mesotrophic most of the year.

Monthly loadings of nitrate and selenium from the Elk River to the reservoir were highest from May to July, with the peak coinciding with freshet in June. In the Kootenay River, May to July also showed the highest loadings for nitrate and selenium to the reservoir, with the peak loadings occurring in June. Loadings of both nitrate and selenium to Koocanusa Reservoir were higher from the Elk River than from the Kootenay River on both a monthly and annual timescale.

Sediment Quality

Sediment, both downstream and upstream of the Elk River, was primarily composed of silt-sized material and lesser amounts of clay-sized material. Lower proportions of silt and higher proportions of clay were indicated in sediment downstream of the Elk River compared to

upstream, however no differences in proportions of sand or total organic content material were indicated between areas. Arsenic, cadmium, chromium, copper, iron, manganese, nickel, selenium, and zinc concentrations in sediment were elevated above the lower WSQG at two or more stations downstream of the Elk River. Of these metals, sediment concentrations of iron, manganese, and nickel were also above the lower WSQG at the upstream area suggesting background concentrations of these three parameters that point to sources upstream of the reservoir. Several metals and PAHs occurred at significantly higher concentrations in sediment downstream of the Elk River compared to upstream in 2021.

Zooplankton Community and Tissue Chemistry

In 2021, no differences in overall density, biomass, and richness of the community, or absolute density and biomass of the major zooplankton groups were indicated between transects located downstream and upstream of the Elk River. Relative biomass of Cladocera and Rotifera was higher, whereas the relative biomass of Copepoda was lower, downstream of the Elk River compared to upstream. Density, biomass, and richness of the overall zooplankton community, as well as density and biomass of all dominant taxonomic groups, was lower at the downstream transect in 2021 than in 2019 and 2020, but a similar change was also apparent at the upstream transect in 2021 compared to 2019 and 2020 and unrelated to mine operations.

Zooplankton tissue selenium concentrations were below the BC chronic interim guideline both downstream and upstream of the Elk River in June and August 2021. There were no differences in selenium concentrations in zooplankton observed between areas downstream and upstream in either June or August, nor were there differences in concentrations between June and August within areas. Temporally, zooplankton tissue selenium concentrations were lower in June 2021 compared to 2020 both downstream and upstream of the Elk River and comparable to 2019. Tissue selenium concentrations in August 2021 were comparable to concentrations previously reported in 2019 and 2020, suggesting no changes over time.

Benthic Invertebrate Community and Tissue Chemistry

In 2021, benthic invertebrate richness and density were higher downstream than upstream of the Elk River. The benthic invertebrate community was primarily dominated by Oligochaeta (mostly Tubificinae) and Insecta (primarily chironomids) both downstream and upstream of the Elk River. Evaluation of community composition indicated higher absolute density of Chironomidae, Bivalvia, Oligochaeta, and Ostracoda downstream of the Elk River compared to upstream. However, among the dominant taxonomic groups, only the relative abundance of Bivalvia was higher downstream compared to upstream of the Elk River suggesting similar overall structure of the benthic invertebrate community between transects. Temporally, benthic invertebrate richness, density, Shannon's diversity, and the absolute and relative densities of

major taxonomic groups in 2021 were generally within respective ranges shown historically in 2016 and 2018 for each individual study area suggesting no substantial changes in benthic invertebrate community composition over time at either transect.

Benthic invertebrate tissue collected downstream of the Elk River in April 2021 contained a selenium concentration that was above the BC guideline and greater than in the benthic invertebrate tissue collected upstream of the Elk River. The selenium concentration in the benthic invertebrate tissue sample collected upstream of the Elk River in April 2021 was also elevated relative to the BC guideline. In May, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated above the EVWQP Level 1 fish benchmark and higher than concentrations observed upstream of the Elk River. In August, selenium concentrations in benthic invertebrate tissue collected downstream of the Elk River were elevated above the BC guideline but remained below the BC guideline upstream of the Elk River. Temporally, concentrations of selenium in benthic invertebrate tissue downstream of the Elk River appeared to be higher than the concentration previously observed in 2019, but lower than 2020 for both April and August, whereas concentrations upstream of the Elk River remained within historical ranges. Selenium concentrations in benthic invertebrate tissues were higher downstream compared to upstream of the Elk River in both 2020 and 2021, unlike in 2019 where selenium concentrations were comparable between areas.

Fish Health Assessment

In 2021, differences observed in both female and male PCC were within their respective CES indicating the results were not ecologically meaningful. Qualitative temporal comparisons of the occurrence and direction of significant differences in fish health endpoints did not indicate any consistent trends in differences for either female or male PCC at both downstream study areas compared to the mouth of Sand Creek (upstream) study area from 2014 to 2021. For female RSC, the only ecologically meaningful difference observed was lighter relative gonad weight and liver weight in females from RG_GC compared to upstream of the Elk River (RG_SC), both of which were outside of the CES of ±25 %. No differences observed in male RSC endpoints between the downstream and upstream areas were ecologically meaningful. Temporal comparisons of the occurrence and direction of significant differences in endpoints did not indicate any consistent trends in differences for either female or male RSC at both downstream study areas compared to the upstream study area from 2016 to 2021.

Fish Tissue Chemistry

Mean selenium concentrations in muscle tissue of all fish sampled were below the applicable BC fish muscle tissue guideline and US EPA criterion at all areas in 2021. PCC, RSC, and BT captured downstream showed significantly higher muscle selenium concentrations than upstream

in 2021, but all concentrations were lower than guidelines and therefore the differences are not expected to be ecologically significant.

PCC were targeted in April, May, and June in 2021, however, results indicated that May provided the best opportunity to capture gravid females for the collection of ripe ovaries. Selenium concentrations in well-developed (i.e., ripe) ovary tissue provide the most direct predictor for potential reproductive effects in fish and are the basis for the development of the BC water quality guidelines for chronic effects related to selenium. Ovary GSI from PCC collected in 2021 were greater than in females collected in April 2020 indicating that females in 2021 had more developed ovaries at the time of sampling. Mean selenium concentrations in the ovaries of PCC sampled at RG_ER (May and June) and RG_GC (June) were greater than the BC ovary tissue guideline, but less than the US EPA criterion and the EVWQP Level 1 benchmark for reproductive effects to fish. Correlation between GSI and ovary tissue selenium concentrations in 2021 indicated lower concentrations of selenium in ovary tissue associated with higher GSI values, which is more representative of selenium concentrations expected in ripe ovaries. Considering selenium concentrations relative to GSI, selenium concentrations in PCC ovary tissue were higher downstream of the Elk River (at the RG_ER site) compared to upstream, but no difference in selenium concentrations were observed between the farther downstream (RG_GC) and upstream (RG_SC) study areas.

RSC were targeted in June 2021, which resulted in the collection of females with higher GSI than observed in previous years. Mean selenium concentrations in the ovaries of RSC collected downstream of the Elk River (RG_ER and RG_GC) in June 2021 were greater than the BC guideline but below the US EPA criterion. The mean selenium concentration in RSC ovaries was below the BC guideline in RG_SC. No differences were observed between downstream and upstream areas. In general, PCC and RSC females with higher GSIs were collected in 2021 compared to previous years. However, concentrations of selenium in ovary tissues observed in 2021 should not be compared to concentrations previously observed without taking historical gonadal development into consideration. This will be explored during the three-year temporal analysis.

Conclusion

This annual summary report provides an overview of environmental monitoring activities conducted in Koocanusa Reservoir, along with the associated results from 2021. The next annual summary report will cover data from 2022 will be due to ENV in June 2023. Data collected from 2020 to 2022 will be used to address key questions related to changes over time and will be presented in the three-year interpretive report due to ENV in December 2023.

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APPENDIX A
DATA QUALITY REVIEW

APPENDIX A DATA QUALITY REVIEW

A1 INTRODUCTION

A1.1 Background

A variety of factors can influence the physical, chemical, and biological measurements made in an environmental study and thus affect the accuracy and/or precision of the data. Depending on their magnitude, inaccuracy or imprecision have the potential to affect the reliability of conclusions made from data. Therefore, it is important to ensure that programs incorporate appropriate steps to control non-natural sources of data variability (i.e., minimize variability that does not reflect authentic spatial and temporal variability in the environment) and thus assure the quality of the data. Data quality as a concept is meaningful only when it relates to the intended use of the data. That is, one must know the context in which the data will be interpreted in order to establish a relevant basis for judging whether or not the data set is adequate. A Data Quality Review (DQR) involves the comparison of field and laboratory measurement performance to Data Quality Objectives (DQOs) established for a particular study, such as evaluation of Laboratory Reporting Limits (LRLs), blank sample data, data precision (based on field and laboratory duplicate samples), and data accuracy (based on matrix spike recoveries and/or analysis of standards or certified reference materials). Trusted analytical laboratories certified by Canadian Association for Laboratory Accreditation (CALA) or the National Environmental Laboratory Accreditation Program (NELAP) with a rigorous internal quality assurance program were selected to ensure the highest possible data quality. Data Quality Objectives were established *a priori* to reflect reasonable and achievable performance expectations (Table A.1). Programs involving many samples and analytes usually yield some results that exceed DQOs. This is particularly so for multi-element scans, as the analytical conditions are not necessarily optimal for every element included in the scan. Generally, scan results may be considered acceptable if no more than 20% of the parameters fail to meet DQOs. Overall, the intent of a DQR is not to reject any measurement that did not meet a DQO, but to ensure that any questionable data received more scrutiny to determine what effect, if any, this had on interpretation of results within the context of the project.

A1.2 Quality Control Samples

A DQR was conducted on all laboratory data collected as part of the 2021 Koocanusa Reservoir Monitoring Program. The objective of a DQR is to define the overall quality of the data presented in the report, and, by extension, the confidence with which the data can be used to derive conclusions. A DQR involves the examination of analytical results associated

with several types of Quality Control (QC) samples collected or prepared in the field and laboratory. General QC samples collected for this project include the following:

- **Blanks** are samples of de-ionized water and/or appropriate reagent(s) that are handled and analyzed in the same way as regular samples. These samples will reflect any contamination of samples occurring in the field (in the case of field or travel blanks) or in the laboratory (in the case of laboratory or method blanks). Analyte concentrations should be below detection.
- **Laboratory Duplicates** are replicate sub-samples created in the laboratory from randomly selected field samples which are sub-sampled and then analyzed independently using identical analytical methods. The laboratory duplicate sample results reflect any variability introduced during laboratory sample handling and analysis and thus provide a measure of laboratory precision.
- **Field Duplicates** are samples collected from a randomly selected field station that are homogenized to the extent possible, split and analyzed separately in the laboratory. The duplicate samples are handled and analyzed in an identical manner in the laboratory.
- **Certified Reference Materials (CRM) or Reference Materials (RM)** are commercially prepared (or commercially homogenized) samples containing known chemical concentrations that are processed and analyzed along with batches of environmental samples. The sample results are then compared to the known concentrations to provide a measure of analytical accuracy. The results are reported as the percent of the known concentration that was recovered in the analysis.
- **Laboratory Control Samples** are created in the laboratory to have a known analyte concentration in a matrix free of interferences, such as deionized water or reference sand. The sample results are compared to the target results to confirm that the analytical method is accurate in a purified reference sample. The results are reported as the percent of the known concentration that was recovered in the analysis.
- **Laboratory Sorting Duplicates** are randomly selected grabs of the initially sorted community material. These samples are recounted and the number of invertebrates that were not recovered during the initial sort was determined. In order to reduce bias, recounting is conducted by an analyst uninvolved in the initial sample processing. This check is performed on 10% of samples and determines the accuracy through assessment of recovery (sorting) efficiency and quantifies any under-estimation of organism enumeration.

- **Taxonomic Quality Control Samples** are a randomly selected portion of a benthic invertebrate community field sample to be assessed by the laboratory using an internal quality control audit. A blind re-enumeration and re-identification of random samples is performed by an analyst uninvolved in the original sample processing. This assessment quantifies taxonomic misidentification among laboratory analysts and ensures accurate organism identities are reported.

- **Laboratory Subsamples** are community samples prepared by the laboratory to ensure that the fraction of the total sample examined was an accurate representation of the total number of organisms. By comparing the amount recovered between at least two subsamples, one can assess the analytical precision. In addition, comparisons of the subsamples from the whole community sample allows for an evaluation of subsampling accuracy.

A2 WATER CHEMISTRY

Water chemistry data for the 2021 Koocanusa Reservoir Monitoring Program were collected and reviewed for quality by Teck, and so are not discussed in this DQR.

A3 SEDIMENT CHEMISTRY

A3.1 Laboratory Reporting Limits

The analytical report for sediment chemistry from ALS (see laboratory report L2633922 in Appendix C) was examined to assess Laboratory Reporting Limits (LRLs) relative to analyte concentrations and applicable guidelines (Table A.2). The LRLs for these analytes were assessed relative to existing British Columbia Working Sediment Quality Guidelines (BC WSQG; BCMOECCS 2021). Several analytes were reported at concentrations below the LRL in 100% of samples (Table A.2). For those analytes with one or more result(s) below the LRL, achieved LRLs were above the relevant guidelines and were therefore considered appropriate for this study.

A3.2 Laboratory Blanks

A total of 11 Method Blank (MB) samples were analyzed in the ALS laboratory report (Appendix C). All 195 individual analyte results met the laboratory DQO, indicating no inadvertent contamination of sediment samples during analysis. Therefore, laboratory precision as determined by laboratory blanks was considered excellent.

A3.3 Data Precision

Three laboratory duplicate samples were used to evaluate precision within the ALS laboratory reports (Appendix C). All 73 individual analyte results met the laboratory DQO (Table A.1). Therefore, ALS laboratory analytical precision was considered excellent.

One set of field duplicate samples was collected to assess field sampling precision for sediment chemistry (Table A.3). Several relative percent differences (RPDs) could not be calculated as both analyte concentrations in the pair were below the LRL. Of the 39 RPDs that could be calculated, all were less than 30% (Table A.3). Therefore, sediment data were considered to have excellent field precision and reproducibility.

A3.4 Data Accuracy

Data accuracy for sediment chemistry analyses completed by ALS was evaluated based on the analysis of 12 Laboratory Control Samples (LCS), one Certified Reference Material (CRM) sample, and 10 Internal Reference Material (IRM) samples. All 192 LCS, 33 CRM, and 158 IRM individual analyte results met the laboratory DQO (Table A.1). Therefore, the accuracy achieved by the laboratory was considered excellent.

A3.5 Hold Times

All recommended hold times were met for all samples.

A3.6 Data Quality Statement

Sediment chemistry data collected for the 2021 Koocanusa Reservoir Monitoring Program were of acceptable quality as characterized by appropriate LRLs, excellent laboratory precision and accuracy, excellent field precision and reproducibility, and no hold time exceedances. Overall, the associated data were considered acceptable for this study.

A4 BENTHIC INVERTEBRATE COMMUNITY

A4.1 Organism Sorting Efficiency

The analytical reports from ZEAS Inc. for benthic invertebrate density and community structure (see laboratory report in Appendix E) were examined to assess subsampling accuracy. A minimum of 25% of a sample was assessed. Of the 15 benthic invertebrate community samples analyzed, 10 samples were processed in their entirety (Table A.4). The proportion of sub-sampled material ranged from 25% to 50% of the total sample material (Table A.4). Both the precision and accuracy of the subsample randomly chosen for subsample assessment (approximately 10% of samples that were subsampled; n = 1) met the laboratory DQO (<20%; Table A.5). Thus, the precision and accuracy for subsampling of the benthic invertebrate community samples was considered excellent.

A4.2 Subsampling Accuracy and Accuracy

To measure the effectiveness of the sorters, at least 10% of samples were selected at random for resorting analysis by a different sorter (n = 2). Sorting efficiency (i.e., percent recovery) of benthic invertebrate samples was excellent, achieving an average of 97.0% for the samples evaluated (Table A.6). As recovery in quality control samples was above the laboratory's DQO (95%), organism sorting efficiency was considered excellent.

A4.3 Data Quality Statement

Benthic community data collected for the 2021 Koocanusa Reservoir Monitoring Program and analyzed by ZEAS Inc. were of good quality as characterized by excellent sorting efficiency and subsampling precision and accuracy. Therefore, the associated data can be used with a high level of confidence in the derivation of conclusions.

A5 TISSUE CHEMISTRY

A5.1 Laboratory Reporting Limits

Analytical reports of benthic invertebrate, fish, and zooplankton tissue metal concentrations from TrichAnalytics (see laboratory reports in Appendix G) were examined to provide an inventory of analyte results below the LRL and to compare the LRLs for these analytes to available benchmarks (Table A.7). A total of 18 analytes were below detection in fish tissue samples, and mercury was below detection in four out of 11 zooplankton tissue samples (36.4%; Table A.7). However, the sole focus of interpretation of benthic invertebrate, fish, and zooplankton tissue chemistry results for the 2021 Koocanusa Reservoir Monitoring Program was selenium. Selenium was detectable (i.e., above the LRL) in all benthic invertebrate, fish, and zooplankton tissue samples, except for in one fish tissue sample. All benthic invertebrate, fish, and zooplankton LRLs were lower than the applicable selenium guidelines. Overall, the detectability of selenium (i.e., all but one sample were above the LRL) indicates that the achieved LRLs were suitable for the study.

A5.2 Data Accuracy and Precision

Data accuracy and precision were evaluated based on the analysis of 52 CRM samples (see laboratory reports in Appendix G). Of the 1,560 CRM results, 13 did not meet the laboratory DQO for precision, and five did not meet the laboratory DQO for accuracy. As these results only represent 0.83 of all precision results, 0.32% of accuracy results, and do not include any results for selenium, laboratory accuracy and precision as determined by CRM analyses was considered adequate.

Laboratory precision was also evaluated by duplicate analysis of 43 benthic invertebrate tissue samples (Appendix I). As all of the 1,290 duplicate results met the laboratory DQO, laboratory accuracy and precision were considered excellent.

Field precision was evaluated by ten fish tissue duplicate samples and one zooplankton tissue duplicate sample (Tables A.8 and A.9). Fish tissue field duplicate samples did not meet the DQO for most analytes (Table A.8). The primary analyte of concern for fish tissue was selenium, and four out of the 10 field duplicate samples did not meet the DQO (40%; Table A.8). Fish tissue samples can be highly variable due to heterogeneity of the samples and this will be considered when analyzing the data. Only three RPDs for zooplankton tissue duplicate samples did not meet the DQO (10%; Table A.9). As the primary analyte of concern for zooplankton tissue was selenium, and the RPD between zooplankton tissue duplicates for

selenium were less than 30%, zooplankton tissue field precision was considered adequate. Field duplicate samples were not collected for benthic invertebrate tissue.

A5.3 Data Quality Statement

Benthic invertebrate, fish, and zooplankton tissue data collected for the 2021 Koocanusa Reservoir Monitoring Program were of good quality as characterized by appropriate LRLs and excellent laboratory precision and accuracy. Selenium field duplicate results for fish tissue did not meet the DQO in 40% of field duplicate samples, suggesting a relatively low level of field sampling precision that will be considered during interpretation. However, overall the associated data can be used with a good level of confidence in the derivation of conclusions for this study.

A6 FISH AGING

Analytical reports of fish age estimates from AAE Tech Services Inc. (see laboratory reports in Appendix F) were examined to evaluate data accuracy. To determine the accuracy of redside shiners, peamouth chub, and slimy sculpin, approximately 25% of aging structures that were analyzed by AAE Technical Service were re-processed by a second analyst (n = 94). The original and second analyst assigned a confidence index to each age estimate and check. Original and re-assessed age estimates agreed, except for four samples. Age estimates differed in one redside shiner and in three peamouth chub by one to two years. As these disagreements only occurred in 4.3% of age structures that were re-processed, overall accuracy achieved by the laboratory in this study was considered good.

A7 ZOOPLANKTON COMMUNITY COMPOSITION

A7.1 Field Sampling Precision

One duplicate field zooplankton community sample was analyzed by Salki to assess the precision of zooplankton identification and enumeration by the laboratory (sample Table A.10). Out of the 25 RPDs that were calculated for abundance within a Lowest Practical Level (LPL; species or genus), nine RPDs were greater than 30% (36.0% of RPDs; Table A.10). Five of the RPDs greater than 30% resulted from no individuals in an LPL being identified in one of the duplicate samples and a low number of individuals in that LPL being identified in the other duplicate sample. This indicates that some of these RPDs may due to rare species and limitations associated with subsampling rather than inconsistencies in identification. Of the five RPDs that were calculated for abundance between major zooplankton groups (e.g., calanoida, cyclopoida, etc.), four were greater than 30%, indicating significant discrepancies between the two duplicate samples. However, notes on sample condition provided by the head taxonomist indicated that many of the specimens within the samples were damaged or deteriorated. The taxonomist indicated that their condition was not caused by inadequate preservation, but rather from the hot summer temperatures experienced in August 2021. It is expected that the condition of the samples was also a factor in the discrepancies observed between the two samples, and also highlights the heterogeneity of samples collected using these methods.

A8 DATA QUALITY REVIEW SUMMARY

Overall, the quality of the data collected for this project was considered acceptable for the derivation of conclusions associated with the objectives of the 2021 Koocanusa Reservoir Monitoring Program. Field sampling precision was relatively low for fish tissue samples, as 40% of RPDs for the target analyte, selenium, did not meet the DQO of 30% (Table A.8). The precision of zooplankton identification was also relatively low, but may stem from conditions of the samples rather than inconsistencies in identification. All of the above will be taken into consideration during data interpretation and, overall, the quality of the data collected for the 2021 Koocanusa Reservoir Monitoring Program was considered acceptable.

A9 REFERENCES

BCMOECCS (British Columbia Ministry of Environment and Climate Change Strategy). 2021. British Columbia Working Water Quality Guidelines: Aquatic Life, Wildlife and Agriculture. Water Quality Guideline Series, WQG-08. Water Protection and Sustainability Branch, Province of British Columbia, Victoria, B.C.

Teck (Teck Coal Limited). 2014. Elk Valley Water Quality Plan. Submitted to the British Columbia Minister of Environment for approval on July 22, 2014.

Table A.1: Laboratory Data Quality Objectives for the Koocanusa Reservoir Monitoring Program, 2021

Quality Control Measure	Quality Control Sample Type	Study Component			
		Sediment Chemistry	Benthic Invertebrate Community	Zooplankton Community	Benthic Invertebrate, Fish, and Zooplankton Tissue Chemistry
		ALS	ZEAS Inc.	Salki	TrichAnalytics
Analytical Laboratory LRLs	Comparison of actual LRL versus target LRL	LRL for each parameter should be at least as low as applicable guidelines and benchmarks	-	-	LRL for each parameter should be at least as low as applicable guidelines and benchmarks
Blank Analysis	Field, Trip, or Laboratory Blank	Concentrations measured in blank samples should be < LRL	-	-	-
Laboratory Precision	Laboratory Duplicates	0.2 (pH) ≤5% to 25% RPD (particle size) ≤20% RPD (inorganic and total carbon, moisture) ≤30% RPD (all remaining analytes) ≤40% RPD (aluminum, barium, lead, mercury, molybdenum, potassium, silver, sodium, strontium, tin, titanium) ≤50% RPD (PAHs)	-	-	≤60% RPD (calcium and strontium) ≤40% RPD (all remaining analytes)
	Organism Sorting Efficiency	-	≥95%	-	-
	Organism Sub-Sampling Precision and Accuracy	-	≤20% difference between sub-samples; minimum of 5% of each sample must be analyzed	≤20% difference between sub-samples; minimum of 5% of each sample must be analyzed	-
Accuracy	Recovery of Certified Reference Material	0.15 mg/kg to 0.55 mg/kg (Se) 0.16 mg/kg to 0.36 mg/kg (Ag) 0.2 mg/kg to 4.2 mg/kg (Sn) 1 mg/kg to 2 mg/kg (W) 70% to 130% (all other metals) 7.7 to 8.3 pH units (pH) 50% to 130% (naphthalene) 80% to 120% (inorganic carbon, total carbon) 60% to 130% (all other PAHs) 0% to 26.5% (particle size)			60% to 140% (antimony, barium, boron, silver, tin, titanium) 90% to 110% (selenium) 70% to 130% (all remaining analytes)
	Laboratory Control Sample	0 to 26.5 (particle size) 60% to 130% (PAHs) 80% to 120% (inorganic carbon, total carbon) 7.4 to 8 (pH 1:2 soil:water)	-	-	-
	Taxonomic Accuracy	-	minimum 90% recovery	-	-

Notes: LRL = Laboratory Reporting Limit; "-" = not applicable; < = less than;≤ = less than or equal to; % = percent; RPD = Relative Percent Difference; PAHs = polycyclic aromatic hydrocarbons; mg/kg dw = milligrams per kilogram dry weight.

Table A.2: Laboratory Reporting Limit (LRL) Evaluation for Sediment Chemistry Analyses, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Units	BC WSQGs		Range of LRLs	No. LRLs > ISQG	No. LRLs > PEL	No. Sample Results < LRL
		ISQG	PEL				
Particle Size							
% Gravel (>2 mm)	%	-	-	1.0	-	-	16 (100%)
% Sand (2.00 mm - 1.00 mm)	%	-	-	1.0	-	-	16 (100%)
% Sand (1.00 mm - 0.50 mm)	%	-	-	1.0	-	-	16 (100%)
% Sand (0.50 mm - 0.25 mm)	%	-	-	1.0	-	-	16 (100%)
% Sand (0.25 mm - 0.125 mm)	%	-	-	1.0	-	-	16 (100%)
% Sand (0.125 mm - 0.063 mm)	%	-	-	1.0	-	-	9 (56.3%)
Organic / Inorganic Carbon							
Total Organic Carbon	%	-	-	0.95 to 1.1	-	-	2 (12.5%)
Metals							
Bismuth	mg/kg	-	-	0.2 to 0.5	-	-	11 (68.8%)
Boron	mg/kg	-	-	5 to 12.5	-	-	15 (93.8%)
Selenium	mg/kg	2.00	-	0.2 to 0.5	0	0	11 (68.8%)
Silver	mg/kg	0.500	-	0.1 to 0.25	0	0	15 (93.8%)
Sulphur	mg/kg	-	-	1000 to 2500	-	-	15 (93.8%)
Tin	mg/kg	-	-	2 to 5	-	-	14 (87.5%)
Tungsten	mg/kg	-	-	0.5 to 1.25	-	-	16 (100%)
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	0.00671	0.0889	0.005	0	0	15 (93.8%)
Acenaphthylene	mg/kg	0.00587	0.128	0.005	0	0	15 (93.8%)
Acridine	mg/kg	-	-	0.01	-	-	16 (100%)
Anthracene	mg/kg	0.0469	0.245	0.004	0	0	14 (87.5%)
Benzo(a)anthracene	mg/kg	-	-	0.01	-	-	14 (87.5%)
Benzo(a)pyrene	mg/kg	0.0319	0.782	0.01	0	0	16 (100%)
Benzo(b&j)fluoranthene	mg/kg	-	-	0.01	-	-	12 (75%)
Benzo(b+j+k)fluoranthene	mg/kg	-	-	0.015	-	-	15 (93.8%)
Benzo(g,h,i)perylene	mg/kg	0.170	0.320	0.01	0	0	11 (68.8%)
Benzo(k)fluoranthene	mg/kg	0.240	13.4	0.01	0	0	16 (100%)
Benzo(e)pyrene	mg/kg	-	-	0.01	-	-	16 (100%)
Chrysene	mg/kg	0.0571	0.862	0.01	0	0	11 (68.8%)
Dibenz(a,h)anthracene	mg/kg	0.00622	0.135	0.005	0	0	16 (100%)
Fluoranthene	mg/kg	0.111	2.36	0.01	0	0	11 (68.8%)
Fluorene	mg/kg	0.0212	0.144	0.01	0	0	16 (100%)
Indeno(1,2,3-c,d)pyrene	mg/kg	0.200	3.20	0.01	0	0	16 (100%)
1-Methylnaphthalene	mg/kg	-	-	0.05	-	-	16 (100%)
2-Methylnaphthalene	mg/kg	0.0202	0.201	0.01	0	0	11 (68.8%)
Naphthalene	mg/kg	0.0346	0.391	0.01	0	0	11 (68.8%)
Perylene	mg/kg	-	-	0.01	-	-	12 (75%)
Phenanthrene	mg/kg	0.0419	0.515	0.01	0	0	11 (68.8%)
Pyrene	mg/kg	0.0530	0.875	0.01	0	0	11 (68.8%)
Quinoline	mg/kg	-	-	0.05	-	-	16 (100%)
B(a)P Total Potency Equivalent	mg/kg	-	-	0.02	-	-	16 (100%)
IACR:Coarse	-	-	-	0.05	-	-	16 (100%)
IACR:Fine	-	-	-	0.05	-	-	16 (100%)
IACR (CCME)	-	-	-	0.15	-	-	12 (75%)

Notes: Only analytes with at least one result < Laboratory Reporting Limit (LRL) or LRL were above guidelines were displayed. The total number of samples in 2021 (n) was 16, which included one field duplicate sample. "-" = no applicable guideline exists, BC WSQGs = British Columbia Sediment Quality Guidelines (BCMOECCS 2021); ISQG = Interim Sediment Quality Guideline; PEL = Probable Effects Limit.

Table A.3: Field Duplicate Results for Sediment Chemistry Analyses, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Units	RG_SAND_SE-05_2021-08-26_1257	RG_RIVER_SE_2021-08-26_1257	RPD (%)
Physical Tests				
% Moisture	%	35.5	35.9	1.12
pH (1:2 soil:water)	pH	8.64	8.71	0.807
Particle Size				
% Gravel (>2 mm)	%	<1.0	<1.0	-
% Sand (2.00 mm - 1.00 mm)	%	<1.0	<1.0	-
% Sand (1.00 mm - 0.50 mm)	%	<1.0	<1.0	-
% Sand (0.50 mm - 0.25 mm)	%	<1.0	<1.0	-
% Sand (0.25 mm - 0.125 mm)	%	<1.0	<1.0	-
% Sand (0.125 mm - 0.063 mm)	%	7.30	8.40	14.0
% Silt (0.063 mm - 0.0312 mm)	%	21.8	18.9	14.3
% Silt (0.0312 mm - 0.004 mm)	%	54.0	54.3	0.554
% Clay (<4 µm)	%	16.6	17.9	7.54
Organic / Inorganic Carbon				
Total Organic Carbon	%	1.40	1.50	6.90
Metals				
Aluminum	mg/kg	12,100	12,000	0.830
Antimony	mg/kg	0.250	0.240	4.08
Arsenic	mg/kg	4.78	4.67	2.33
Barium	mg/kg	72.6	71.6	1.39
Beryllium	mg/kg	0.340	0.350	2.90
Bismuth	mg/kg	<0.20	<0.20	-
Boron	mg/kg	<5.0	<5.0	-
Cadmium	mg/kg	0.164	0.172	4.76
Calcium	mg/kg	108,000	108,000	0
Chromium	mg/kg	17.1	16.8	1.77
Cobalt	mg/kg	8.80	8.62	2.07
Copper	mg/kg	14.7	15.0	2.02
Iron	mg/kg	21,900	21,400	2.31
Lead	mg/kg	12.7	12.8	0.784
Lithium	mg/kg	23.7	23.1	2.56
Magnesium	mg/kg	23,800	23,000	3.42
Manganese	mg/kg	404	400	0.995
Mercury	mg/kg	0.0204	0.0214	4.78
Molybdenum	mg/kg	0.590	0.600	1.68
Nickel	mg/kg	19.3	19.0	1.57
Phosphorus	mg/kg	506	507	0.197
Potassium	mg/kg	710	660	7.30
Selenium	mg/kg	<0.20	<0.20	-
Silver	mg/kg	<0.10	<0.10	-
Sodium	mg/kg	76.0	71.0	6.80
Strontium	mg/kg	256	257	0.390
Sulphur	mg/kg	<1,000	<1,000	-
Thallium	mg/kg	0.0730	0.0720	1.38
Tin	mg/kg	<2.0	<2.0	-
Titanium	mg/kg	81.1	67.4	18.5
Tungsten	mg/kg	<0.50	<0.50	-
Uranium	mg/kg	0.602	0.621	3.11
Vanadium	mg/kg	12.5	12.1	3.25
Zinc	mg/kg	64.1	64.6	0.777
Zirconium	mg/kg	1.30	1.40	7.41
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	mg/kg	<0.0050	<0.0050	-
Acenaphthylene	mg/kg	<0.0050	<0.0050	-
Acridine	mg/kg	<0.010	<0.010	-
Anthracene	mg/kg	<0.0040	<0.0040	-
Benzo(a)anthracene	mg/kg	<0.010	<0.010	-
Benzo(a)pyrene	mg/kg	<0.010	<0.010	-
Benzo(b&j)fluoranthene	mg/kg	<0.010	<0.010	-
Benzo(b+j+k)fluoranthene	mg/kg	<0.015	<0.015	-
Benzo(e)pyrene	mg/kg	<0.010	<0.010	-
Benzo(g,h,i)perylene	mg/kg	<0.010	<0.010	-
Benzo(k)fluoranthene	mg/kg	<0.010	<0.010	-
Chrysene	mg/kg	<0.010	<0.010	-
Dibenz(a,h)anthracene	mg/kg	<0.0050	<0.0050	-
Fluoranthene	mg/kg	<0.010	<0.010	-
Fluorene	mg/kg	<0.010	<0.010	-
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.010	<0.010	-
1-Methylnaphthalene	mg/kg	<0.050	<0.050	-
2-Methylnaphthalene	mg/kg	<0.010	<0.010	-
Naphthalene	mg/kg	<0.010	<0.010	-
Perylene	mg/kg	<0.010	<0.010	-
Phenanthrene	mg/kg	<0.010	<0.010	-
Pyrene	mg/kg	<0.010	<0.010	-
Quinoline	mg/kg	<0.050	<0.050	-
d10-Acenaphthene	%	91.1	85.9	5.88
d12-Chrysene	%	85.0	81.3	4.45
d8-Naphthalene	%	85.4	83.7	2.01
Phenanthrene d10	%	88.8	84.9	4.49
B(a)P Total Potency Equivalent	mg/kg	<0.020	<0.020	-
IACR:Coarse	-	<0.050	<0.050	-
IACR:Fine	-	<0.050	<0.050	-
IACR (CCME)	-	<0.15	<0.15	-

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; LRL = Laboratory Reporting Limit. The RPD was calculated using < LRL results at the LRL if one result in a duplicate pair was below the LRL. The RPD was not calculated if both results were < LRL.

Table A.4: Percent of Sample Sorted and the Total Number of Invertebrates Recovered from the Sampled Fraction, Koocanusa Reservoir Monitoring Program, 2021

Sample ID	Fraction Sorted
RG_SAND-1	Whole
RG_SAND-2	Whole
RG_SAND-3	Whole
RG_SAND-4	Whole
RG_SAND-5	1/4
RG_T4-1	1/2
RG_T4-2	1/2
RG_T4-3	1/2
RG_T4-4	Whole
RG_T4-5	Whole
RG_TN-1	Whole
RG_TN-2	Whole
RG_TN-3	Whole
RG_TN-4	Whole
RG_TN-5	1/4

Table A.5: Benthic Invertebrate Community Sub-sampling Precision and Accuracy, Koocanusa Reservoir Monitoring Program, 2021

Station ID	Organisms in Subsample		Total	Precision Error		Accuracy Error	
	1	2		Min (%)	Max (%)	Min (%)	Max (%)
RG_T4-4	194	199	393	2.51	-	1.27	-

Table A.6: Benthic Invertebrate Community Sorting Efficiency, Koocanusa Reservoir Monitoring Program, 2021

Sample ID	Number of Organisms Recovered	Number of Organisms in	Sorting Efficiency (%)
RG_SAND-3	273	280	97.5%
RG_TN-3	164	170	96.5%
			97.0%

Table A.7: Laboratory Reporting Limit (LRL) Evaluation for Tissue Chemistry Analyses, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Units	BC WQG (Long-term[a])	Most Conservative EVWQP Level 1 Benchmarks Screening Value[b]	Range of LRLs	No. LRLs > Guideline	No. Fish Tissue Sample Results < LRL	No. Zooplankton Tissue Sample Results < LRL
Aluminum	mg/kg dw	-	-	0.052 to 0.296	-	11 (2.86%)	0
Antimony	mg/kg dw	-	-	0.005 to 0.008	-	277 (72.1%)	0
Arsenic	mg/kg dw	-	-	0.477 to 0.514	-	363 (94.5%)	0
Barium	mg/kg dw	-	-	0.001	-	1 (0.260%)	0
Boron	mg/kg dw	-	-	0.077 to 0.113	-	242 (63.0%)	0
Cadmium	mg/kg dw	-	-	0.036 to 0.067	-	287 (74.7%)	0
Chromium	mg/kg dw	-	-	0.27 to 1.9	-	1 (0.260%)	0
Lead	mg/kg dw	-	-	0.001 to 0.006	-	15 (3.91%)	0
Lithium	mg/kg dw	-	-	0.006 to 0.008	-	90 (23.4%)	0
Mercury	mg/kg dw	-	-	0.025 to 0.071	-	78 (20.3%)	4 (19.0%)
Molybdenum	mg/kg dw	-	-	0.001 to 0.014	-	169 (44.0%)	0
Nickel	mg/kg dw	-	-	0.001 to 0.07	-	26 (6.77%)	0
Selenium	mg/kg dw	4.0	11	0.209 to 0.439	0	1 (0.260%)	0
Silver	mg/kg dw	-	-	0.001	-	242 (63.0%)	0
Tin	mg/kg dw	-	-	0.03 to 0.043	-	18 (4.69%)	0
Titanium	mg/kg dw	-	-	0.001 to 0.61	-	1 (0.260%)	0
Uranium	mg/kg dw	-	-	0.001	-	225 (58.6%)	0
Vanadium	mg/kg dw	-	-	0.053 to 0.077	-	304 (79.2%)	0

Notes: "-" = no applicable guideline exists; LRL = Laboratory Reporting Limit; dw = dry weight. Only analytes with at least one sample results < LRL are displayed. All results for benthic invertebrate samples were above the LRL. In 2021, Minnow collected eight benthic invertebrate tissue samples, 395 fish tissue samples, and 11 zooplankton tissue samples, which include field duplicate samples.

[a] British Columbia Working Water Quality Guidelines for the protection of Aquatic Life (BCMOE 2021).

[b] Level 1 EVWQP benchmark for benthic invertebrates (Teck 2014).

Table A.8: Field Duplicate Results for Fish Tissue Chemistry Analyses, Koocanusa Monitoring Program, 2021

Parameter	RG_SC-RSC-01-O_20210625	RG_RIVER_RSC-01-O_20210625	RPD (%)	RG_RIVER_RSC-01-M_20210625	RG_SC-RSC-01-M_20210625	RPD (%)	RG_ER-RSC-03-O_20210622	RG_RIVER_RSC-03-O_20210622	RPD (%)	RG_ER-RSC-03-M_20210622	RG_RIVER_RSC-03-M_20210622	RPD (%)	RG_ER-RSC-05-O_20210622	RG_RIVER_RSC-05-O_20210622	RPD (%)
Aluminum	0.539	<0.296	58	<0.296	<0.296	-	2.0	0.391	135	4.7	<0.296	176	1.2	1.7	34
Antimony	<0.005	<0.005	-	<0.005	<0.005	-	<0.005	<0.005	-	0.007	<0.005	33	<0.005	<0.005	-
Arsenic	<0.495	<0.495	-	<0.495	<0.495	-	0.593	<0.495	18	<0.495	<0.495	-	<0.495	<0.495	-
Barium	0.804	0.834	4	0.112	0.440	119	1.4	3.9	94	1.0	0.353	96	1.8	1.4	25
Boron	<0.108	<0.108	-	<0.108	<0.108	-	0.145	<0.108	29	0.289	<0.108	91	<0.108	<0.108	-
Cadmium	0.347	<0.045	154	<0.045	0.057	27	0.226	<0.045	134	0.066	<0.045	38	0.050	0.088	55
Calcium	557	404	32	1,093	1,103	1	559	1,360	83	1,334	1,037	25	401	544	30
Chromium	1.7	1.1	43	1.0	1.3	26	1.6	1.2	29	1.6	1.2	29	1.4	1.3	7
Cobalt	0.080	0.040	67	0.010	0.010	0	0.064	0.092	36	0.020	0.015	29	0.040	0.042	5
Copper	5.3	3.2	49	0.692	0.993	36	3.9	4.8	21	1.4	0.949	38	3.8	3.8	0
Iron	91	36	87	9.8	13	28	73	92	23	22	10	75	61	88	36
Lead	0.010	0.004	86	0.002	0.004	67	0.008	0.008	0	0.035	0.006	141	0.025	0.039	44
Lithium	0.009	<0.008	12	<0.008	<0.008	-	0.014	0.033	81	0.014	<0.008	140	0.009	0.016	56
Magnesium	1,085	760	35	918	1,062	15	765	1,124	38	1,360	1,106	21	776	908	16
Manganese	3.8	2.4	45	0.312	0.493	45	4.6	9.1	66	0.978	0.472	70	4.8	5.7	17
Mercury	0.041	<0.036	13	0.390	0.460	16	0.044	0.040	10	0.465	0.605	26	<0.036	<0.036	-
Molybdenum	0.103	0.048	73	<0.001	<0.001	-	0.045	0.097	73	0.011	<0.001	167	0.045	0.060	29
Nickel	0.048	<0.041	16	0.058	0.057	2	0.341	0.065	136	0.160	0.145	10	0.076	0.101	28
Phosphorus	17,275	10,214	51	7,717	13,457	54	14,152	13,430	5	13,260	10,325	25	13,617	15,340	12
Potassium	10,037	6,835	38	17,661	31,564	56	9,022	12,612	33	22,840	21,950	4	9,487	11,740	21
Selenium	13	9.0	36	2.5	2.8	11	8.1	5.8	33	3.2	2.0	46	15	16	6
Silver	0.022	0.014	44	<0.001	<0.001	-	0.014	0.014	0	<0.001	<0.001	-	0.014	0.014	0
Sodium	1,554	971	46	1,078	1,456	30	1,392	3,312	82	1,323	1,068	21	1,086	1,391	25
Strontium	0.373	0.324	14	0.416	0.304	31	0.540	0.764	34	0.540	0.336	47	0.304	0.434	35
Thallium	0.013	0.006	74	0.007	0.011	44	0.031	0.021	38	0.031	0.012	88	0.020	0.017	16
Tin	0.400	0.357	11	<0.043	0.054	26	0.291	0.100	98	0.274	<0.043	146	0.105	0.412	119
Titanium	1.2	0.866	32	1.3	1.5	14	1.4	1.2	15	1.5	1.3	14	1.4	1.7	19
Uranium	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-
Vanadium	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
Zinc	102	73	33	12	34	96	91	144	45	46	25	59	84	107	24

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; If one result in a duplicate pair was below the Laboratory Reporting Limit (LRL) it was calculated at the LRL. The RPD was not calculated if both results were < LRL.

Table A.8: Field Duplicate Results for Fish Tissue Chemistry Analyses, Koocanusa Monitoring Program, 2021

Parameter	RG_ER-RSC-05-M_20210622	RG_RIVER_RSC-05-M_20210622	RPD (%)	RG_ER-PCC-09-O_20210623	RG_RIVER_PCC-09-O_20210623	RPD (%)	RG_ER-PCC-09-M_20210623	RG_RIVER_PCC-09-M_20210623	RPD (%)	RG_SC-PCC-10-O_20210625	RG_RIVER_PCC-10-O_20210625	RPD (%)	RG_SC-PCC-10-M_20210625	RG_RIVER_PCC-10-M_20210625	RPD (%)
Aluminum	9.7	5.7	52	<0.296	0.468	45	1.2	1.3	8	0.735	0.382	63	6.2	2.6	82
Antimony	0.036	0.007	135	<0.005	<0.005	-	0.005	<0.005	0	<0.005	<0.005	-	<0.005	<0.005	-
Arsenic	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-
Barium	1.6	1.8	12	1.7	5.1	100	2.9	2.1	32	1.1	1.1	0	3.1	2.8	10
Boron	0.406	0.226	57	<0.108	<0.108	-	<0.108	<0.108	-	<0.108	<0.108	-	0.291	0.114	87
Cadmium	0.116	<0.045	88	<0.045	0.046	2	<0.045	<0.045	-	<0.045	<0.045	-	<0.045	<0.045	-
Calcium	1,647	1,108	39	258	351	31	752	1,273	51	416	319	26	1,071	761	34
Chromium	2.4	1.1	74	1.4	1.2	15	1.2	1.2	0	1.5	1.1	31	1.4	1.1	24
Cobalt	0.067	0.027	85	0.040	0.052	26	0.023	0.020	14	0.055	0.040	32	0.023	0.022	4
Copper	1.8	1.8	0	2.3	2.5	8	2.0	1.2	50	4.0	3.0	29	1.3	1.6	21
Iron	37	24	43	40	53	28	33	20	49	89	49	58	21	23	9
Lead	0.265	0.055	131	0.005	0.008	46	0.010	0.025	86	0.009	0.004	77	0.033	0.024	32
Lithium	0.044	0.022	67	0.046	0.085	60	0.057	0.048	17	0.008	<0.008	0	0.012	<0.008	40
Magnesium	2,151	1,470	38	722	929	25	1,608	1,695	5	984	735	29	1,433	1,259	13
Manganese	1.3	0.605	73	3.6	4.1	13	0.646	0.585	10	9.9	7.8	24	0.801	0.517	43
Mercury	0.667	0.404	49	0.039	<0.036	8.0	0.867	0.947	9	0.051	<0.036	34	1.1	1.1	0
Molybdenum	0.021	0.012	55	0.064	0.077	18	<0.001	<0.001	-	0.079	0.070	12	0.015	0.013	14
Nickel	0.457	0.232	65	<0.041	0.081	66	0.091	0.130	35	<0.041	<0.041	-	0.180	0.147	20
Phosphorus	18,845	10,840	54	10,474	16,580	45	11,937	12,240	3	10,447	11,373	8	10,767	10,215	5
Potassium	32,491	20,805	44	6,507	13,356	69	21,328	23,490	10	5,299	9,411	56	19,839	20,254	2
Selenium	4.5	2.8	47	12	15	22	5.5	4.5	20	8.1	7.1	13	1.8	1.4	25
Silver	0.005	<0.001	133	0.021	0.019	10	<0.001	<0.001	-	0.021	0.019	10	<0.001	<0.001	-
Sodium	1,947	1,056	59	1,470	3,553	83	1,515	1,423	6	1,082	1,704	45	1,242	1,413	13
Strontium	0.898	0.634	34	0.182	0.255	33	0.272	0.718	90	0.277	0.235	16	0.469	0.394	17
Thallium	0.036	0.018	67	0.005	0.010	67	0.022	0.014	44	0.004	0.004	0	0.006	0.010	50
Tin	0.241	0.200	19	0.254	0.344	30	0.161	0.149	8	0.273	0.149	59	0.109	0.115	5
Titanium	3.0	1.9	45	1.3	1.5	14	2.5	2.8	11	2.6	1.4	60	10	4.2	82
Uranium	0.003	<0.001	100	0.002	0.002	0	<0.001	<0.001	-	0.003	0.002	40	<0.001	<0.001	-
Vanadium	0.072	<0.070	3	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
Zinc	47	47	0	44	92	71	42	29	37	83	72	14	45	45	0

Indicates RPD exceeded 30%

Notes: RPD = relative percent difference; "-"= no data/not calculated; If one result in a duplicate pair was below the Laboratory Reporting Limit (LRL) it was calculated at the LRL. The RPD was not calculated if both results were < LRL.

Table A.9: Field Duplicate Results for Zooplankton Tissue Chemistry Analyses, Koocanusa Monitoring Program, 2021

Parameter	RG_TN-4_ZOOT_2021-08-24	RG_RIVER _ZOOT_2021-08-24	RPD (%)
Aluminum	1,705	2,177	24.3
Antimony	0.0710	0.0880	21.4
Arsenic	2.20	2.20	0.0
Barium	119	148	21.7
Boron	1.70	2.50	38.1
Cadmium	0.340	0.573	51.0
Calcium	22,519	28,650	24.0
Chromium	87.0	67.0	26.0
Cobalt	0.976	1.10	11.9
Copper	8.30	8.40	1.2
Iron	1,785	1,686	5.7
Lead	0.719	0.747	3.8
Lithium	1.00	1.30	26.1
Magnesium	2,710	3,349	21.1
Manganese	41.0	43.0	4.8
Mercury	0.0820	0.0820	0.0
Molybdenum	0.740	0.674	9.3
Nickel	92.0	79.0	15.2
Phosphorus	9,222	9,737	5.4
Potassium	3,930	3,185	20.9
Selenium	2.70	2.60	3.8
Silver	0.0290	0.0230	23.1
Sodium	1,112	1,059	4.9
Strontium	70.0	84.0	18.2
Thallium	0.0190	0.0220	14.6
Tin	3.70	6.50	54.9
Titanium	109	139	24.2
Uranium	0.282	0.380	29.6
Vanadium	1.70	1.90	11.1
Zinc	70.0	67.0	4.4

Indicates RPD exceeded 30%

Table A.10: Field Duplicate Results for Zooplankton Abundance (Individuals/L), Koocanusa Reservoir Monitoring Program, 2021

Taxa Group	Species	Zooplankton Abundance (Individuals/L)		RPD (%)
		RG_T4_ZOOP-04_2021-08-25	RG_T4_ZOOP-04X_2021-08-25	
Calanoida	Total E. nevadensis	0.056	0.081	37.6
	Total D. tyrrwlli	0.029	0	200
	Total D. sicilis	0	0	0
	Total D. pallidus	0.13	0.13	0
	Calanoid nauplius	0.22	0.43	66.7
	Total	**0.43**	**0.64**	**39.9**
Cylopoida	C.vernalis (?) immature	0.054	0	200
	Total C. scutifer	0	0	0
	Total C. b. thomasi	0.76	0.65	15.4
	Cyclopoid nauplius	0.43	0.22	66.7
	Total	**1.2**	**0.87**	**35.9**
Cladocera	Holopedium gibberum Zaddach	0	0	0
	Diaphanosoma leuchtenbergianum Fisher	0.043	0.057	28.6
	Daphnia schoedleri Sars	0	0	0
	Total D. g. mendotae	0.10	0.10	2.7
	Total D. longiremis	0	0	0
	Total D. retrocurva	0	0.050	200
	Total B. longirostris	0	0.054	200
	Chydorus sps	0	0	0
	Total	**0.15**	**0.27**	**58.5**
Crustacea	**Total**	**1.8**	**1.8**	**2.5**
Rotifera	Kellicottia sps	0.49	0.76	43.5
	Keratella sps	0	0	0
	Polyarthra sps	0.49	0.49	0
	Conochilus sps	0.11	0	200
	Gastropus sps	0	0	0
	Brachionus sps	0	0	0
	Asplanchna sps	0	0	0
	Monostyla sps	0	0	0
	Total	**1.1**	**1.2**	**14.0**
Total Zooplankton Abundance		**4.7**	**4.8**	**1.5**

Indicates RPD exceeded 30%.

Notes: RPD = relative percent difference.

Teck Coal Ltd.
ATTN: Allie Ferguson
421 Pine Avenue
Sparwood BC V0B 2G0

Date Received: 31-AUG-21
Report Date: 16-SEP-21 12:01 (MT)
Version: FINAL

Client Phone: 250-425-8202

Certificate of Analysis

Lab Work Order #: L2633922

Project P.O. #: VPO00750546
Job Reference: REGIONAL EFFECTS PROGRAM
C of C Numbers: REGIONAL Koocanusa
Legal Site Desc:

Lyudmyla Shvets, B.Sc.
Account Manager

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-1	L2633922-2	L2633922-3	L2633922-4	L2633922-5
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21
	Sampled Time	10:30	12:15	14:00	13:00	14:15
	Client ID	RG_TN_1_SE_2021-08-26_1030	RG_TN_2_SE_2021-08-26_1215	RG_TN_3_SE_2021-08-26_1400	RG_TN_4_SE_2021-08-26_1300	RG_TN_5_SE_2021-08-26_1415
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	41.4	41.0	41.6	40.3	41.8
	pH (1:2 soil:water) (pH)	8.50	8.54	8.60	8.55	8.58
Particle Size	% Gravel (>2mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (1.00mm - 0.50mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.50mm - 0.25mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.25mm - 0.125mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.125mm - 0.063mm) (%)	1.6	3.7	<1.0	<1.0	1.3
	% Silt (0.063mm - 0.0312mm) (%)	15.4	17.1	15.4	16.8	18.0
	% Silt (0.0312mm - 0.004mm) (%)	61.7	59.4	61.6	61.5	61.0
	% Clay (<4um) (%)	21.0	19.5	22.1	21.0	19.6
	Texture	Silt	Silt	Silt	Silt	Silt
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.2	1.2	1.2	1.3	1.2
Metals	Aluminum (Al) (mg/kg)	12800	12600	12800	12600	13600
	Antimony (Sb) (mg/kg)	0.26	0.23	0.23	0.23	0.24
	Arsenic (As) (mg/kg)	5.13	4.75	4.78	4.68	5.10
	Barium (Ba) (mg/kg)	79.0	74.1	77.2	74.3	81.2
	Beryllium (Be) (mg/kg)	0.36	0.35	0.35	0.34	0.37
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.176	0.167	0.175	0.172	0.185
	Calcium (Ca) (mg/kg)	113000	113000	113000	120000	129000
	Chromium (Cr) (mg/kg)	17.7	17.4	17.2	17.3	18.8
	Cobalt (Co) (mg/kg)	8.95	8.66	8.68	8.66	9.44
	Copper (Cu) (mg/kg)	14.5	14.0	13.8	14.0	15.3
	Iron (Fe) (mg/kg)	22400	21800	21800	21900	23800
	Lead (Pb) (mg/kg)	12.6	12.6	12.1	12.2	13.2
	Lithium (Li) (mg/kg)	25.4	23.3	23.0	24.1	26.3
	Magnesium (Mg) (mg/kg)	23000	23400	22600	23000	25500
	Manganese (Mn) (mg/kg)	490	437	433	432	502
	Mercury (Hg) (mg/kg)	0.0304	0.0307	0.0221	0.0232	0.0221
	Molybdenum (Mo) (mg/kg)	0.59	0.59	0.57	0.59	0.63
	Nickel (Ni) (mg/kg)	19.5	19.0	19.2	19.1	20.9
	Phosphorus (P) (mg/kg)	458	498	443	466	541
	Potassium (K) (mg/kg)	790	790	760	780	740
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-6	L2633922-7	L2633922-8	L2633922-9	L2633922-10
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	24-AUG-21	24-AUG-21	24-AUG-21	25-AUG-21	25-AUG-21
	Sampled Time	11:00	13:40	14:30	10:27	12:30
	Client ID	RG_T4_1_SE_2021-08-24_1100	RG_T4_2_SE_2021-08-24_1340	RG_T4_3_SE_2021-08-24_1430	RG_T4_4_SE_2021-08-25_1027	RG_T4_5_SE_2021-08-25_1200
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	46.5	46.5	45.4	42.1	42.2
	pH (1:2 soil:water) (pH)	8.57	8.68	8.54	8.63	8.72
Particle Size	% Gravel (>2mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (1.00mm - 0.50mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.50mm - 0.25mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.25mm - 0.125mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.125mm - 0.063mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Silt (0.063mm - 0.0312mm) (%)	7.1	4.2	6.7	5.7	4.5
	% Silt (0.0312mm - 0.004mm) (%)	58.2	57.1	60.3	60.1	61.4
	% Clay (<4um) (%)	34.6	38.4	32.4	33.7	34.0
	Texture	Silt loam	Silt loam	Silt loam	Silt loam	Silt loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.34	1.28	1.35	1.30	1.13
Metals	Aluminum (Al) (mg/kg)	33900	34600	12200	12300	12700
	Antimony (Sb) (mg/kg)	0.97	1.05	0.37	0.36	0.35
	Arsenic (As) (mg/kg)	16.6	19.1	6.22	6.17	6.09
	Barium (Ba) (mg/kg)	428	463	157	157	151
	Beryllium (Be) (mg/kg)	1.36	1.44	0.50	0.48	0.48
	Bismuth (Bi) (mg/kg)	0.53	0.58	0.20	0.20	0.20
	Boron (B) (mg/kg)	<13	12.8	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	1.25	1.40	0.462	0.461	0.424
	Calcium (Ca) (mg/kg)	244000	249000	96000	99500	105000
	Chromium (Cr) (mg/kg)	45.5	47.1	17.2	17.1	17.5
	Cobalt (Co) (mg/kg)	21.7	23.4	8.48	8.47	8.79
	Copper (Cu) (mg/kg)	38.9	41.7	15.6	15.0	15.2
	Iron (Fe) (mg/kg)	53500	56200	21000	21000	21600
	Lead (Pb) (mg/kg)	32.2	33.9	12.4	12.0	12.5
	Lithium (Li) (mg/kg)	57.2	57.9	21.8	21.0	22.0
	Magnesium (Mg) (mg/kg)	50600	50600	20200	20300	20600
	Manganese (Mn) (mg/kg)	1630	1930	618	625	604
	Mercury (Hg) (mg/kg)	0.0337	0.0364	0.0353	0.0330	0.0310
	Molybdenum (Mo) (mg/kg)	2.23	2.41	0.86	0.89	0.86
	Nickel (Ni) (mg/kg)	51.3	53.6	20.2	20.2	20.3
	Phosphorus (P) (mg/kg)	1630	1800	639	632	599
	Potassium (K) (mg/kg)	3810	4280	1220	1220	1150
	Selenium (Se) (mg/kg)	2.04	2.28	0.74	0.72	0.58
	Silver (Ag) (mg/kg)	<0.25	0.26	<0.10	<0.10	<0.10

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2633922-11 SEDIMENT 21-AUG-21 12:57 RG_RIVER_SE_2021-08-26_1257	L2633922-12 SEDIMENT 25-AUG-21 13:51 RG_SAND_1_SE_2021-08-25_1351	L2633922-13 SEDIMENT 25-AUG-21 15:13 RG_SAND_2_SE_2021-08-25_1513	L2633922-14 SEDIMENT 26-AUG-21 09:55 RG_SAND_3_SE_2021-08-26_0955	L2633922-15 SEDIMENT 22-AUG-21 11:20 RG_SAND_4_SE_2021-08-26_1120
SOIL						
Physical Tests	Moisture (%)	35.9	37.7	32.3	36.0	39.2
	pH (1:2 soil:water) (pH)	8.71	8.82	8.76	8.72	8.68
Particle Size	% Gravel (>2mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (2.00mm - 1.00mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (1.00mm - 0.50mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.50mm - 0.25mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.25mm - 0.125mm) (%)	<1.0	<1.0	<1.0	<1.0	<1.0
	% Sand (0.125mm - 0.063mm) (%)	8.4	<1.0	3.9	3.7	<1.0
	% Silt (0.063mm - 0.0312mm) (%)	18.9	6.1	18.1	17.3	7.7
	% Silt (0.0312mm - 0.004mm) (%)	54.3	64.8	57.1	58.3	64.8
	% Clay (<4um) (%)	17.9	29.0	20.7	20.5	27.0
	Texture	Silt	Silt loam	Silt loam	Silt	Silt loam
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.5	<1.0	1.20	1.36	<0.99
Metals	Aluminum (Al) (mg/kg)	12000	12600	12000	11400	12600
	Antimony (Sb) (mg/kg)	0.24	0.24	0.31	0.33	0.26
	Arsenic (As) (mg/kg)	4.67	4.57	4.87	4.97	4.63
	Barium (Ba) (mg/kg)	71.6	82.3	79.8	79.3	80.8
	Beryllium (Be) (mg/kg)	0.35	0.35	0.38	0.37	0.35
	Bismuth (Bi) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Boron (B) (mg/kg)	<5.0	<5.0	<5.0	<5.0	<5.0
	Cadmium (Cd) (mg/kg)	0.172	0.160	0.177	0.193	0.162
	Calcium (Ca) (mg/kg)	108000	120000	106000	100000	116000
	Chromium (Cr) (mg/kg)	16.8	16.8	16.3	16.1	17.0
	Cobalt (Co) (mg/kg)	8.62	8.53	8.37	8.39	8.69
	Copper (Cu) (mg/kg)	15.0	13.6	14.0	14.8	13.7
	Iron (Fe) (mg/kg)	21400	21600	21000	20500	21700
	Lead (Pb) (mg/kg)	12.8	11.8	12.0	12.4	11.4
	Lithium (Li) (mg/kg)	23.1	23.4	21.7	20.8	23.2
	Magnesium (Mg) (mg/kg)	23000	22100	22400	22700	22500
	Manganese (Mn) (mg/kg)	400	426	429	419	488
	Mercury (Hg) (mg/kg)	0.0214	0.0185	0.0255	0.0279	0.0212
	Molybdenum (Mo) (mg/kg)	0.60	0.59	0.56	0.53	0.61
	Nickel (Ni) (mg/kg)	19.0	19.2	18.7	18.6	19.3
	Phosphorus (P) (mg/kg)	507	414	480	527	443
	Potassium (K) (mg/kg)	660	920	920	840	830
	Selenium (Se) (mg/kg)	<0.20	<0.20	<0.20	<0.20	<0.20
	Silver (Ag) (mg/kg)	<0.10	<0.10	<0.10	<0.10	<0.10

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-16				
	Description	SEDIMENT				
	Sampled Date	26-AUG-21				
	Sampled Time	12:57				
	Client ID	RG_SAND_5_SE_ 2021-08-26_1257				
Grouping	**Analyte**					
SOIL						
Physical Tests	Moisture (%)	35.5				
	pH (1:2 soil:water) (pH)	8.64				
Particle Size	% Gravel (>2mm) (%)	<1.0				
	% Sand (2.00mm - 1.00mm) (%)	<1.0				
	% Sand (1.00mm - 0.50mm) (%)	<1.0				
	% Sand (0.50mm - 0.25mm) (%)	<1.0				
	% Sand (0.25mm - 0.125mm) (%)	<1.0				
	% Sand (0.125mm - 0.063mm) (%)	7.3				
	% Silt (0.063mm - 0.0312mm) (%)	21.8				
	% Silt (0.0312mm - 0.004mm) (%)	54.0				
	% Clay (<4um) (%)	16.6				
	Texture	Silt				
Organic / Inorganic Carbon	Total Organic Carbon (%)	1.4				
Metals	Aluminum (Al) (mg/kg)	12100				
	Antimony (Sb) (mg/kg)	0.25				
	Arsenic (As) (mg/kg)	4.78				
	Barium (Ba) (mg/kg)	72.6				
	Beryllium (Be) (mg/kg)	0.34				
	Bismuth (Bi) (mg/kg)	<0.20				
	Boron (B) (mg/kg)	<5.0				
	Cadmium (Cd) (mg/kg)	0.164				
	Calcium (Ca) (mg/kg)	108000				
	Chromium (Cr) (mg/kg)	17.1				
	Cobalt (Co) (mg/kg)	8.80				
	Copper (Cu) (mg/kg)	14.7				
	Iron (Fe) (mg/kg)	21900				
	Lead (Pb) (mg/kg)	12.7				
	Lithium (Li) (mg/kg)	23.7				
	Magnesium (Mg) (mg/kg)	23800				
	Manganese (Mn) (mg/kg)	404				
	Mercury (Hg) (mg/kg)	0.0204				
	Molybdenum (Mo) (mg/kg)	0.59				
	Nickel (Ni) (mg/kg)	19.3				
	Phosphorus (P) (mg/kg)	506				
	Potassium (K) (mg/kg)	710				
	Selenium (Se) (mg/kg)	<0.20				
	Silver (Ag) (mg/kg)	<0.10				

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-1	L2633922-2	L2633922-3	L2633922-4	L2633922-5
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21
	Sampled Time	10:30	12:15	14:00	13:00	14:15
	Client ID	RG_TN_1_SE_2021-08-26_1030	RG_TN_2_SE_2021-08-26_1215	RG_TN_3_SE_2021-08-26_1400	RG_TN_4_SE_2021-08-26_1300	RG_TN_5_SE_2021-08-26_1415
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	81	80	76	108	80
	Strontium (Sr) (mg/kg)	276	270	271	284	306
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.073	0.076	0.073	0.073	0.075
	Tin (Sn) (mg/kg)	<2.0	<2.0	3.7	<2.0	<2.0
	Titanium (Ti) (mg/kg)	72.3	86.7	65.4	82.8	71.7
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	0.582	0.598	0.576	0.594	0.627
	Vanadium (V) (mg/kg)	12.8	12.7	12.3	12.3	13.3
	Zinc (Zn) (mg/kg)	64.7	65.7	64.0	63.0	70.3
	Zirconium (Zr) (mg/kg)	1.4	1.3	1.3	1.5	1.6
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acridine (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(a)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b&j)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.015	<0.015	<0.015	<0.015	<0.015
	Benzo(e)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(g,h,i)perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Dibenz(a,h)anthracene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Fluorene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	2-Methylnaphthalene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Naphthalene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	89.1	93.9	87.0	83.8	93.9
	Surrogate: d12-Chrysene (%)	86.3	91.8	89.3	83.5	91.1

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	Sample ID / Description / Sampled Date / Sampled Time / Client ID				
		L2633922-6 SEDIMENT 24-AUG-21 11:00 RG_T4_1_SE_2021-08-24_1100	L2633922-7 SEDIMENT 24-AUG-21 13:40 RG_T4_2_SE_2021-08-24_1340	L2633922-8 SEDIMENT 24-AUG-21 14:30 RG_T4_3_SE_2021-08-24_1430	L2633922-9 SEDIMENT 25-AUG-21 10:27 RG_T4_4_SE_2021-08-25_1027	L2633922-10 SEDIMENT 25-AUG-21 12:30 RG_T4_5_SE_2021-08-25_1200
SOIL						
Metals	Sodium (Na) (mg/kg)	250	289	92	91	88
	Strontium (Sr) (mg/kg)	480	483	196	208	211
	Sulfur (S) (mg/kg)	<2500	1400	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.38	0.408	0.135	0.129	0.121
	Tin (Sn) (mg/kg)	<5.0	4.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	137	127	34.4	39.7	38.6
	Tungsten (W) (mg/kg)	<1.3	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	1.70	1.74	0.640	0.625	0.621
	Vanadium (V) (mg/kg)	50.4	53.8	17.9	17.6	16.8
	Zinc (Zn) (mg/kg)	193	207	74.3	73.2	73.9
	Zirconium (Zr) (mg/kg)	2.9	3.0	1.1	1.1	1.0
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Acridine (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Anthracene (mg/kg)	<0.0040	<0.0040	0.0053	<0.0040	<0.0040
	Benz(a)anthracene (mg/kg)	<0.010	0.010	0.012	<0.010	<0.010
	Benzo(a)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b&j)fluoranthene (mg/kg)	0.012	0.015	0.014	0.013	<0.010
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.015	0.015	<0.015	<0.015	<0.015
	Benzo(e)pyrene (mg/kg)	0.014	0.013	0.014	0.011	0.010
	Benzo(g,h,i)perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	0.025	0.027	0.026	0.021	0.019
	Dibenz(a,h)anthracene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene (mg/kg)	0.016	0.020	0.017	0.013	0.014
	Fluorene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	2-Methylnaphthalene (mg/kg)	0.044	0.044	0.044	0.039	0.033
	Naphthalene (mg/kg)	0.019	0.018	0.017	0.015	0.016
	Perylene (mg/kg)	0.015	0.012	0.013	0.011	<0.010
	Phenanthrene (mg/kg)	0.049	0.052	0.052	0.046	0.039
	Pyrene (mg/kg)	0.014	0.017	0.018	0.013	0.013
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	93.1	89.4	92.0	93.1	92.1
	Surrogate: d12-Chrysene (%)	92.3	90.3	93.9	89.8	87.5

ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping	Analyte	L2633922-11 SEDIMENT 21-AUG-21 12:57 RG_RIVER_SE_2021-08-26_1257	L2633922-12 SEDIMENT 25-AUG-21 13:51 RG_SAND_1_SE_2021-08-25_1351	L2633922-13 SEDIMENT 25-AUG-21 15:13 RG_SAND_2_SE_2021-08-25_1513	L2633922-14 SEDIMENT 26-AUG-21 09:55 RG_SAND_3_SE_2021-08-26_0955	L2633922-15 SEDIMENT 22-AUG-21 11:20 RG_SAND_4_SE_2021-08-26_1120
SOIL						
Metals	Sodium (Na) (mg/kg)	71	83	81	81	79
	Strontium (Sr) (mg/kg)	257	290	238	219	273
	Sulfur (S) (mg/kg)	<1000	<1000	<1000	<1000	<1000
	Thallium (Tl) (mg/kg)	0.072	0.080	0.086	0.084	0.075
	Tin (Sn) (mg/kg)	<2.0	<2.0	<2.0	<2.0	<2.0
	Titanium (Ti) (mg/kg)	67.4	59.6	71.6	68.0	56.8
	Tungsten (W) (mg/kg)	<0.50	<0.50	<0.50	<0.50	<0.50
	Uranium (U) (mg/kg)	0.621	0.604	0.571	0.546	0.542
	Vanadium (V) (mg/kg)	12.1	12.5	13.0	13.0	12.4
	Zinc (Zn) (mg/kg)	64.6	58.7	61.4	61.4	60.7
	Zirconium (Zr) (mg/kg)	1.4	1.4	1.1	1.1	1.3
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.0050	<0.0050	<0.0050	0.0056	<0.0050
	Acenaphthylene (mg/kg)	<0.0050	<0.0050	<0.0050	0.0067	<0.0050
	Acridine (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Anthracene (mg/kg)	<0.0040	<0.0040	<0.0040	0.0050	<0.0040
	Benz(a)anthracene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(a)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b&j)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.015	<0.015	<0.015	<0.015	<0.015
	Benzo(e)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(g,h,i)perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Benzo(k)fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Chrysene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Dibenz(a,h)anthracene (mg/kg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Fluoranthene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Fluorene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	1-Methylnaphthalene (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	2-Methylnaphthalene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Naphthalene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Perylene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Phenanthrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Pyrene (mg/kg)	<0.010	<0.010	<0.010	<0.010	<0.010
	Quinoline (mg/kg)	<0.050	<0.050	<0.050	<0.050	<0.050
	Surrogate: d10-Acenaphthene (%)	85.9	92.1	92.9	91.7	92.2
	Surrogate: d12-Chrysene (%)	81.3	83.2	84.7	86.8	84.3

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-16				
	Description	SEDIMENT				
	Sampled Date	26-AUG-21				
	Sampled Time	12:57				
	Client ID	RG_SAND_5_SE_ 2021-08-26_1257				
Grouping	**Analyte**					
SOIL						
Metals	Sodium (Na) (mg/kg)	76				
	Strontium (Sr) (mg/kg)	256				
	Sulfur (S) (mg/kg)	<1000				
	Thallium (Tl) (mg/kg)	0.073				
	Tin (Sn) (mg/kg)	<2.0				
	Titanium (Ti) (mg/kg)	81.1				
	Tungsten (W) (mg/kg)	<0.50				
	Uranium (U) (mg/kg)	0.602				
	Vanadium (V) (mg/kg)	12.5				
	Zinc (Zn) (mg/kg)	64.1				
	Zirconium (Zr) (mg/kg)	1.3				
Polycyclic Aromatic Hydrocarbons	Acenaphthene (mg/kg)	<0.0050				
	Acenaphthylene (mg/kg)	<0.0050				
	Acridine (mg/kg)	<0.010				
	Anthracene (mg/kg)	<0.0040				
	Benz(a)anthracene (mg/kg)	<0.010				
	Benzo(a)pyrene (mg/kg)	<0.010				
	Benzo(b&j)fluoranthene (mg/kg)	<0.010				
	Benzo(b+j+k)fluoranthene (mg/kg)	<0.015				
	Benzo(e)pyrene (mg/kg)	<0.010				
	Benzo(g,h,i)perylene (mg/kg)	<0.010				
	Benzo(k)fluoranthene (mg/kg)	<0.010				
	Chrysene (mg/kg)	<0.010				
	Dibenz(a,h)anthracene (mg/kg)	<0.0050				
	Fluoranthene (mg/kg)	<0.010				
	Fluorene (mg/kg)	<0.010				
	Indeno(1,2,3-c,d)pyrene (mg/kg)	<0.010				
	1-Methylnaphthalene (mg/kg)	<0.050				
	2-Methylnaphthalene (mg/kg)	<0.010				
	Naphthalene (mg/kg)	<0.010				
	Perylene (mg/kg)	<0.010				
	Phenanthrene (mg/kg)	<0.010				
	Pyrene (mg/kg)	<0.010				
	Quinoline (mg/kg)	<0.050				
	Surrogate: d10-Acenaphthene (%)	91.1				
	Surrogate: d12-Chrysene (%)	85.0				

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-1	L2633922-2	L2633922-3	L2633922-4	L2633922-5
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21	26-AUG-21
	Sampled Time	10:30	12:15	14:00	13:00	14:15
	Client ID	RG_TN_1_SE_2021-08-26_1030	RG_TN_2_SE_2021-08-26_1215	RG_TN_3_SE_2021-08-26_1400	RG_TN_4_SE_2021-08-26_1300	RG_TN_5_SE_2021-08-26_1415
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	85.7	88.7	85.1	83.0	88.2
	Surrogate: d10-Phenanthrene (%)	89.6	93.2	87.5	85.2	93.3
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	IACR (CCME)	<0.15	<0.15	<0.15	<0.15	<0.15

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-6	L2633922-7	L2633922-8	L2633922-9	L2633922-10
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	24-AUG-21	24-AUG-21	24-AUG-21	25-AUG-21	25-AUG-21
	Sampled Time	11:00	13:40	14:30	10:27	12:30
	Client ID	RG_T4_1_SE_2021-08-24_1100	RG_T4_2_SE_2021-08-24_1340	RG_T4_3_SE_2021-08-24_1430	RG_T4_4_SE_2021-08-25_1027	RG_T4_5_SE_2021-08-25_1200
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	89.2	88.2	91.1	87.2	88.2
	Surrogate: d10-Phenanthrene (%)	91.1	91.5	93.0	92.1	88.0
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	IACR (CCME)	0.16	0.20	0.19	0.16	<0.15

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-11	L2633922-12	L2633922-13	L2633922-14	L2633922-15
	Description	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
	Sampled Date	21-AUG-21	25-AUG-21	25-AUG-21	26-AUG-21	22-AUG-21
	Sampled Time	12:57	13:51	15:13	09:55	11:20
	Client ID	RG_RIVER_SE_2021-08-26_1257	RG_SAND_1_SE_2021-08-25_1351	RG_SAND_2_SE_2021-08-25_1513	RG_SAND_3_SE_2021-08-26_0955	RG_SAND_4_SE_2021-08-26_1120
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	83.7	89.8	87.9	89.3	89.1
	Surrogate: d10-Phenanthrene (%)	84.9	92.0	91.3	87.3	91.0
	IACR:Coarse	<0.050	<0.050	<0.050	<0.050	<0.050
	IACR:Fine	<0.050	<0.050	<0.050	<0.050	<0.050
	B(a)P Total Potency Equivalent (mg/kg)	<0.020	<0.020	<0.020	<0.020	<0.020
	IACR (CCME)	<0.15	<0.15	<0.15	<0.15	<0.15

ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L2633922-16				
	Description	SEDIMENT				
	Sampled Date	26-AUG-21				
	Sampled Time	12:57				
	Client ID	RG_SAND_5_SE_ 2021-08-26_1257				
Grouping	**Analyte**					
SOIL						
Polycyclic Aromatic Hydrocarbons	Surrogate: d8-Naphthalene (%)	85.4				
	Surrogate: d10-Phenanthrene (%)	88.8				
	IACR:Coarse	<0.050				
	IACR:Fine	<0.050				
	B(a)P Total Potency Equivalent (mg/kg)	<0.020				
	IACR (CCME)	<0.15				

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
C-TIC-PCT-SK	Soil	Total Inorganic Carbon in Soil	CSSS (2008) P216-217
A known quantity of acetic acid is consumed by reaction with carbonates in the soil. The pH of the resulting solution is measured and compared against a standard curve relating pH to weight of carbonate.			
C-TOC-CALC-SK	Soil	Total Organic Carbon Calculation	CSSS (2008) 21.2
Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon. (TIC)			
C-TOT-LECO-SK	Soil	Total Carbon by combustion method	CSSS (2008) 21.2
The sample is ignited in a combustion analyzer where carbon in the reduced CO2 gas is determined using a thermal conductivity detector.			
HG-200.2-CVAA-CL	Soil	Mercury in Soil by CVAAS	EPA 200.2/1631E (mod)
Soil samples are digested with nitric and hydrochloric acids, followed by analysis by CVAAS.			
IC-CACO3-CALC-SK	Soil	Inorganic Carbon as CaCO3 Equivalent	Calculation
MET-200.2-CCMS-CL	Soil	Metals in Soil by CRC ICPMS	EPA 200.2/6020A (mod)
Soil/sediment is dried, disaggregated, and sieved (2 mm). Strong Acid Leachable Metals in the <2mm fraction are solubilized by heated digestion with nitric and hydrochloric acids. Instrumental analysis is by Collision / Reaction Cell ICPMS. Limitations: This method is intended to liberate environmentally available metals. Silicate minerals are not solubilized. Some metals may be only partially recovered (matrix dependent), including Al, Ba, Be, Cr, S, Sr, Ti, Tl, V, W, and Zr. Elemental Sulfur may be poorly recovered by this method. Volatile forms of sulfur (e.g. sulfide, H2S) may be excluded if lost during sampling, storage, or digestion.			
MOISTURE-CL	Soil	% Moisture	CCME PHC in Soil - Tier 1 (mod)
This analysis is carried out gravimetrically by drying the sample at 105 C			
PAH-TMB-H/A-MS-CL	Soil	PAH Tumbler Extraction (Hexane/Acetone)	EPA 3570/8270-GC/MS
This analysis is carried out using procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846, Methods 3545 & 8270, published by the United States Environmental Protection Agency (EPA). The procedure uses a mechanical shaking technique to extract a subsample of the sediment/soil with a 1:1 mixture of hexane and acetone. The extract is then solvent exchanged to toluene. The final extract is analysed by capillary column gas chromatography with mass spectrometric detection (GC/MS). Surrogate recoveries may not be reported in cases where interferences from the sample matrix prevent accurate quantitation. Because the two isomers cannot be readily chromatographically separated, benzo(j)fluoranthene is reported as part of the benzo(b)fluoranthene parameter.			
PH-1:2-CL	Soil	pH in soil (1:2 Soil:Water Extraction)	CSSS Ch. 16
Soil and de-ionized water (by volume) are mixed in a defined ratio. The slurry is allowed to stand, shaken, and then allowed to stand again prior to taking measurements. After equilibration, the pH of the liquid portion of the extract is measured by a pH meter. Field Measurement is recommended where accurate pH measurements are required, due to the 15 minute recommended hold time.			
PSA-PIPET-DETAIL-SK	Soil	Particle size - Sieve and Pipette	SSIR-51 METHOD 3.2.1
Particle size distribution is determined by a combination of techniques. Dry sieving is performed for coarse particles, wet sieving for sand particles and the pipette sedimentation method for clay particles.			

** 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
SK	ALS ENVIRONMENTAL - SASKATOON, SASKATCHEWAN, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

Chain of Custody Numbers:

REGIONAL Koocanusa

Reference Information

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour 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.
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 of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
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

Client: Teck Coal Ltd.
421 Pine Avenue
Sparwood BC V0B 2G0
Contact: Allie Ferguson

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-TIC-PCT-SK	**Soil**							
Batch R5584930								
WG3611169-1 DUP		**L2633922-6**						
Inorganic Carbon		3.50	3.46		%	0.9	20	15-SEP-21
WG3611169-4 IRM		**08-109_SOIL**						
Inorganic Carbon			94.9		%		80-120	15-SEP-21
WG3611169-2 LCS		**0.5**						
Inorganic Carbon			95.1		%		90-110	15-SEP-21
WG3611169-3 MB								
Inorganic Carbon			<0.050		%		0.05	15-SEP-21
C-TOT-LECO-SK	**Soil**							
Batch R5584159								
WG3610734-2 IRM		**08-109_SOIL**						
Total Carbon by Combustion			97.9		%		80-120	13-SEP-21
WG3610734-4 LCS		**SULFADIAZINE**						
Total Carbon by Combustion			104.6		%		90-110	13-SEP-21
WG3610734-3 MB								
Total Carbon by Combustion			<0.05		%		0.05	13-SEP-21
HG-200.2-CVAA-CL	**Soil**							
Batch R5576544								
WG3610045-9 CRM		**TILL-2**						
Mercury (Hg)			112.7		%		70-130	02-SEP-21
WG3610045-8 LCS								
Mercury (Hg)			95.2		%		80-120	02-SEP-21
WG3610045-6 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	02-SEP-21
Batch R5579528								
WG3610045-14 CRM		**TILL-2**						
Mercury (Hg)			120.8		%		70-130	04-SEP-21
WG3610045-15 DUP		**L2633922-6**						
Mercury (Hg)		0.0337	0.0366		mg/kg	8.1	40	04-SEP-21
WG3610045-13 LCS								
Mercury (Hg)			111.0		%		80-120	04-SEP-21
WG3610045-11 MB								
Mercury (Hg)			<0.0050		mg/kg		0.005	04-SEP-21
MET-200.2-CCMS-CL	**Soil**							
Batch R5576356								
WG3610045-9 CRM		**TILL-2**						
Aluminum (Al)			92.6		%		70-130	02-SEP-21
Antimony (Sb)			83.8		%		70-130	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5576356								
WG3610045-9 CRM		**TILL-2**						
Arsenic (As)			93.7		%		70-130	02-SEP-21
Barium (Ba)			91.3		%		70-130	02-SEP-21
Beryllium (Be)			88.9		%		70-130	02-SEP-21
Bismuth (Bi)			97.8		%		70-130	02-SEP-21
Cadmium (Cd)			96.5		%		70-130	02-SEP-21
Calcium (Ca)			96.6		%		70-130	02-SEP-21
Chromium (Cr)			96.5		%		70-130	02-SEP-21
Cobalt (Co)			96.6		%		70-130	02-SEP-21
Copper (Cu)			96.1		%		70-130	02-SEP-21
Iron (Fe)			96.7		%		70-130	02-SEP-21
Lead (Pb)			97.9		%		70-130	02-SEP-21
Lithium (Li)			97.0		%		70-130	02-SEP-21
Magnesium (Mg)			99.4		%		70-130	02-SEP-21
Manganese (Mn)			99.9		%		70-130	02-SEP-21
Molybdenum (Mo)			90.7		%		70-130	02-SEP-21
Nickel (Ni)			95.0		%		70-130	02-SEP-21
Phosphorus (P)			105.0		%		70-130	02-SEP-21
Potassium (K)			89.0		%		70-130	02-SEP-21
Selenium (Se)			0.35		mg/kg		0.15-0.55	02-SEP-21
Silver (Ag)			0.24		mg/kg		0.16-0.36	02-SEP-21
Sodium (Na)			87.1		%		70-130	02-SEP-21
Strontium (Sr)			106.9		%		70-130	02-SEP-21
Thallium (Tl)			95.0		%		70-130	02-SEP-21
Tin (Sn)			2.8		mg/kg		0.2-4.2	02-SEP-21
Titanium (Ti)			94.2		%		70-130	02-SEP-21
Tungsten (W)			1.11		mg/kg		1-2	02-SEP-21
Uranium (U)			89.3		%		70-130	02-SEP-21
Vanadium (V)			95.6		%		70-130	02-SEP-21
Zinc (Zn)			96.1		%		70-130	02-SEP-21
Zirconium (Zr)			92.1		%		70-130	02-SEP-21
WG3610045-8 LCS								
Aluminum (Al)			99.3		%		80-120	02-SEP-21
Antimony (Sb)			100.4		%		80-120	02-SEP-21
Arsenic (As)			95.0		%		80-120	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5576356								
WG3610045-8 LCS								
Barium (Ba)			99.1		%		80-120	02-SEP-21
Beryllium (Be)			98.5		%		80-120	02-SEP-21
Bismuth (Bi)			109.5		%		80-120	02-SEP-21
Boron (B)			101.7		%		80-120	02-SEP-21
Cadmium (Cd)			98.6		%		80-120	02-SEP-21
Calcium (Ca)			98.1		%		80-120	02-SEP-21
Chromium (Cr)			99.4		%		80-120	02-SEP-21
Cobalt (Co)			98.5		%		80-120	02-SEP-21
Copper (Cu)			96.9		%		80-120	02-SEP-21
Iron (Fe)			115.3		%		80-120	02-SEP-21
Lead (Pb)			104.2		%		80-120	02-SEP-21
Lithium (Li)			103.8		%		80-120	02-SEP-21
Magnesium (Mg)			104.9		%		80-120	02-SEP-21
Manganese (Mn)			99.4		%		80-120	02-SEP-21
Molybdenum (Mo)			94.4		%		80-120	02-SEP-21
Nickel (Ni)			95.6		%		80-120	02-SEP-21
Phosphorus (P)			105.0		%		80-120	02-SEP-21
Potassium (K)			102.5		%		80-120	02-SEP-21
Selenium (Se)			97.8		%		80-120	02-SEP-21
Silver (Ag)			96.9		%		80-120	02-SEP-21
Sodium (Na)			99.3		%		80-120	02-SEP-21
Strontium (Sr)			113.9		%		80-120	02-SEP-21
Sulfur (S)			94.2		%		80-120	02-SEP-21
Thallium (Tl)			104.2		%		80-120	02-SEP-21
Tin (Sn)			98.8		%		80-120	02-SEP-21
Titanium (Ti)			95.7		%		80-120	02-SEP-21
Tungsten (W)			91.7		%		80-120	02-SEP-21
Uranium (U)			93.1		%		80-120	02-SEP-21
Vanadium (V)			100.1		%		80-120	02-SEP-21
Zinc (Zn)			97.8		%		80-120	02-SEP-21
Zirconium (Zr)			95.1		%		80-120	02-SEP-21
WG3610045-6 MB								
Aluminum (Al)			<50		mg/kg		50	02-SEP-21
Antimony (Sb)			<0.10		mg/kg		0.1	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5576356								
WG3610045-6 MB								
Arsenic (As)			<0.10		mg/kg		0.1	02-SEP-21
Barium (Ba)			<0.50		mg/kg		0.5	02-SEP-21
Beryllium (Be)			<0.10		mg/kg		0.1	02-SEP-21
Bismuth (Bi)			<0.20		mg/kg		0.2	02-SEP-21
Boron (B)			<5.0		mg/kg		5	02-SEP-21
Cadmium (Cd)			<0.020		mg/kg		0.02	02-SEP-21
Calcium (Ca)			<50		mg/kg		50	02-SEP-21
Chromium (Cr)			<0.50		mg/kg		0.5	02-SEP-21
Cobalt (Co)			<0.10		mg/kg		0.1	02-SEP-21
Copper (Cu)			<0.50		mg/kg		0.5	02-SEP-21
Iron (Fe)			<50		mg/kg		50	02-SEP-21
Lead (Pb)			<0.50		mg/kg		0.5	02-SEP-21
Lithium (Li)			<2.0		mg/kg		2	02-SEP-21
Magnesium (Mg)			<20		mg/kg		20	02-SEP-21
Manganese (Mn)			<1.0		mg/kg		1	02-SEP-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	02-SEP-21
Nickel (Ni)			<0.50		mg/kg		0.5	02-SEP-21
Phosphorus (P)			<50		mg/kg		50	02-SEP-21
Potassium (K)			<100		mg/kg		100	02-SEP-21
Selenium (Se)			<0.20		mg/kg		0.2	02-SEP-21
Silver (Ag)			<0.10		mg/kg		0.1	02-SEP-21
Sodium (Na)			<50		mg/kg		50	02-SEP-21
Strontium (Sr)			<0.50		mg/kg		0.5	02-SEP-21
Sulfur (S)			<1000		mg/kg		1000	02-SEP-21
Thallium (Tl)			<0.050		mg/kg		0.05	02-SEP-21
Tin (Sn)			<2.0		mg/kg		2	02-SEP-21
Titanium (Ti)			<1.0		mg/kg		1	02-SEP-21
Tungsten (W)			<0.50		mg/kg		0.5	02-SEP-21
Uranium (U)			<0.050		mg/kg		0.05	02-SEP-21
Vanadium (V)			<0.20		mg/kg		0.2	02-SEP-21
Zinc (Zn)			<2.0		mg/kg		2	02-SEP-21
Zirconium (Zr)			<1.0		mg/kg		1	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5579299								
WG3610045-14 CRM		**TILL-2**						
Aluminum (Al)			92.7		%		70-130	03-SEP-21
Antimony (Sb)			88.2		%		70-130	03-SEP-21
Arsenic (As)			93.6		%		70-130	03-SEP-21
Barium (Ba)			88.1		%		70-130	03-SEP-21
Beryllium (Be)			80.4		%		70-130	03-SEP-21
Bismuth (Bi)			96.4		%		70-130	03-SEP-21
Cadmium (Cd)			94.1		%		70-130	03-SEP-21
Calcium (Ca)			88.2		%		70-130	03-SEP-21
Chromium (Cr)			91.8		%		70-130	03-SEP-21
Cobalt (Co)			95.2		%		70-130	03-SEP-21
Copper (Cu)			94.9		%		70-130	03-SEP-21
Iron (Fe)			93.9		%		70-130	03-SEP-21
Lead (Pb)			97.5		%		70-130	03-SEP-21
Lithium (Li)			85.7		%		70-130	03-SEP-21
Magnesium (Mg)			94.3		%		70-130	03-SEP-21
Manganese (Mn)			99.2		%		70-130	03-SEP-21
Molybdenum (Mo)			94.3		%		70-130	03-SEP-21
Nickel (Ni)			91.7		%		70-130	03-SEP-21
Phosphorus (P)			92.0		%		70-130	03-SEP-21
Potassium (K)			76.7		%		70-130	03-SEP-21
Selenium (Se)			0.31		mg/kg		0.15-0.55	03-SEP-21
Silver (Ag)			0.24		mg/kg		0.16-0.36	03-SEP-21
Sodium (Na)			80.3		%		70-130	03-SEP-21
Strontium (Sr)			89.8		%		70-130	03-SEP-21
Thallium (Tl)			88.3		%		70-130	03-SEP-21
Tin (Sn)			2.0		mg/kg		0.2-4.2	03-SEP-21
Titanium (Ti)			80.4		%		70-130	03-SEP-21
Tungsten (W)			1.18		mg/kg		1-2	03-SEP-21
Uranium (U)			86.3		%		70-130	03-SEP-21
Vanadium (V)			90.1		%		70-130	03-SEP-21
Zinc (Zn)			95.7		%		70-130	03-SEP-21
Zirconium (Zr)			88.2		%		70-130	03-SEP-21
WG3610045-15 DUP		**L2633922-6**						
Aluminum (Al)		33900	34300		mg/kg	1.2	40	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5579299								
WG3610045-15 DUP		**L2633922-6**						
Antimony (Sb)		0.97	0.98		mg/kg	0.9	30	03-SEP-21
Arsenic (As)		16.6	17.1		mg/kg	3.1	30	03-SEP-21
Barium (Ba)		428	453		mg/kg	5.8	40	03-SEP-21
Beryllium (Be)		1.36	1.40		mg/kg	2.7	30	03-SEP-21
Bismuth (Bi)		0.53	0.55		mg/kg	3.3	30	03-SEP-21
Boron (B)		<13	13.1		mg/kg	5.7	30	03-SEP-21
Cadmium (Cd)		1.25	1.31		mg/kg	5.2	30	03-SEP-21
Calcium (Ca)		244000	244000		mg/kg	0.0	30	03-SEP-21
Chromium (Cr)		45.5	46.6		mg/kg	2.4	30	03-SEP-21
Cobalt (Co)		21.7	22.1		mg/kg	1.6	30	03-SEP-21
Copper (Cu)		38.9	39.8		mg/kg	2.2	30	03-SEP-21
Iron (Fe)		53500	55700		mg/kg	4.0	30	03-SEP-21
Lead (Pb)		32.2	32.5		mg/kg	1.1	40	03-SEP-21
Lithium (Li)		57.2	58.2		mg/kg	1.7	30	03-SEP-21
Magnesium (Mg)		50600	51200		mg/kg	1.2	30	03-SEP-21
Manganese (Mn)		1630	1710		mg/kg	4.5	30	03-SEP-21
Molybdenum (Mo)		2.23	2.28		mg/kg	2.1	40	03-SEP-21
Nickel (Ni)		51.3	52.1		mg/kg	1.6	30	03-SEP-21
Phosphorus (P)		1630	1710		mg/kg	4.7	30	03-SEP-21
Potassium (K)		3810	4040		mg/kg	6.0	40	03-SEP-21
Selenium (Se)		2.04	2.08		mg/kg	2.3	30	03-SEP-21
Silver (Ag)		<0.25	0.25		mg/kg	1.3	40	03-SEP-21
Sodium (Na)		250	261		mg/kg	2.8	40	03-SEP-21
Strontium (Sr)		480	488		mg/kg	1.7	40	03-SEP-21
Sulfur (S)		<2500	1400		mg/kg	6.4	30	03-SEP-21
Thallium (Tl)		0.38	0.384		mg/kg	2.5	30	03-SEP-21
Tin (Sn)		<5.0	<2.0	RPD-NA	mg/kg	N/A	40	03-SEP-21
Titanium (Ti)		137	134		mg/kg	2.0	40	03-SEP-21
Tungsten (W)		<1.3	<0.50	RPD-NA	mg/kg	N/A	30	03-SEP-21
Uranium (U)		1.70	1.74		mg/kg	1.8	30	03-SEP-21
Vanadium (V)		50.4	52.0		mg/kg	3.1	30	03-SEP-21
Zinc (Zn)		193	199		mg/kg	2.9	30	03-SEP-21
Zirconium (Zr)		2.9	2.9		mg/kg	0.5	30	03-SEP-21
WG3610045-13 LCS								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5579299								
WG3610045-13 LCS								
Aluminum (Al)			100.4		%		80-120	03-SEP-21
Antimony (Sb)			101.5		%		80-120	03-SEP-21
Arsenic (As)			96.6		%		80-120	03-SEP-21
Barium (Ba)			100.9		%		80-120	03-SEP-21
Beryllium (Be)			92.0		%		80-120	03-SEP-21
Bismuth (Bi)			106.0		%		80-120	03-SEP-21
Boron (B)			94.0		%		80-120	03-SEP-21
Cadmium (Cd)			99.0		%		80-120	03-SEP-21
Calcium (Ca)			94.9		%		80-120	03-SEP-21
Chromium (Cr)			99.2		%		80-120	03-SEP-21
Cobalt (Co)			100.0		%		80-120	03-SEP-21
Copper (Cu)			97.9		%		80-120	03-SEP-21
Iron (Fe)			107.3		%		80-120	03-SEP-21
Lead (Pb)			101.5		%		80-120	03-SEP-21
Lithium (Li)			96.6		%		80-120	03-SEP-21
Magnesium (Mg)			106.4		%		80-120	03-SEP-21
Manganese (Mn)			99.6		%		80-120	03-SEP-21
Molybdenum (Mo)			101.8		%		80-120	03-SEP-21
Nickel (Ni)			96.0		%		80-120	03-SEP-21
Potassium (K)			99.6		%		80-120	03-SEP-21
Selenium (Se)			97.3		%		80-120	03-SEP-21
Silver (Ag)			96.0		%		80-120	03-SEP-21
Sodium (Na)			102.1		%		80-120	03-SEP-21
Strontium (Sr)			104.6		%		80-120	03-SEP-21
Sulfur (S)			101.7		%		80-120	03-SEP-21
Thallium (Tl)			102.0		%		80-120	03-SEP-21
Tin (Sn)			97.8		%		80-120	03-SEP-21
Titanium (Ti)			94.8		%		80-120	03-SEP-21
Tungsten (W)			90.5		%		80-120	03-SEP-21
Uranium (U)			94.9		%		80-120	03-SEP-21
Vanadium (V)			100.5		%		80-120	03-SEP-21
Zinc (Zn)			101.1		%		80-120	03-SEP-21
Zirconium (Zr)			94.4		%		80-120	03-SEP-21
WG3610045-11 MB								

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-200.2-CCMS-CL	**Soil**							
Batch R5579299								
WG3610045-11 MB								
Aluminum (Al)			<50		mg/kg		50	03-SEP-21
Antimony (Sb)			<0.10		mg/kg		0.1	03-SEP-21
Arsenic (As)			<0.10		mg/kg		0.1	03-SEP-21
Barium (Ba)			<0.50		mg/kg		0.5	03-SEP-21
Beryllium (Be)			<0.10		mg/kg		0.1	03-SEP-21
Bismuth (Bi)			<0.20		mg/kg		0.2	03-SEP-21
Boron (B)			<5.0		mg/kg		5	03-SEP-21
Cadmium (Cd)			<0.020		mg/kg		0.02	03-SEP-21
Calcium (Ca)			<50		mg/kg		50	03-SEP-21
Chromium (Cr)			<0.50		mg/kg		0.5	03-SEP-21
Cobalt (Co)			<0.10		mg/kg		0.1	03-SEP-21
Copper (Cu)			<0.50		mg/kg		0.5	03-SEP-21
Iron (Fe)			<50		mg/kg		50	03-SEP-21
Lead (Pb)			<0.50		mg/kg		0.5	03-SEP-21
Lithium (Li)			<2.0		mg/kg		2	03-SEP-21
Magnesium (Mg)			<20		mg/kg		20	03-SEP-21
Manganese (Mn)			<1.0		mg/kg		1	03-SEP-21
Molybdenum (Mo)			<0.10		mg/kg		0.1	03-SEP-21
Nickel (Ni)			<0.50		mg/kg		0.5	03-SEP-21
Phosphorus (P)			<50		mg/kg		50	03-SEP-21
Potassium (K)			<100		mg/kg		100	03-SEP-21
Selenium (Se)			<0.20		mg/kg		0.2	03-SEP-21
Silver (Ag)			<0.10		mg/kg		0.1	03-SEP-21
Sodium (Na)			<50		mg/kg		50	03-SEP-21
Strontium (Sr)			<0.50		mg/kg		0.5	03-SEP-21
Sulfur (S)			<1000		mg/kg		1000	03-SEP-21
Thallium (Tl)			<0.050		mg/kg		0.05	03-SEP-21
Tin (Sn)			<2.0		mg/kg		2	03-SEP-21
Titanium (Ti)			<1.0		mg/kg		1	03-SEP-21
Tungsten (W)			<0.50		mg/kg		0.5	03-SEP-21
Uranium (U)			<0.050		mg/kg		0.05	03-SEP-21
Vanadium (V)			<0.20		mg/kg		0.2	03-SEP-21
Zinc (Zn)			<2.0		mg/kg		2	03-SEP-21
Zirconium (Zr)			<1.0		mg/kg		1	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MOISTURE-CL	**Soil**							
Batch R5577357								
WG3610213-2 LCS								
Moisture			98.0		%		90-110	03-SEP-21
WG3610213-1 MB								
Moisture			<0.25		%		0.25	03-SEP-21
Batch R5577370								
WG3610644-2 LCS								
Moisture			98.6		%		90-110	03-SEP-21
WG3610644-1 MB								
Moisture			<0.25		%		0.25	03-SEP-21
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-22 DUP		**L2633922-1**						
Acenaphthene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	04-SEP-21
Acenaphthylene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	04-SEP-21
Anthracene		<0.0040	<0.0040	RPD-NA	mg/kg	N/A	50	04-SEP-21
Acridine		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benz(a)anthracene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benzo(a)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benzo(b&j)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benzo(e)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benzo(g,h,i)perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Benzo(k)fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Chrysene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Dibenz(a,h)anthracene		<0.0050	<0.0050	RPD-NA	mg/kg	N/A	50	04-SEP-21
Fluoranthene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Fluorene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Indeno(1,2,3-c,d)pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
2-Methylnaphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Naphthalene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Perylene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Phenanthrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
Pyrene		<0.010	<0.010	RPD-NA	mg/kg	N/A	50	04-SEP-21
1-Methylnaphthalene		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	04-SEP-21
Quinoline		<0.050	<0.050	RPD-NA	mg/kg	N/A	50	04-SEP-21
WG3611176-11 IRM		**ALS PAH RM2**						
Acenaphthene			86.7		%		60-130	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-11 IRM		**ALS PAH RM2**						
Acenaphthylene			97.9		%		60-130	03-SEP-21
Anthracene			98.6		%		60-130	03-SEP-21
Acridine			97.3		%		60-130	03-SEP-21
Benz(a)anthracene			83.9		%		60-130	03-SEP-21
Benzo(a)pyrene			79.9		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			78.1		%		60-130	03-SEP-21
Benzo(e)pyrene			88.4		%		60-130	03-SEP-21
Benzo(g,h,i)perylene			76.2		%		60-130	03-SEP-21
Benzo(k)fluoranthene			76.3		%		60-130	03-SEP-21
Chrysene			84.8		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			75.9		%		60-130	03-SEP-21
Fluoranthene			77.5		%		60-130	03-SEP-21
Fluorene			83.5		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			96.8		%		60-130	03-SEP-21
2-Methylnaphthalene			84.3		%		60-130	03-SEP-21
Naphthalene			83.3		%		50-130	03-SEP-21
Perylene			82.1		%		60-130	03-SEP-21
Phenanthrene			79.6		%		60-130	03-SEP-21
Pyrene			79.7		%		60-130	03-SEP-21
1-Methylnaphthalene			83.0		%		60-130	03-SEP-21
WG3611176-15 IRM		**ALS PAH RM2**						
Acenaphthene			111.1		%		60-130	03-SEP-21
Acenaphthylene			112.8		%		60-130	03-SEP-21
Anthracene			116.1		%		60-130	03-SEP-21
Acridine			107.7		%		60-130	03-SEP-21
Benz(a)anthracene			97.6		%		60-130	03-SEP-21
Benzo(a)pyrene			89.6		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			88.0		%		60-130	03-SEP-21
Benzo(e)pyrene			99.2		%		60-130	03-SEP-21
Benzo(g,h,i)perylene			87.1		%		60-130	03-SEP-21
Benzo(k)fluoranthene			87.0		%		60-130	03-SEP-21
Chrysene			99.5		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			87.3		%		60-130	03-SEP-21
Fluoranthene			94.6		%		60-130	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-15 IRM		**ALS PAH RM2**						
Fluorene			103.2		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			109.7		%		60-130	03-SEP-21
2-Methylnaphthalene			106.5		%		60-130	03-SEP-21
Naphthalene			104.7		%		50-130	03-SEP-21
Perylene			94.4		%		60-130	03-SEP-21
Phenanthrene			96.4		%		60-130	03-SEP-21
Pyrene			96.5		%		60-130	03-SEP-21
1-Methylnaphthalene			105.9		%		60-130	03-SEP-21
WG3611176-2 IRM		**ALS PAH RM2**						
Acenaphthene			95.7		%		60-130	02-SEP-21
Acenaphthylene			112.9		%		60-130	02-SEP-21
Anthracene			104.7		%		60-130	02-SEP-21
Acridine			110.7		%		60-130	02-SEP-21
Benz(a)anthracene			98.4		%		60-130	02-SEP-21
Benzo(a)pyrene			100.3		%		60-130	02-SEP-21
Benzo(b&j)fluoranthene			92.4		%		60-130	02-SEP-21
Benzo(e)pyrene			106.2		%		60-130	02-SEP-21
Benzo(g,h,i)perylene			98.5		%		60-130	02-SEP-21
Benzo(k)fluoranthene			94.0		%		60-130	02-SEP-21
Chrysene			102.7		%		60-130	02-SEP-21
Dibenz(a,h)anthracene			94.6		%		60-130	02-SEP-21
Fluoranthene			90.4		%		60-130	02-SEP-21
Fluorene			92.2		%		60-130	02-SEP-21
Indeno(1,2,3-c,d)pyrene			117.5		%		60-130	02-SEP-21
2-Methylnaphthalene			94.6		%		60-130	02-SEP-21
Naphthalene			96.4		%		50-130	02-SEP-21
Perylene			108.1		%		60-130	02-SEP-21
Phenanthrene			90.3		%		60-130	02-SEP-21
Pyrene			92.2		%		60-130	02-SEP-21
1-Methylnaphthalene			94.8		%		60-130	02-SEP-21
WG3611176-20 IRM		**ALS PAH RM2**						
Acenaphthene			111.8		%		60-130	04-SEP-21
Acenaphthylene			121.9		%		60-130	04-SEP-21
Anthracene			122.6		%		60-130	04-SEP-21
Acridine			119.6		%		60-130	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-20 IRM		**ALS PAH RM2**						
Benz(a)anthracene			101.1		%		60-130	04-SEP-21
Benzo(a)pyrene			104.2		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			94.5		%		60-130	04-SEP-21
Benzo(e)pyrene			109.7		%		60-130	04-SEP-21
Benzo(g,h,i)perylene			93.9		%		60-130	04-SEP-21
Benzo(k)fluoranthene			86.6		%		60-130	04-SEP-21
Chrysene			104.0		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			96.3		%		60-130	04-SEP-21
Fluoranthene			94.8		%		60-130	04-SEP-21
Fluorene			99.7		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			117.9		%		60-130	04-SEP-21
2-Methylnaphthalene			105.6		%		60-130	04-SEP-21
Naphthalene			106.3		%		50-130	04-SEP-21
Perylene			104.1		%		60-130	04-SEP-21
Phenanthrene			95.5		%		60-130	04-SEP-21
Pyrene			95.9		%		60-130	04-SEP-21
1-Methylnaphthalene			106.0		%		60-130	04-SEP-21
WG3611176-23 IRM		**ALS PAH RM2**						
Acenaphthene			103.0		%		60-130	04-SEP-21
Acenaphthylene			109.8		%		60-130	04-SEP-21
Anthracene			112.7		%		60-130	04-SEP-21
Acridine			92.9		%		60-130	04-SEP-21
Benz(a)anthracene			87.3		%		60-130	04-SEP-21
Benzo(a)pyrene			74.9		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			78.6		%		60-130	04-SEP-21
Benzo(e)pyrene			85.4		%		60-130	04-SEP-21
Benzo(g,h,i)perylene			73.9		%		60-130	04-SEP-21
Benzo(k)fluoranthene			77.6		%		60-130	04-SEP-21
Chrysene			87.2		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			82.2		%		60-130	04-SEP-21
Fluoranthene			84.8		%		60-130	04-SEP-21
Fluorene			95.5		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			87.7		%		60-130	04-SEP-21
2-Methylnaphthalene			95.4		%		60-130	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-23 IRM		**ALS PAH RM2**						
Naphthalene			88.2		%		50-130	04-SEP-21
Perylene			84.4		%		60-130	04-SEP-21
Phenanthrene			92.2		%		60-130	04-SEP-21
Pyrene			87.0		%		60-130	04-SEP-21
1-Methylnaphthalene			93.9		%		60-130	04-SEP-21
WG3611176-27 IRM		**ALS PAH RM2**						
Acenaphthene			93.9		%		60-130	04-SEP-21
Acenaphthylene			98.3		%		60-130	04-SEP-21
Anthracene			106.3		%		60-130	04-SEP-21
Acridine			98.8		%		60-130	04-SEP-21
Benz(a)anthracene			97.2		%		60-130	04-SEP-21
Benzo(a)pyrene			92.1		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			86.7		%		60-130	04-SEP-21
Benzo(e)pyrene			100.0		%		60-130	04-SEP-21
Benzo(g,h,i)perylene			84.4		%		60-130	04-SEP-21
Benzo(k)fluoranthene			89.4		%		60-130	04-SEP-21
Chrysene			98.2		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			84.8		%		60-130	04-SEP-21
Fluoranthene			84.1		%		60-130	04-SEP-21
Fluorene			89.7		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			109.3		%		60-130	04-SEP-21
2-Methylnaphthalene			91.7		%		60-130	04-SEP-21
Naphthalene			92.4		%		50-130	04-SEP-21
Perylene			96.7		%		60-130	04-SEP-21
Phenanthrene			86.4		%		60-130	04-SEP-21
Pyrene			85.7		%		60-130	04-SEP-21
1-Methylnaphthalene			90.7		%		60-130	04-SEP-21
WG3611176-6 IRM		**ALS PAH RM2**						
Acenaphthene			91.2		%		60-130	03-SEP-21
Acenaphthylene			99.1		%		60-130	03-SEP-21
Anthracene			98.8		%		60-130	03-SEP-21
Acridine			94.8		%		60-130	03-SEP-21
Benz(a)anthracene			83.9		%		60-130	03-SEP-21
Benzo(a)pyrene			83.6		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			78.3		%		60-130	03-SEP-21

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-6 IRM		**ALS PAH RM2**						
Benzo(e)pyrene			86.2		%		60-130	03-SEP-21
Benzo(g,h,i)perylene			76.0		%		60-130	03-SEP-21
Benzo(k)fluoranthene			73.6		%		60-130	03-SEP-21
Chrysene			85.4		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			76.9		%		60-130	03-SEP-21
Fluoranthene			81.4		%		60-130	03-SEP-21
Fluorene			86.0		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			97.4		%		60-130	03-SEP-21
2-Methylnaphthalene			89.7		%		60-130	03-SEP-21
Naphthalene			88.5		%		50-130	03-SEP-21
Perylene			90.4		%		60-130	03-SEP-21
Phenanthrene			83.0		%		60-130	03-SEP-21
Pyrene			83.1		%		60-130	03-SEP-21
1-Methylnaphthalene			88.2		%		60-130	03-SEP-21
WG3611176-1 LCS								
Acenaphthene			108.3		%		60-130	02-SEP-21
Acenaphthylene			97.5		%		60-130	02-SEP-21
Anthracene			93.4		%		60-130	02-SEP-21
Acridine			93.3		%		60-130	02-SEP-21
Benz(a)anthracene			98.5		%		60-130	02-SEP-21
Benzo(a)pyrene			79.8		%		60-130	02-SEP-21
Benzo(b&j)fluoranthene			92.0		%		60-130	02-SEP-21
Benzo(e)pyrene			104.0		%		60-130	02-SEP-21
Benzo(g,h,i)perylene			98.2		%		60-130	02-SEP-21
Benzo(k)fluoranthene			103.8		%		60-130	02-SEP-21
Chrysene			101.9		%		60-130	02-SEP-21
Dibenz(a,h)anthracene			97.1		%		60-130	02-SEP-21
Fluoranthene			106.6		%		60-130	02-SEP-21
Fluorene			101.5		%		60-130	02-SEP-21
Indeno(1,2,3-c,d)pyrene			107.5		%		60-130	02-SEP-21
2-Methylnaphthalene			114.3		%		60-130	02-SEP-21
Naphthalene			113.7		%		50-130	02-SEP-21
Perylene			95.9		%		60-130	02-SEP-21
Phenanthrene			106.0		%		60-130	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-1 LCS								
Pyrene			104.6		%		60-130	02-SEP-21
1-Methylnaphthalene			119.4		%		60-130	02-SEP-21
Quinoline			102.2		%		60-130	02-SEP-21
WG3611176-12 LCS								
Acenaphthene			108.0		%		60-130	03-SEP-21
Acenaphthylene			99.9		%		60-130	03-SEP-21
Anthracene			100.3		%		60-130	03-SEP-21
Acridine			102.9		%		60-130	03-SEP-21
Benz(a)anthracene			109.5		%		60-130	03-SEP-21
Benzo(a)pyrene			93.8		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			102.6		%		60-130	03-SEP-21
Benzo(e)pyrene			113.2		%		60-130	03-SEP-21
Benzo(g,h,i)perylene			99.3		%		60-130	03-SEP-21
Benzo(k)fluoranthene			106.7		%		60-130	03-SEP-21
Chrysene			103.8		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			97.3		%		60-130	03-SEP-21
Fluoranthene			106.0		%		60-130	03-SEP-21
Fluorene			102.3		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			103.9		%		60-130	03-SEP-21
2-Methylnaphthalene			111.8		%		60-130	03-SEP-21
Naphthalene			110.9		%		50-130	03-SEP-21
Perylene			105.0		%		60-130	03-SEP-21
Phenanthrene			108.8		%		60-130	03-SEP-21
Pyrene			107.0		%		60-130	03-SEP-21
1-Methylnaphthalene			114.8		%		60-130	03-SEP-21
Quinoline			105.0		%		60-130	03-SEP-21
WG3611176-16 LCS								
Acenaphthene			107.8		%		60-130	03-SEP-21
Acenaphthylene			99.2		%		60-130	03-SEP-21
Anthracene			98.2		%		60-130	03-SEP-21
Acridine			101.1		%		60-130	03-SEP-21
Benz(a)anthracene			109.7		%		60-130	03-SEP-21
Benzo(a)pyrene			92.7		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			101.5		%		60-130	03-SEP-21
Benzo(e)pyrene			114.3		%		60-130	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-16 LCS								
Benzo(g,h,i)perylene			99.1		%		60-130	03-SEP-21
Benzo(k)fluoranthene			108.7		%		60-130	03-SEP-21
Chrysene			105.2		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			97.5		%		60-130	03-SEP-21
Fluoranthene			106.2		%		60-130	03-SEP-21
Fluorene			102.1		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			103.7		%		60-130	03-SEP-21
2-Methylnaphthalene			111.3		%		60-130	03-SEP-21
Naphthalene			109.9		%		50-130	03-SEP-21
Perylene			107.0		%		60-130	03-SEP-21
Phenanthrene			108.4		%		60-130	03-SEP-21
Pyrene			105.9		%		60-130	03-SEP-21
1-Methylnaphthalene			114.3		%		60-130	03-SEP-21
Quinoline			101.7		%		60-130	03-SEP-21
WG3611176-19 LCS								
Acenaphthene			108.9		%		60-130	04-SEP-21
Acenaphthylene			96.4		%		60-130	04-SEP-21
Anthracene			96.6		%		60-130	04-SEP-21
Acridine			101.4		%		60-130	04-SEP-21
Benz(a)anthracene			106.8		%		60-130	04-SEP-21
Benzo(a)pyrene			87.5		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			99.7		%		60-130	04-SEP-21
Benzo(e)pyrene			109.0		%		60-130	04-SEP-21
Benzo(g,h,i)perylene			92.1		%		60-130	04-SEP-21
Benzo(k)fluoranthene			103.4		%		60-130	04-SEP-21
Chrysene			101.6		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			92.2		%		60-130	04-SEP-21
Fluoranthene			103.2		%		60-130	04-SEP-21
Fluorene			97.7		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			81.2		%		60-130	04-SEP-21
2-Methylnaphthalene			108.0		%		60-130	04-SEP-21
Naphthalene			106.3		%		50-130	04-SEP-21
Perylene			100.4		%		60-130	04-SEP-21
Phenanthrene			105.9		%		60-130	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-19 LCS								
Pyrene			104.3		%		60-130	04-SEP-21
1-Methylnaphthalene			112.2		%		60-130	04-SEP-21
Quinoline			97.3		%		60-130	04-SEP-21
WG3611176-24 LCS								
Acenaphthene			110.0		%		60-130	04-SEP-21
Acenaphthylene			97.2		%		60-130	04-SEP-21
Anthracene			95.4		%		60-130	04-SEP-21
Acridine			99.7		%		60-130	04-SEP-21
Benz(a)anthracene			101.0		%		60-130	04-SEP-21
Benzo(a)pyrene			79.8		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			84.3		%		60-130	04-SEP-21
Benzo(e)pyrene			94.2		%		60-130	04-SEP-21
Benzo(g,h,i)perylene			97.7		%		60-130	04-SEP-21
Benzo(k)fluoranthene			91.0		%		60-130	04-SEP-21
Chrysene			97.9		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			90.2		%		60-130	04-SEP-21
Fluoranthene			102.3		%		60-130	04-SEP-21
Fluorene			99.6		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			74.5		%		60-130	04-SEP-21
2-Methylnaphthalene			112.6		%		60-130	04-SEP-21
Naphthalene			113.4		%		50-130	04-SEP-21
Perylene			83.2		%		60-130	04-SEP-21
Phenanthrene			104.8		%		60-130	04-SEP-21
Pyrene			102.6		%		60-130	04-SEP-21
1-Methylnaphthalene			115.4		%		60-130	04-SEP-21
Quinoline			102.6		%		60-130	04-SEP-21
WG3611176-28 LCS								
Acenaphthene			101.0		%		60-130	04-SEP-21
Acenaphthylene			89.8		%		60-130	04-SEP-21
Anthracene			93.2		%		60-130	04-SEP-21
Acridine			97.6		%		60-130	04-SEP-21
Benz(a)anthracene			108.1		%		60-130	04-SEP-21
Benzo(a)pyrene			91.2		%		60-130	04-SEP-21
Benzo(b&j)fluoranthene			98.8		%		60-130	04-SEP-21
Benzo(e)pyrene			111.3		%		60-130	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-28 LCS								
Benzo(g,h,i)perylene			91.1		%		60-130	04-SEP-21
Benzo(k)fluoranthene			109.4		%		60-130	04-SEP-21
Chrysene			102.9		%		60-130	04-SEP-21
Dibenz(a,h)anthracene			88.8		%		60-130	04-SEP-21
Fluoranthene			98.4		%		60-130	04-SEP-21
Fluorene			95.1		%		60-130	04-SEP-21
Indeno(1,2,3-c,d)pyrene			101.9		%		60-130	04-SEP-21
2-Methylnaphthalene			106.8		%		60-130	04-SEP-21
Naphthalene			106.3		%		50-130	04-SEP-21
Perylene			104.8		%		60-130	04-SEP-21
Phenanthrene			101.2		%		60-130	04-SEP-21
Pyrene			98.3		%		60-130	04-SEP-21
1-Methylnaphthalene			107.2		%		60-130	04-SEP-21
Quinoline			99.6		%		60-130	04-SEP-21
WG3611176-5 LCS								
Acenaphthene			100.5		%		60-130	03-SEP-21
Acenaphthylene			89.3		%		60-130	03-SEP-21
Anthracene			90.7		%		60-130	03-SEP-21
Acridine			92.6		%		60-130	03-SEP-21
Benz(a)anthracene			102.0		%		60-130	03-SEP-21
Benzo(a)pyrene			87.0		%		60-130	03-SEP-21
Benzo(b&j)fluoranthene			95.0		%		60-130	03-SEP-21
Benzo(e)pyrene			105.3		%		60-130	03-SEP-21
Benzo(g,h,i)perylene			93.8		%		60-130	03-SEP-21
Benzo(k)fluoranthene			99.6		%		60-130	03-SEP-21
Chrysene			95.8		%		60-130	03-SEP-21
Dibenz(a,h)anthracene			89.5		%		60-130	03-SEP-21
Fluoranthene			97.9		%		60-130	03-SEP-21
Fluorene			91.2		%		60-130	03-SEP-21
Indeno(1,2,3-c,d)pyrene			101.1		%		60-130	03-SEP-21
2-Methylnaphthalene			104.1		%		60-130	03-SEP-21
Naphthalene			101.3		%		50-130	03-SEP-21
Perylene			97.8		%		60-130	03-SEP-21
Phenanthrene			98.6		%		60-130	03-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-5 LCS								
Pyrene			98.5		%		60-130	03-SEP-21
1-Methylnaphthalene			106.0		%		60-130	03-SEP-21
Quinoline			94.6		%		60-130	03-SEP-21
WG3611176-13 MB								
Acenaphthene			<0.0050		mg/kg		0.005	03-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	03-SEP-21
Anthracene			<0.0040		mg/kg		0.004	03-SEP-21
Acridine			<0.010		mg/kg		0.01	03-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Chrysene			<0.010		mg/kg		0.01	03-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	03-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Fluorene			<0.010		mg/kg		0.01	03-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	03-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	03-SEP-21
Naphthalene			<0.010		mg/kg		0.01	03-SEP-21
Perylene			<0.010		mg/kg		0.01	03-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	03-SEP-21
Pyrene			<0.010		mg/kg		0.01	03-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	03-SEP-21
Quinoline			<0.050		mg/kg		0.05	03-SEP-21
Surrogate: d8-Naphthalene			94.2		%		50-130	03-SEP-21
Surrogate: d10-Acenaphthene			97.5		%		60-130	03-SEP-21
Surrogate: d10-Phenanthrene			94.1		%		60-130	03-SEP-21
Surrogate: d12-Chrysene			97.9		%		60-130	03-SEP-21
WG3611176-17 MB								
Acenaphthene			<0.0050		mg/kg		0.005	04-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	04-SEP-21
Anthracene			<0.0040		mg/kg		0.004	04-SEP-21
Acridine			<0.010		mg/kg		0.01	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-17 MB								
Benz(a)anthracene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Chrysene			<0.010		mg/kg		0.01	04-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	04-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Fluorene			<0.010		mg/kg		0.01	04-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	04-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	04-SEP-21
Naphthalene			<0.010		mg/kg		0.01	04-SEP-21
Perylene			<0.010		mg/kg		0.01	04-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	04-SEP-21
Pyrene			<0.010		mg/kg		0.01	04-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	04-SEP-21
Quinoline			<0.050		mg/kg		0.05	04-SEP-21
Surrogate: d8-Naphthalene			89.0		%		50-130	04-SEP-21
Surrogate: d10-Acenaphthene			94.5		%		60-130	04-SEP-21
Surrogate: d10-Phenanthrene			93.5		%		60-130	04-SEP-21
Surrogate: d12-Chrysene			96.3		%		60-130	04-SEP-21
WG3611176-21 MB								
Acenaphthene			<0.0050		mg/kg		0.005	04-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	04-SEP-21
Anthracene			<0.0040		mg/kg		0.004	04-SEP-21
Acridine			<0.010		mg/kg		0.01	04-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Chrysene			<0.010		mg/kg		0.01	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-21 MB								
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	04-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Fluorene			<0.010		mg/kg		0.01	04-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	04-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	04-SEP-21
Naphthalene			<0.010		mg/kg		0.01	04-SEP-21
Perylene			<0.010		mg/kg		0.01	04-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	04-SEP-21
Pyrene			<0.010		mg/kg		0.01	04-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	04-SEP-21
Quinoline			<0.050		mg/kg		0.05	04-SEP-21
Surrogate: d8-Naphthalene			89.7		%		50-130	04-SEP-21
Surrogate: d10-Acenaphthene			96.7		%		60-130	04-SEP-21
Surrogate: d10-Phenanthrene			95.8		%		60-130	04-SEP-21
Surrogate: d12-Chrysene			98.8		%		60-130	04-SEP-21
WG3611176-25 MB								
Acenaphthene			<0.0050		mg/kg		0.005	04-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	04-SEP-21
Anthracene			<0.0040		mg/kg		0.004	04-SEP-21
Acridine			<0.010		mg/kg		0.01	04-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	04-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Chrysene			<0.010		mg/kg		0.01	04-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	04-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	04-SEP-21
Fluorene			<0.010		mg/kg		0.01	04-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	04-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	04-SEP-21
Naphthalene			<0.010		mg/kg		0.01	04-SEP-21
Perylene			<0.010		mg/kg		0.01	04-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-25 MB								
Phenanthrene			<0.010		mg/kg		0.01	04-SEP-21
Pyrene			<0.010		mg/kg		0.01	04-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	04-SEP-21
Quinoline			<0.050		mg/kg		0.05	04-SEP-21
Surrogate: d8-Naphthalene			94.6		%		50-130	04-SEP-21
Surrogate: d10-Acenaphthene			95.0		%		60-130	04-SEP-21
Surrogate: d10-Phenanthrene			96.3		%		60-130	04-SEP-21
Surrogate: d12-Chrysene			104.3		%		60-130	04-SEP-21
WG3611176-3 MB								
Acenaphthene			<0.0050		mg/kg		0.005	02-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	02-SEP-21
Anthracene			<0.0040		mg/kg		0.004	02-SEP-21
Acridine			<0.010		mg/kg		0.01	02-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	02-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	02-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	02-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	02-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	02-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	02-SEP-21
Chrysene			<0.010		mg/kg		0.01	02-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	02-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	02-SEP-21
Fluorene			<0.010		mg/kg		0.01	02-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	02-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	02-SEP-21
Naphthalene			<0.010		mg/kg		0.01	02-SEP-21
Perylene			<0.010		mg/kg		0.01	02-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	02-SEP-21
Pyrene			<0.010		mg/kg		0.01	02-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	02-SEP-21
Quinoline			<0.050		mg/kg		0.05	02-SEP-21
Surrogate: d8-Naphthalene			98.7		%		50-130	02-SEP-21
Surrogate: d10-Acenaphthene			99.6		%		60-130	02-SEP-21
Surrogate: d10-Phenanthrene			98.1		%		60-130	02-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PAH-TMB-H/A-MS-CL	**Soil**							
Batch R5578160								
WG3611176-3 MB								
Surrogate: d12-Chrysene			104.3		%		60-130	02-SEP-21
WG3611176-9 MB								
Acenaphthene			<0.0050		mg/kg		0.005	03-SEP-21
Acenaphthylene			<0.0050		mg/kg		0.005	03-SEP-21
Anthracene			<0.0040		mg/kg		0.004	03-SEP-21
Acridine			<0.010		mg/kg		0.01	03-SEP-21
Benz(a)anthracene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(a)pyrene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(b&j)fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(e)pyrene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(g,h,i)perylene			<0.010		mg/kg		0.01	03-SEP-21
Benzo(k)fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Chrysene			<0.010		mg/kg		0.01	03-SEP-21
Dibenz(a,h)anthracene			<0.0050		mg/kg		0.005	03-SEP-21
Fluoranthene			<0.010		mg/kg		0.01	03-SEP-21
Fluorene			<0.010		mg/kg		0.01	03-SEP-21
Indeno(1,2,3-c,d)pyrene			<0.010		mg/kg		0.01	03-SEP-21
2-Methylnaphthalene			<0.010		mg/kg		0.01	03-SEP-21
Naphthalene			<0.010		mg/kg		0.01	03-SEP-21
Perylene			<0.010		mg/kg		0.01	03-SEP-21
Phenanthrene			<0.010		mg/kg		0.01	03-SEP-21
Pyrene			<0.010		mg/kg		0.01	03-SEP-21
1-Methylnaphthalene			<0.050		mg/kg		0.05	03-SEP-21
Quinoline			<0.050		mg/kg		0.05	03-SEP-21
Surrogate: d8-Naphthalene			79.9		%		50-130	03-SEP-21
Surrogate: d10-Acenaphthene			88.6		%		60-130	03-SEP-21
Surrogate: d10-Phenanthrene			86.6		%		60-130	03-SEP-21
Surrogate: d12-Chrysene			91.6		%		60-130	03-SEP-21
PSA-PIPET-DETAIL-SK	**Soil**							
Batch R5584206								
WG3610273-1 DUP		**L2633922-4**						
% Gravel (>2mm)		<1.0	<1.0	RPD-NA	%	N/A	25	14-SEP-21
% Sand (2.00mm - 1.00mm)		<1.0	<1.0	RPD-NA	%	N/A	5	14-SEP-21
% Sand (1.00mm - 0.50mm)		<1.0	<1.0	RPD-NA	%	N/A	5	14-SEP-21

Quality Control Report

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PSA-PIPET-DETAIL-SK	**Soil**							
Batch	**R5584206**							
WG3610273-1	**DUP**	**L2633922-4**						
% Sand (0.50mm - 0.25mm)		<1.0	<1.0	RPD-NA	%	N/A	5	14-SEP-21
% Sand (0.25mm - 0.125mm)		<1.0	<1.0	RPD-NA	%	N/A	5	14-SEP-21
% Sand (0.125mm - 0.063mm)		<1.0	<1.0	RPD-NA	%	N/A	5	14-SEP-21
% Silt (0.063mm - 0.0312mm)		16.8	16.1	J	%	0.8	5	14-SEP-21
% Silt (0.0312mm - 0.004mm)		61.5	62.1	J	%	0.6	5	14-SEP-21
% Clay (<4um)		21.0	20.6	J	%	0.4	5	14-SEP-21
WG3610273-2	**IRM**	**2020-PSA_SOIL**						
% Sand (2.00mm - 1.00mm)			2.2		%		0-7.2	14-SEP-21
% Sand (1.00mm - 0.50mm)			3.9		%		0-8.7	14-SEP-21
% Sand (0.50mm - 0.25mm)			8.5		%		4-14	14-SEP-21
% Sand (0.25mm - 0.125mm)			17.4		%		11.7-21.7	14-SEP-21
% Sand (0.125mm - 0.063mm)			13.8		%		8.4-18.4	14-SEP-21
% Silt (0.063mm - 0.0312mm)			11.7		%		8.5-18.5	14-SEP-21
% Silt (0.0312mm - 0.004mm)			20.9		%		15.1-25.1	14-SEP-21
% Clay (<4um)			21.5		%		16.5-26.5	14-SEP-21

Quality Control Report

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
J	Duplicate results and limits are expressed in terms of absolute difference.
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 pre-determined 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.

Teck

COC ID: REGIONAL Koocanusa Reservoir

TURNAROUND TIME: Regular

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Regional Koocanusa			Lab Name	ALS Burnaby			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Allie Ferguseon			Lab Contact	Lyudmyla Shvets			Email 1: allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2: colleen.mooney@teck.com	X	X	X
Address	421 Pine Avenue			Address	2559 29 Street NE			Email 3: mstokes@minnow.ca	X	X	X
								Email 4: teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5: hourrier@minnow.ca	X	X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y7B5	Country	Canada				
Phone Number	250.425.8048			Phone Number	14034071794			PO number			

SAMPLE DETAILS

ANALYSIS REQUESTED

Filtered - F, Field, L, Lab, F/L, Field & Lab, N, None

L2633922-COFC

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Particle Size	TOC	PAH	Total Metals (including Hg)	Moisture						
Filtered								N	N	N	N	N	N	N				
Preserved								NONE	NONE	NONE	NONE	NONE	HNO3	NONE				
RG_TN_1_SE_2021-08-26_1030	RG_TN_1	Sediment	No	26-Aug-21	10:30	G	2	X	X	X	X	X						
RG_TN_2_SE_2021-08-26_1215	RG_TN_2	Sediment	No	26-Aug-21	12:15	G	2	X	X	X	X	X						
RG_TN_3_SE_2021-08-26_1400	RG_TN_3	Sediment	No	26-Aug-21	14:00	G	2	X	X	X	X	X						
RG_TN_4_SE_2021-08-26_1300	RG_TN_4	Sediment	No	26-Aug-21	13:00	G	2	X	X	X	X	X						
RG_TN_5_SE_2021-08-26_1415	RG_TN_5	Sediment	No	26-Aug-21	14:15	G	2	X	X	X	X	X						
RG_T4_1_SE_2021-08-24_1100	RG_T4_1	Sediment	No	24-Aug-21	11:00	G	2	X	X	X	X	X						
RG_T4_2_SE_2021-08-24_1340	RG_T4_2	Sediment	No	24-Aug-21	13:40	G	2	X	X	X	X	X						
RG_T4_3_SE_2021-08-24_1430	RG_T4_3	Sediment	No	24-Aug-21	14:30	G	2	X	X	X	X	X						
RG_T4_4_SE_2021-08-25_1027	RG_T4_4	Sediment	No	25-Aug-21	10:27	G	2	X	X	X	X	X						
RG_T4_5_SE_2021-08-25_1200	RG_T4_5	Sediment	No	25-Aug-21	12:30	G	2	X	X	X	X	X						
RG_RIVER_SE_2021-08-26_1257	RG_DUP	Sediment	No	21-Aug-21	12:57	G	2	X	X	X	X	X						

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Koocanusa - 21-17 1 jar for PAHs and 1 bag for everything else		8:50 GT		Aug 31

SERVICE REQUEST (rush - subject to availability)				
Regular (default) X	Sampler's Name	MADDY STOKES	Mobile #	905-691-6183
Priority (2-3 business days) - 50% surcharge				
Emergency (1 Business Day) - 100% surcharge	Sampler's Signature		Date/Time	August 30, 2021
For Emergency <1 Day, ASAP or Weekend - Contact ALS				

10cc

Teck

COC ID: REGIONAL Koocanusa Reservoir

TURNAROUND TIME: Regular

PROJECT/CLIENT INFO				LABORATORY				OTHER INFO			
Facility Name / Job#	Regional Koocanusa			Lab Name	ALS Burnaby			Report Format / Distribution	Excel	PDF	EDD
Project Manager	Allie Ferguseon			Lab Contact	Lyudmyla Shvets			Email 1: allie.ferguson@teck.com	X	X	X
Email	allie.ferguson@teck.com			Email	Lyudmyla.Shvets@ALSGlobal.com			Email 2: colleen.mooney@teck.com	X	X	X
Address	421 Pine Avenue			Address	2559 29 Street NE			Email 3: mstokes@minnow.ca	X	X	X
								Email 4: teckcoal@equisonline.com			X
City	Sparwood	Province	BC	City	Calgary	Province	AB	Email 5: heurtier@minnow.ca		X	X
Postal Code	V0B 2G0	Country	Canada	Postal Code	T1Y7B5	Country	Canada				
Phone Number	250.425.8048			Phone Number	14034071794			PO number			

SAMPLE DETAILS — **ANALYSIS REQUESTED** (Filtered: F, Field; L, Lab; FL, Field & Lab; N, None)

Sample ID	Sample Location (sys_loc_code)	Field Matrix	Hazardous Material (Yes/No)	Date	Time (24hr)	G=Grab C=Comp	# Of Cont.	Particle Size	TOC	PAH	Total Metals (including Hg)	Moisture						
							PRESERV.	N NONE	N NONE	N NONE	N NONE	N NONE	N HNO3	N NONE				
RG_SAND_1_SE_2021-08-25_1351	RG_SAND_1	Sediment		25-Aug-21	13:51	G	2	X	X	X	X	X						
RG_SAND_2_SE_2021-08-25_1513	RG_SAND_2	Sediment		25-Aug-21	15:13	G	2	X	X	X	X	X						
RG_SAND_3_SE_2021-08-26_0955	RG_SAND_3	Sediment		26-Aug-21	9:55	G	2	X	X	X	X	X						
RG_SAND_4_SE_2021-08-26_1120	RG_SAND_4	Sediment		22-Aug-21	11:20	G	2	X	X	X	X	X						
RG_SAND_5_SE_2021-08-26_1257	RG_SAND_5	Sediment		26-Aug-21	12:57	G	2	X	X	X	X	X						

L2633922-COFC

ADDITIONAL COMMENTS/SPECIAL INSTRUCTIONS	RELINQUISHED BY/AFFILIATION	DATE/TIME	ACCEPTED BY/AFFILIATION	DATE/TIME
Koocanusa - 19-08 1 jar for PAHs and 1 bag for everything else		8:50	GT	Aug 31

SERVICE REQUEST (rush - subject to availability)

Regular (default)	X	Sampler's Name	Heidi and Maddy	Mobile #	905-691-6183
Priority (2-3 business days) - 50% surcharge		Sampler's Signature		Date/Time	August 30, 2021
Emergency (1 Business Day) - 100% surcharge					
For Emergency <1 Day, ASAP or Weekend - Contact ALS					

10.2

TABLE 1: BENTHIC MACROINVERTEBRATES COLLECTED FROM TECK KOOCANUSA, 2021 (Densities expressed per sampled area) .

Station	RG_SAND					RG_T4					RG_TN
	1	2	3	4	5	1	2	3	4	5	1
ROUNDWORMS											
P. Nemata	-	17	4	-	28	2	2	8	1	2	2
FLATWORMS											
P. Platyhelminthes											
Cl. Turbellaria											
indeterminate	-	-	-	-	-	-	-	-	1	-	-
ANNELIDS											
P. Annelida											
WORMS											
Cl. Oligochaeta											
F. Naididae											
S.F. Naidinae											
Dero digitata	-	-	-	-	-	-	-	-	-	-	-
S.F. Tubificinae											
Aulodrilus limnobius	2	-	-	-	-	57	40	11	48	45	25
Aulodrilus pluriseta	-	-	-	-	-	-	-	-	-	-	6
Limnodrilus hoffmeisteri	-	30	22	-	447	41	40	35	19	11	-
Limnodrilus udekemianus	4	8	7	2	-	-	-	-	-	-	19
immatures with hair chaetae	15	115	37	27	224	57	122	127	127	113	108
immatures without hair chaetae	5	38	118	3	1193	49	94	115	58	102	-
ARTHROPODS											
P. Arthropoda											
MITES											
Cl. Arachnida											
Subcl. Acari											
F. Lebertidae											
Lebertia	-	-	1	-	-	-	-	-	1	-	-
F. Limnesiidae											
Limnesia	-	-	-	-	4	-	-	-	-	-	-
SEED SHRIMPS											
Cl. Ostracoda											
F. Candonidae											
Candona	3	2	-	1	20	18	16	24	22	27	12
F. Cyprididae											
Isocypris	-	11	-	1	-	-	-	10	5	5	3
F. Cytherideidae											
Cytherissa lacustris	1	1	49	-	20	58	24	20	26	12	-
F. Limnocytheridae											
Limnocythere	-	2	1	1	-	-	-	-	-	-	-
INSECTS											
Cl. Insecta											
TRUE FLIES											
O. Diptera											
MIDGES											
F. Chironomidae											
chironomid pupae	-	**1**	-	-	-	**2**	**4**	**6**	**4**	**3**	-
S.F. Chironominae											
Chironomus	12	1	2	3	4	38	22	18	6	8	2
Harnischia	-	-	2	-	-	-	-	4	3	-	3
Microchironomus	-	-	2	-	-	-	-	-	-	-	-
Phaenopsectra	-	-	-	-	-	-	-	-	-	-	-
Tanytarsus	2	5	-	-	-	6	-	10	7	9	1
S.F. Prodiamesinae											
Protanypus	-	-	-	-	-	-	-	-	-	1	-
S.F. Orthocladiinae											
Heterotrissocladius	-	-	-	-	-	8	16	46	16	13	-
S.F. Tanypodinae											
Procladius	19	59	35	14	64	6	8	38	33	49	12
MOLLUSCS											
P. Mollusca											
CLAMS											
Cl. Bivalvia											
F. Sphaeriidae											
Pisidium (Cyclocalyx)	-	8	-	-	-	4	4	28	16	27	-
TOTAL NUMBER OF ORGANISMS	63	298	280	52	2004	346	392	500	393	427	193

TABLE 1: BENTHIC MACROINVERTEBRATES COLLECTED FROM TECK KOOCANUSA, 2021 (Densities expressed per sampled area) .

Station	RG_SAND					RG_T4					RG_TN
	1	2	3	4	5	1	2	3	4	5	1
TOTAL NUMBER OF TAXA [a]	9	13	12	8	9	12	11	14	16	14	11

[a] Bold entries excluded from taxa count

TABLE 1: BENTHIC MACROINVERTEBRATES COLLECTED FROM TECK KOOCANUSA, 2021 (Densities expressed per sampled area) .

Station	2	3	4	5
ROUNDWORMS				
P. Nemata	1	1	-	4
FLATWORMS				
P. Platyhelminthes				
Cl. Turbellaria				
indeterminate	-	-	-	-
ANNELIDS				
P. Annelida				
WORMS				
Cl. Oligochaeta				
F. Naididae				
S.F. Naidinae				
Dero digitata	-	-	7	-
S.F. Tubificinae				
Aulodrilus limnobius	11	10	7	-
Aulodrilus pluriseta	-	40	-	-
Limnodrilus hoffmeisteri	-	-	-	-
Limnodrilus udekemianus	28	5	7	16
immatures with hair chaetae	78	55	63	72
immatures without hair chaetae	11	15	4	8
ARTHROPODS				
P. Arthropoda				
MITES				
Cl. Arachnida				
Subcl. Acari				
F. Lebertidae				
Lebertia	-	-	-	-
F. Limnesiidae				
Limnesia	-	-	-	-
SEED SHRIMPS				
Cl. Ostracoda				
F. Candonidae				
Candona	3	12	19	16
F. Cyprididae				
Isocypris	1	-	1	4
F. Cytherideidae				
Cytherissa lacustris	1	8	-	4
F. Limnocytheridae				
Limnocythere	1	1	1	-
INSECTS				
Cl. Insecta				
TRUE FLIES				
O. Diptera				
MIDGES				
F. Chironomidae				
chironomid pupae	-	-	-	-
S.F. Chironominae				
Chironomus	-	8	25	32
Harnischia	2	1	3	-
Microchironomus	-	-	2	-
Phaenopsectra	-	1	-	-
Tanytarsus	1	-	1	-
S.F. Prodiamesinae				
Protanypus	-	-	-	-
S.F. Orthocladiinae				
Heterotrissocladius	-	-	-	-
S.F. Tanypodinae				
Procladius	13	13	36	32
MOLLUSCS				
P. Mollusca				
CLAMS				
Cl. Bivalvia				
F. Sphaeriidae				
Pisidium (Cyclocalyx)	-	-	-	-
TOTAL NUMBER OF ORGANISMS	151	170	176	188

TABLE 1: BENTHIC MACROINVERTEBRATES COLLECTED FROM TECK KOOCANUSA, 2021 (Densities expressed per sampled area) .

Station	2	3	4	5
TOTAL NUMBER OF TAXA [a]	12	13	13	9

[a] Bold entries excluded from taxa count

TABLE 1: CALCULATION OF SUBSAMPLING ERROR FOR BENTHIC MACROINVERTEBRATE SAMPLES FROM TECK KOOCANUSA (2021).

Station	Whole Organisms	Number of Organisms in	Number of Organisms in	Number of Organisms in	Number of Organisms in	Actual Density*	Precision % range		Accuracy min	max
RG_T4-4	-	194	199	-	-	393	2.5	-	1.3	-

* whole large organisms excluded in calculations.
min = minimum absolute % error
max = maximum absolute % error

TABLE 2: PERCENT RECOVERY OF BENTHIC MACROINVERTEBRATES FROM SAMPLES COLLECTED FROM TECK KOOCANUSA (2021).

Station	Number of Organisms Recovered (initial sort)	Number of Organisms in Re-sort	Percent Recovery
RG_SAND-3	273	280	97.5%
RG_TN-3	164	170	96.5%
		Average % Recovery	97.0%

TABLE 3: SAMPLE FRACTIONS SORTED FROM TECK KOOCANUSA (2021).

Station	Fraction Sorted	Station	Fraction Sorted	Station	Fraction Sorted
RG_SAND-1	Whole	RG_T4-1	1/2	RG_TN-1	Whole
RG_SAND-2	Whole	RG_T4-2	1/2	RG_TN-2	Whole
RG_SAND-3	Whole	RG_T4-3	1/2	RG_TN-3	Whole
RG_SAND-4	Whole	RG_T4-4	Whole[a]	RG_TN-4	Whole
RG_SAND-5	1/4	RG_T4-5	Whole	RG_TN-5	1/4

[a] two halves sorted for subsampling error calculations.

QA/QC Notes

Pupae were not counted toward total number of taxa unless they were the sole representative of their taxa group.
Immatures were not counted toward total number of taxa unless they were the sole representative of their taxa group. The exceptions to this rule are immature Tubificidae with and without hairs. Immature oligocheates are counted as taxa as the probability of the immature being a unique taxa is high.
Density expressed per sampled area.

2021 Minnow Zooplankton Abundance Individuals/L - Salki

	1	2	3	4	5	6	7	8	9	9x	10
	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
	RG_TN_ZOOP-01_2021	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
	24	24	24	24	24	25	25	25	25	25	25
	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
	16	16	17	16.0	16	27	27	26	26	26	27
	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME
	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60
	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4
INSTAR IDENTIFICATION & SIZE CLASS	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L
COPEPODA											
CALANOIDA											
Epischura nevadensis Lilljeborg											
E.n. adult female 2.0mm	0.01	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.00	0.00	0.00
E.n. adult male 1.8mm	0.02	0.03	0.02	0.00	0.01	0.02	0.00	0.00	0.02	0.02	0.00
E.n. immature 0.5-1.0 mm	0.19	0.16	0.08	0.53	0.05	0.16	0.05	0.03	0.03	0.05	
Total E. nevadensis	**0.21**	**0.21**	**0.11**	**0.54**	**0.06**	**0.19**	**0.06**	**0.04**	**0.06**	**0.08**	**0.00**
Diaptomus tyrrelli Poppe											
D.t. adult female 1.39mm	0.02	0.02	0.00	0.01	0.01	0.05	0.01		0.01		
D.t. gravid female 1.39 mm	0.00	0.00									
D.t. adult male 1.21mm	0.00	0.00	0.00			0.01	0.02	0.01	0.01		0.00
D.t. immature 1.16mm					0.00						0.00
D.t. immature 1.0 mm											
D.t. immature 0.75 mm	0.09										
D.t. immature 0.5 mm	0.26										
Total D. tyrrwlli	**0.38**	**0.03**	**0.00**	**0.01**	**0.01**	**0.07**	**0.02**	**0.01**	**0.03**		**0.00**
Diaptomus sicilis SA Forbes											
D.s. adult female 1.39mm											
D.s. gravid female 1.39 mm											
D.s. adult male 1.21mm											
D.s. immature 1.16mm											
D.s. immature 1.0 mm											
D.s. immature 0.75 mm											
D.s. immature 0.5 mm											
Total D. sicilis											
Diaptomus pallidus Herrick											
D.p. adult female 1.25mm	0.09	0.05	0.01	0.09	0.03	0.08	0.00	0.01		0.07	0.00
D.p. gravid female	0.00	0.01	0.01	0.00							
D.p. adult male 0.97mm	0.00	0.05	0.01	0.00	0.00	0.11	0.00	0.06	0.10	0.06	0.00
D.p. immature 2.0 mm					0.00	0.05					
D.p. immature 1.0 mm		0.05			0.00				0.01		
D.p. immature 0.75 mm	0.09	0.02			0.02		0.01				
D.p. immature 0.5 mm	0.35			0.09					0.01		

2021 Minnow Zooplankton Abundance Individuals/L - Salki

	1	2	3	4	5	6	7	8	9	9x	10
	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
	RG_TN_ZOOP-01_2021	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
Total D. pallidus	**0.54**	**0.17**	**0.02**	**0.19**	**0.06**	**0.24**	**0.02**	**0.07**	**0.13**	**0.13**	**0.00**
Calanoid nauplius	**1.85**		**0.42**	**0.62**	**0.18**	**0.31**	**0.05**	**0.05**	**0.22**	**0.43**	**0.10**
Total Calanoida ind/L	**2.98**	**0.41**	**0.55**	**1.36**	**0.31**	**0.81**	**0.15**	**0.18**	**0.43**	**0.64**	**0.11**
CYLOPOIDA											
C.vernalis (?) immature		**0.35**		**0.26**					**0.05**		
Cyclops scutifer Sars											
C. s.adult female											
C. s. gravid female											
C. s. male											
C. s. immature 1.3 mm											
C. s. immature 0.99 mm											
C. s. immature 0.75mm											
C. s. immature 0.5 mm											
Total C. scutifer											
Cyclops bicuspidatus thomasi S.A.Forbes											
C. b. t. adult female 0.92mm				0.09	0.02	0.05					0.01
C. b. t. gravid female 0.92mm							0.00				
C. b. t. adult male 0.77mm		0.09			0.00	0.10	0.00	0.05			0.01
C. b. t. immature 1.0 mm		0.02	0.08	0.09		0.05			0.05	0.05	0.04
C. b. t. immatue 0.75 mm			0.17	0.09	0.02	0.47	0.05	0.05	0.43	0.11	
C. b. t. immature 0.5 mm	0.62		0.08	0.35		1.05	0.10	0.05	0.27	0.49	0.16
Total C. b. thomasi	**0.62**	**0.11**	**0.33**	**0.62**	**0.05**	**1.73**	**0.16**	**0.16**	**0.76**	**0.65**	**0.23**
Cyclopoid nauplius	**0.62**	**0.18**	**0.08**	**0.35**	**0.09**	**1.15**	**0.47**	**0.05**	**0.43**	**0.22**	**0.26**
Total Cyclopoida ind/L	**1.24**	**0.64**	**0.42**	**1.24**	**0.14**	**2.88**	**0.63**	**0.22**	**1.25**	**0.87**	**0.49**
CLADOCERA											
Holopedium gibberum Zaddach		**0.02**									
Diaphanosoma leuchtenbergianum Fisher	**0.09**	**0.05**	**0.01**	**0.12**	**0.05**	**0.21**	**0.01**	**0.06**	**0.04**	**0.06**	**0.10**
Daphnia schoedleri Sars											
Daphnia galeata mendotae Birge											
D. g. m. 2.5 mm											
D. g. m. 2.0 mm	0.00	0.02	0.00	0.00	0.01		0.00	0.01	0.00	0.00	
D. g. m. 1.5 mm	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.05	0.00
D. g. m. 1.0 mm	0.07	0.05	0.02	0.05	0.01	0.04	0.04	0.09	0.06	0.03	0.01
D. g. m. 0.5 mm	0.02	0.05	0.08	0.18		0.01	0.00	0.01	0.03	0.01	0.05
Total D. g. mendotae	**0.12**	**0.11**	**0.11**	**0.23**	**0.02**	**0.07**	**0.06**	**0.12**	**0.10**	**0.10**	**0.07**
DaphniaS longiremis Sars											
D. l. mature 1.0 mm											
D. l. immature 0.5 mm											

2021 Minnow Zooplankton Abundance Individuals/L - Salki

	1	2	3	4	5	6	7	8	9	9x	10
	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
	RG_TN_ZOOP-01_2021	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
Total D. longiremis											
Daphnia retrocurva Forbes											
D. r. 1.52 mm											
D. r. 1.24 mm											
D. r. 0.8 mm										0.05	
Total D. retrocurva											
Bosmina longirostris O.F. Mueller											
B. l. 0.5 mm		0.02		0.02			0.00				
B. l. 0.25 mm						0.05	0.01	0.05		0.05	
Total B. longirostris		**0.02**		**0.02**		**0.05**	**0.02**	**0.05**		**0.05**	
Chydorus sps ?											**0.01**
Total Cladocera Ind/L	**0.21**	**0.21**	**0.12**	**0.37**	**0.07**	**0.33**	**0.09**	**0.23**	**0.15**	**0.27**	**0.19**
TOTAL CRUSTACEA Ind/L	**4.43**	**1.25**	**1.09**	**2.96**	**0.51**	**4.02**	**0.87**	**0.63**	**1.82**	**1.78**	**0.79**
ROTIFERA											
Kellicottia sps	**0.62**	**0.26**	**0.08**	**0.26**	**0.44**	**0.26**	**0.42**	**0.60**	**0.49**	**0.76**	**0.31**
Keratella sps	**0.18**										**0.05**
Polyarthra sps	**0.62**	**0.09**		**0.18**		**0.26**	**0.16**	**0.05**	**0.49**	**0.49**	**0.37**
Conochilus sps									**0.11**		
Gastropus sps											
Brachionus sps											
Asplanchna sps											
Monostyla sps	**0.09**										
TOTAL ROTIFERA Ind/L	**1.50**	**0.35**	**0.08**	**0.44**	**0.44**	**0.52**	**0.58**	**0.65**	**1.09**	**1.25**	**0.73**
Total Calanoida ind/L	**2.98**	**0.41**	**0.55**	**1.36**	**0.31**	**0.81**	**0.15**	**0.18**	**0.43**	**0.64**	**0.11**
Total Cyclopoida ind/L	**1.24**	**0.64**	**0.42**	**1.24**	**0.14**	**2.88**	**0.63**	**0.22**	**1.25**	**0.87**	**0.49**
Total Cladocera ind/L	**0.21**	**0.21**	**0.12**	**0.37**	**0.07**	**0.33**	**0.09**	**0.23**	**0.15**	**0.27**	**0.19**
Total Rotifera ind/L	**1.50**	**0.35**	**0.08**	**0.44**	**0.44**	**0.52**	**0.58**	**0.65**	**1.09**	**1.25**	**0.73**
TOTAL ZOOPLANKTON ABUNDANCE ind/L	**5.93**	**1.61**	**1.18**	**3.40**	**0.95**	**4.54**	**1.45**	**1.28**	**2.91**	**3.03**	**1.52**

2021 Minnow Zooplankton Biomass WW ug/L - Salki

	Mean LENGTH Lmm	Malley et al 1989* Regression LnL	#	Lna	b	Calculate LnW	Calculate DryWt ug	Formula Wet Weight ug	Wet Weight ug													
Analytical #											1	2	3	4	5	6	7	8	9	9x	10
Lake											MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
Station											RGTN1	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
Year											2021	2021	2021	2021	2021	2021	2021	2021	2021	2021	2021
Month											AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG	AUG
Day											24	24	24	24	24	25	25	25	25	25	25
Time											AM	AM	AM	AM	AM	AM	AM	AM	AM	AM	AM
Depth											16	16	17	16.0	16	27	27	26	26	26	27
Collect											ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME
Gear											WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60	WJ60
Sub-sample Fraction #1											40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0	40.0
Sub-sample Fraction #2											10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Sub-sample Fraction#3											1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Net Mouth Area (cm2)											283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4	283.4
INSTAR IDENTIFICATION & SIZE CLASS											ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L	ind/L
COPEPODA																					
CALANOIDA																					
Epischura nevadensis Lilljeborg																					
E.n. adult female 2.0mm	2	0.693	32	1.1337	2.7882	3.0663	21.463	306.615	306.62		2.705	5.410	3.182	4.057	1.352	4.007	1.202	1.665	1.248	1.248	0.401
E.n. adult male 1.8mm	1.8	0.588	32	1.1337	2.7882	2.7726	16	228.57	228.57		4.033	7.057	4.270	0.504	2.016	4.481	0.896	0.931	5.273	5.273	0.299
E.n. immature 0.5-1.0 mm	1.1	0.095	32	1.1337	2.7882	1.3994	4.0529	57.90	57.90		10.726	9.385	4.807	30.646	2.682	9.080	3.027	1.650	1.650	3.143	
Total E. nevadensis											**17.463**	**21.852**	**12.259**	**35.207**	**6.050**	**17.568**	**5.125**	**4.245**	**8.172**	**9.665**	**0.699**
Diaptomus tyrrelli Poppe																					
D.t. adult female 1.4mm	1.4	0.336	30	0.977	2.538	1.8313	6.242	89.17	89.17		2.065	2.065	0.185	0.590	0.983	4.661	0.583		1.271		
D.t. gravid female 1.4 mm	1.4	0.336	30	0.977	2.538	1.8313	6.242	89.17	89.17		0.197	0.197									
D.t. adult male 1.2 mm	1.2	0.182	30	0.977	2.538	1.44	4.2207	60.30	60.30		0.133	0.133	0.125			0.827	0.946	0.859	0.859		0.158
D.t. immature 1.16mm	1.18	0.166	30	0.977	2.538	1.3973	4.0444	57.78	57.78						0.127						0.076
D.t. immature 1.0 mm	0.99	-0.010	30	0.977	2.538	0.9517	2.5901	37.00	37.00												
D.t. immature 0.75 mm	0.75	-0.288	30	0.977	2.538	0.2469	1.2801	18.29	18.29		1.613										
D.t. immature 0.5 mm	0.5	-0.693	30	0.977	2.538	-0.7823	0.4574	6.53	6.53		1.729										
Total D. tyrrwlli											**5.737**	**2.395**	**0.310**	**0.590**	**1.111**	**5.489**	**1.528**	**0.859**	**2.130**		**0.233**
Diaptomus sicilis SA Forbes																					
D. s. adult female 1.4mm	1.4	0.33647	L124	0.931	3.036	1.95253	7.04649	100.664	100.664												
D. s. gravid female 1.4mm	1.4	0.33647	L124	0.931	3.036	1.95253	7.04649	100.664	100.664												
D.s. adult male 1.2mm	1.2	0.18232	L124	0.931	3.036	1.48453	4.41288	63.0412	63.0412												
D.s. immature 1.18mm	1.18	0.16551	L124	0.931	3.036	1.4335	4.19336	59.9051	59.9051												
D.s. immature 1.0	0.99	-0.0101	L124	0.931	3.036	0.90049	2.4608	35.1543	35.1543												
D.s. immature 0.75	0.75	-0.2877	L124	0.931	3.036	0.0576	1.05929	15.1327	15.1327												
D.s. immature 0.5	0.5	-0.6931	L124	0.931	3.036	-1.1734	0.30932	4.41879	4.41879												
Total D. sicilis																					
Diaptomus pallidus Herrick																					
D.p. adult female 1.25 mm	1.25	0.223	30	0.9772	2.538	1.5435	4.6811	66.87	66.87		6.194	3.097	0.555	6.194	1.770	5.506	0.087	0.953		4.765	0.087
D.p. gravid female 1.25 mm	1.25	0.223	30	0.9772	2.538	1.5435	4.6811	66.87	66.87		0.295	0.442	0.555	0.295							
D.p. adult male 0.97 mm	0.97	-0.030	30	0.9772	2.538	0.8999	2.4593	35.13	35.13		0.077	1.627	0.219	0.077	0.077	3.857	0.092	2.003	3.505	2.003	0.046
D.p. immature >1 mm	1.15	0.140	30	0.9772	2.538	1.3319	3.7883	54.12	54.12						0.239	2.829					
D.p. immature 1.0 mm	0.99	-0.010	30	0.9772	2.538	0.9517	2.5901	37.00	37.00			1.714			0.163				0.527		
D.p. immature 0.75 mm	0.75	-0.288	30	0.9772	2.538	0.2471	1.2803	18.29	18.29		1.613	0.424			0.424		0.251				
D.p. immature 0.5 mm	0.5	-0.693	30	0.9772	2.538	-0.782	0.4575	6.54	6.54		2.306			0.577					0.093		
Total D. pallidus											**10.486**	**7.304**	**1.329**	**7.143**	**2.673**	**12.192**	**0.430**	**2.956**	**4.125**	**6.767**	**0.133**
Calanoid nauplius 0.3mm	**0.293**	**-1.228**	**6**	**0.9926**	**2.0997**	**-1.585**	**0.205**	**2.93**	**2.928**		**5.424**		**1.215**	**1.808**	**0.517**	**0.918**	**0.153**	**0.159**	**0.636**	**1.272**	**0.306**
Total Calanoida ug/L											**39.110**	**31.550**	**15.114**	**44.748**	**10.350**	**36.167**	**7.237**	**8.219**	**15.063**	**17.704**	**1.372**
CYLOPOIDA																					

2021 Minnow Zooplankton Biomass WW ug/L - Salki

										Analytical #	1	2	3	4	5	6	7	8	9	9x	10
										Lake	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
										Station	RGTN1	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
Cyclops vernalis? Immature	**0.5**	**-0.6931**	**92**	**0.8344**	**2.576**	**-0.9511**	**0.3863**	**5.5185**	**5.519**			**1.947**		**1.460**					**0.300**		
Cyclops scutifer Sars																					
C. s.adult female	1.400	0.336	94	1.317	2.792	2.255	9.536	136.234	136.234												
C. s. gravid female	1.330	0.285	94	1.317	2.792	2.113	8.273	118.190	118.190												
C. s. male	1.190	0.174	94	1.317	2.792	1.803	6.065	86.642	86.642												
C. s. immature 1.3 mm	1.140	0.131	94	1.317	2.792	1.683	5.380	76.857	76.857												
C. s. immature 0.99 mm	0.990	-0.010	94	1.317	2.792	1.289	3.629	51.837	51.837												
C. s. immature 0.75mm	0.750	-0.288	94	1.317	2.792	0.514	1.672	23.880	23.880												
C. s. immature 0.5 mm	0.500	-0.693	94	1.317	2.792	-0.618	0.539	7.699	7.699												
Total C. scutifer																					
Cyclops bicuspidatus thomasi S.A.Forbes																					
C. b. t. adult female 0.92mm	0.920	-0.083	68	0.7606	3.9145	0.4342	1.5437	22.05	22.05					1.945	0.511	1.153					0.303
C. b. t. gravid female 0.92mm	0.92	-0.083	68	0.7606	3.9145	0.4342	1.5437	22.05	22.05								0.058				
C. b. t. adult male 0.77mm	0.77	-0.261	68	0.7606	3.9145	-0.2625	0.7691	10.99	10.99			0.969			0.024	1.149	0.014	0.596			0.151
C. b. t. immature 1.0 mm	0.99	-0.010	51	0.9032	2.7307	0.876	2.401	34.300	34.300			0.794	2.848	3.026		1.793			1.862	1.862	1.412
C. b. t. immatue 0.75 mm	0.75	-0.288	51	0.9032	2.7307	0.117	1.124	16.055	16.055				2.666	1.416	0.372	7.553	0.839	0.872	6.972	1.743	
C. b. t. immature 0.5 mm	0.5	-0.693	51	0.9032	2.7307	-0.989	0.372	5.313	5.313		3.281		0.441	1.875		5.554	0.555	0.288	1.442	2.596	0.833
Total C. b. thomasi											**3.281**	**1.764**	**5.955**	**8.262**	**0.907**	**17.203**	**1.467**	**1.756**	**10.276**	**6.201**	**2.699**
Cyclopoid nauplius 0.2mm	**0.14**	**-1.966**	**49**	**1.6388**	**2.4474**	**-1.649**	**0.192**	**2.747**	**2.747**		**1.696**	**0.485**	**0.228**	**0.969**	**0.242**	**3.160**	**1.293**	**0.149**	**1.193**	**0.597**	**0.718**
Total Cyclopoida ug/L											**4.977**	**4.195**	**6.183**	**10.692**	**1.149**	**20.362**	**2.759**	**1.906**	**11.769**	**6.797**	**3.417**
CLADOCERA																					
Holopedium gibberum Zaddach**							**1.450**	**20.71**	**20.71**			**0.480**									
Diaphanosoma leuchtenbergianum Fisher***	**0.8**	**-0.2231**	**85**	**1.274**	**3.2454**	**0.5498**	**1.7329**	**24.756**	**24.756**		**2.293**	**1.147**	**0.360**	**2.866**	**1.147**	**5.177**	**0.340**	**1.411**	**1.058**	**1.411**	**2.588**
Daphnia schoedleri Sars 1.25mm	**1.250**	**0.223**	**86**	**1.3933**	**3.0114**	**2.0653**	**7.8875**	**112.68**	**112.68**												
Daphnia galeata mendotae Birge																					
D. g. m. 2.5 mm	2.50	0.916	76	1.0797	2.7188	3.5709	35.549	507.84	507.84												
D. g. m. 2.0 mm	1.95	0.6678	76	1.0797	2.7188	3.4399	31.182	445.46	445.46		1.965	6.877	0.925	0.982	2.947		1.164	3.627	1.209	1.209	
D. g. m. 1.5 mm	1.5	0.4055	76	1.0797	2.7188	3.1566	23.49	335.57	335.57		7.771	2.220	0.697	0.740	0.740	4.605	4.386	4.782	4.782	18.217	0.439
D. g. m. 1.0 mm	1.01	0.010	76	1.0797	2.7188	1.108	3.027	43.243	43.243		3.004	2.003	0.987	2.003	0.477	1.780	1.780	3.697	2.465	1.232	0.593
D. g. m. 0.5 mm	0.38	-0.968	76	1.0797	2.7188	-1.619	0.198	2.830	2.830		0.066	0.131	0.235	0.499		0.039	0.004	0.040	0.081	0.040	0.148
Total D. g. mendotae											**12.805**	**11.231**	**2.843**	**4.224**	**4.164**	**6.424**	**7.334**	**12.147**	**8.537**	**20.699**	**1.180**
DaphniaS longiremis Sars																					
D. l. mature 1.0 mm	0.900	-0.105	40	1.627	3.337	1.276	3.582	51.167	51.167												
D. l. immature 0.5 mm	0.750	-0.288	40	1.627	3.337	0.667	1.949	27.848	27.848												
Total D. longiremis																					
Daphnia retrocurva Forbes																					
D. r. 1.52 mm	1.52	0.419	37	0.8637	3.1262	2.1727	8.7817	125.45	125.45												
D. r. 1.24 mm	1.24	0.215	37	0.8637	3.1262	1.5362	4.6468	66.38	66.38												
D. r. 0.8 mm	0.8	-0.223	37	0.8637	3.1262	0.1661	1.1807	16.87	16.87											0.916	
Total D. retrocurva																				**0.916**	
Bosmina longirostris O.F. Mueller																					
B. l. 0.5 mm	0.5	-0.693	88	2.4751	3.3614	0.145	1.156	16.517	16.517			0.382		0.382			0.022				
B. l. 0.25 mm	0.250	-1.386	88	2.4751	3.3614	-2.185	0.113	1.607	1.607							0.084	0.022	0.087		0.087	
Total B. longirostris												**0.382**		**0.382**		**0.084**	**0.044**	**0.087**		**0.087**	
Chydorus sps (?) 0.4mm							**.741******	**10.586**	**10.586**												**0.145**

2021 Minnow Zooplankton Biomass WW ug/L - Salki							Analytical #	1	2	3	4	5	6	7	8	9	9x	10
							Lake	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW	MINNOW
							Station	RGTN1	RGTN2	RGTN3	RGTN4	RGTN5	RGT41	RGT42	RGT43	RGT44	RGT44	RGT45
Total Cladocera ug/L								**15.098**	**13.239**	**3.203**	**7.473**	**5.311**	**11.684**	**7.717**	**13.645**	**9.595**	**23.113**	**3.913**
TOTAL CRUSTACEA ug/L								**59.186**	**48.985**	**24.500**	**62.913**	**16.810**	**68.214**	**17.713**	**23.770**	**36.427**	**47.614**	**8.702**
ROTIFERA***																		
Kellicottia sps	0.128	-2.056	L224	0.015	0.214	0.214		**0.132**	**0.057**	**0.018**	**0.057**	**0.095**	**0.056**	**0.090**	**0.128**	**0.105**	**0.163**	**0.067**
Keratella sps	0.102	-2.283	L224	0.011	0.157	0.157		**0.028**										**0.008**
Polyarthra sps	0.126	-2.071	L227	0.041	0.586	0.586		**0.362**	**0.052**		**0.103**		**0.153**	**0.092**	**0.032**	**0.286**	**0.286**	**0.214**
Conochilus sps	0.186	-1.682	L223	0.042	0.600	0.600										**0.065**		
Gastropus sps	0.05	-2.996	L224	0.015	0.214	0.214												
Brachionus sps******	0.2	-1.6094	Clay	0.044	0.629	0.629												
Asplanchna sps	0.500		302			1.501												
Monostyla sps*******	0.05	-2.996	L224	0.015	0.214	0.214		**0.019**										
TOTAL ROTIFERA ug/L								**0.541**	**0.108**	**0.018**	**0.160**	**0.095**	**0.209**	**0.182**	**0.160**	**0.456**	**0.449**	**0.290**
Total Calanoida ug/L								**39.110**	**31.550**	**15.114**	**44.748**	**10.350**	**36.167**	**7.237**	**8.219**	**15.063**	**17.704**	**1.372**
Total Cyclopoida ug/L								**4.977**	**4.195**	**6.183**	**10.692**	**1.149**	**20.362**	**2.759**	**1.906**	**11.769**	**6.797**	**3.417**
Total Cladocera ug/L								**15.098**	**13.239**	**3.203**	**7.473**	**5.311**	**11.684**	**7.717**	**13.645**	**9.595**	**23.113**	**3.913**
Total Rotifera ug/L								**0.541**	**0.108**	**0.018**	**0.160**	**0.095**	**0.209**	**0.182**	**0.160**	**0.456**	**0.449**	**0.290**
TOTAL ZOOPLANKTON BIOMASS ug /L								**59.726**	**49.094**	**24.518**	**63.073**	**16.904**	**68.423**	**17.894**	**23.930**	**36.883**	**48.063**	**8.992**

*Length/DryWeight Regressions in form Lnw = Lna + bLnL from Malley et al. 1989
R6 LnW = 0.9926-2.0997 LnL
R30 LnW = 0.9772-2.5384 LnL
R32 Ln+A145:E155W = 1.1337 + 2.7882 LnL
R37 LnW = 0.8637 + 3.1262 LnL
R40 LnW = 1.627 + 3.3367 LnL
R49 LnW = 1.6388 - 2.4474 LnL
R51 LnW =0.9032 + 2.73 LnL
R68 LnW = 0.7606 + 3.91 LnL
R76 LnW = 1.097 + 2.719 LnL
R85 LnW = 1.2740 + 3.2454 LnL
R86 LnW = 1.3933 + 3.0114 LnL
R88 LnW = 2.4751 + 3.3614 LnL
R92 LnW= 0.8344-2.5760 LnL
R94 LnW = 1.3169 - 2.7197 LnL
** Table 14 Malley et al. 1989 Plastic Lake Yan and Mackie 1987
***used formula for Diaphanosoma birgei Table 10 Malley et al 1989.
****Table A1 Malley et al 1989
***** Rotifer dry weights from Table 11 Malley et al 1989 exceptions as noted
****** used formula for Keratella cochlearis Clay Lake Table 11 Malley et all 1989
******* Used formula for Lecane sp. Table 11 Malley et al 1989

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client: Heidi Currier
Aquatic Toxicologist
Minnow Environmental
Phone: 905-691-6183
Email: hcurrier@minnow.ca

Client Project: Teck Coal Limited Project 21-17 (Koocanusa)

Date Received: 11 May 2021
Date of Analysis: 19 May 2021
20 May 2021
24 May 2021
25 May 2021
26 May 2021
Final Report Date: 28 May 2021
Project No.: 2021-217
Method No.: MET-002.05

Analytical Request: Fish Tissue and Benthic Invertebrate Microchemistry (total metals and moisture) - 183 samples. See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in part per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
Client specific DQO for Selenium accuracy is 90 - 110% of the certified value; (average achieved 105%, range 97 - 109%).
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.
* Sample containers for RG_ER-WCT-04-M_20210424 (lab ID 203) and RG_ER-WCT-05-M_20210424 (lab ID 204) were observed to contain noticeable sediment.

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio — 28 May 2021 Date

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-01-O_20210419	RG_ER-PCC-03-O_20210419	RG_ER-PCC-04-O_20210419	RG_ER-PCC-05-O_20210419	RG_ER-PCC-06-O_20210419
		Lab ID	077	078	079	080	081
		Wet Weight (g)	13.5257	11.5363	9.3375	2.0400	11.6825
		Dry Weight (g)	4.8089	4.0946	3.4776	0.5205	4.6255
		Moisture (%)	64.4	64.5	62.8	74.5	60.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.009	0.014	0.009	0.027	0.009
11B	0.082	0.273	<0.082	<0.082	<0.082	0.627	<0.082
23Na	2.5	8.3	1,644	1,666	1,131	2,378	1,025
24Mg	0.026	0.087	710	819	779	1,795	850
27Al	0.052	0.173	1.1	1.3	0.584	19	0.347
31P	85	283	13,421	10,587	10,411	11,395	8,892
39K	11	37	14,235	10,090	6,733	17,646	5,914
44Ca	15	50	371	478	383	1,216	403
49Ti	0.335	1.1	0.762	0.762	0.508	1.6	0.508
51V	0.053	0.177	0.061	0.061	<0.053	0.109	<0.053
52Cr	0.270	0.900	1.2	1.3	1.3	2.4	1.3
55Mn	0.040	0.133	5.3	5.7	5.0	19	5.8
57Fe	2.6	8.7	66	81	53	239	45
59Co	0.004	0.013	0.066	0.060	0.050	0.150	0.043
60Ni	0.027	0.090	0.098	0.073	0.073	1.8	<0.027
63Cu	0.020	0.067	2.9	2.3	3.0	3.2	4.1
66Zn	0.676	2.3	105	111	103	226	80
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	15	8.4	9.8	21	5.0
88Sr	0.001	0.003	0.271	0.339	0.304	0.915	0.269
95Mo	0.014	0.047	0.103	0.155	0.103	0.204	0.103
107Ag	0.001	0.003	0.019	0.008	0.016	0.016	0.023
111Cd	0.067	0.223	<0.067	<0.067	<0.067	0.083	<0.067
118Sn	0.037	0.123	<0.037	0.050	0.077	<0.037	<0.037
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.7	2.4	2.6	15	3.2
202Hg	0.071	0.237	<0.071	<0.071	<0.071	<0.071	<0.071
205Tl	0.001	0.003	0.007	0.007	0.008	0.014	0.014
208Pb	0.006	0.020	0.018	0.014	0.007	0.051	<0.006
238U	0.001	0.003	0.003	0.005	0.001	0.006	0.003

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-07-O_20210419	RG_ER-PCC-08-O_20210419	RG_ER-PCC-10-O_20210419	RG_ER-PCC-11-O_20210419	RG_ER-PCC-12-O_20210419
		Lab ID	082	083	084	085	086
		Wet Weight (g)	6.5713	9.8279	10.6383	11.1402	11.9849
		Dry Weight (g)	2.0744	3.9032	4.1649	4.5997	4.6184
		Moisture (%)	68.4	60.3	60.8	58.7	61.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.014	<0.007	<0.007	<0.007	<0.007
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,374	1,171	972	962	631
24Mg	0.026	0.087	1,201	687	743	736	713
27Al	0.052	0.173	0.932	0.274	0.675	0.347	1.5
31P	85	283	8,833	9,607	8,973	11,117	7,397
39K	11	37	8,431	7,261	6,726	7,495	3,943
44Ca	15	50	620	268	312	311	412
49Ti	0.335	1.1	0.813	<0.335	0.508	0.508	0.762
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.3	1.2	1.2	1.3	1.2
55Mn	0.040	0.133	6.7	3.6	4.6	3.5	5.4
57Fe	2.6	8.7	67	52	38	50	45
59Co	0.004	0.013	0.066	0.050	0.050	0.054	0.050
60Ni	0.027	0.090	0.102	<0.027	0.049	0.073	0.049
63Cu	0.020	0.067	2.5	2.9	2.4	1.8	3.1
66Zn	0.676	2.3	118	84	74	89	80
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	11	6.7	12	12	8.3
88Sr	0.001	0.003	0.488	0.171	0.253	0.211	0.333
95Mo	0.014	0.047	0.113	0.077	0.077	0.077	0.077
107Ag	0.001	0.003	0.016	0.016	0.023	0.023	0.023
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	<0.037	0.078	0.057	<0.037	<0.037
121Sb	0.007	0.023	0.008	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	5.1	2.7	3.0	2.3	2.3
202Hg	0.071	0.237	<0.071	<0.071	<0.071	<0.071	<0.071
205Tl	0.001	0.003	0.010	0.006	0.005	0.005	0.010
208Pb	0.006	0.020	0.008	0.007	0.011	0.011	0.011
238U	0.001	0.003	0.003	0.003	0.003	0.003	0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-13-O_20210419	RG_ER-PCC-01-M_20210419	RG_ER-PCC-03-M_20210419	RG_ER-PCC-04-M_20210419	RG_ER-PCC-05-M_20210419
		Lab ID	087	088	089	090	091
		Wet Weight (g)	6.6329	8.5481	9.6376	7.9754	5.7789
		Dry Weight (g)	2.6367	1.9283	2.2942	1.9043	1.2709
		Moisture (%)	60.2	77.4	76.2	76.1	78.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.009	0.009	0.009	0.009	0.014
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	0.114
23Na	2.5	8.3	1,003	1,010	1,180	814	1,202
24Mg	0.026	0.087	803	1,143	1,327	1,303	1,346
27Al	0.052	0.173	0.524	1.6	0.699	3.6	6.4
31P	85	283	10,651	9,322	10,559	9,822	10,547
39K	11	37	6,979	21,774	26,479	22,388	25,305
44Ca	15	50	376	620	743	893	900
49Ti	0.335	1.1	0.542	0.813	0.813	1.1	1.1
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.3	1.2	1.3	1.6	1.8
55Mn	0.040	0.133	5.3	0.354	0.328	0.530	0.698
57Fe	2.6	8.7	68	15	15	22	25
59Co	0.004	0.013	0.082	0.020	0.016	0.033	0.049
60Ni	0.027	0.090	0.102	0.204	0.127	0.561	0.994
63Cu	0.020	0.067	3.0	0.824	1.1	1.1	0.912
66Zn	0.676	2.3	112	20	19	26	20
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	14	3.1	2.6	2.5	4.6
88Sr	0.001	0.003	0.316	0.399	0.467	0.614	0.941
95Mo	0.014	0.047	0.068	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	0.039	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.081	0.097	0.139	0.100	0.106
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	0.010
137Ba	0.001	0.003	4.0	1.5	1.1	1.8	1.9
202Hg	0.071	0.237	<0.071	0.834	0.484	0.542	0.817
205Tl	0.001	0.003	0.013	0.010	0.009	0.012	0.009
208Pb	0.006	0.020	0.008	<0.006	<0.006	0.008	0.019
238U	0.001	0.003	0.005	<0.001	<0.001	<0.001	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-06-M_20210419	RG_ER-PCC-07-M_20210419	RG_ER-PCC-08-M_20210419	RG_ER-PCC-10-M_20210419	RG_ER-PCC-11-M_20210419
		Lab ID	092	093	094	095	096
		Wet Weight (g)	14.8777	4.6544	5.9455	11.7125	7.4105
		Dry Weight (g)	3.2764	0.9808	1.3750	2.6596	1.7442
		Moisture (%)	78.0	78.9	76.9	77.3	76.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.066	0.010	0.010	<0.007
11B	0.082	0.273	<0.082	0.154	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,113	1,507	896	626	1,004
24Mg	0.026	0.087	1,332	1,241	1,318	894	1,515
27Al	0.052	0.173	0.559	5.6	5.3	0.499	0.839
31P	85	283	10,630	11,795	9,484	6,595	10,875
39K	11	37	23,534	28,896	21,746	14,638	24,250
44Ca	15	50	964	990	1,006	747	957
49Ti	0.335	1.1	0.851	1.1	1.1	0.425	0.851
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.3	1.6	1.4	1.3	1.5
55Mn	0.040	0.133	0.378	0.470	0.507	0.313	0.344
57Fe	2.6	8.7	17	20	24	13	23
59Co	0.004	0.013	0.022	0.022	0.026	0.009	0.017
60Ni	0.027	0.090	0.085	0.169	0.085	0.056	0.085
63Cu	0.020	0.067	0.971	1.1	1.7	0.797	1.5
66Zn	0.676	2.3	21	23	18	16	22
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.0	2.6	1.8	4.8	4.9
88Sr	0.001	0.003	0.777	0.647	0.860	0.352	0.561
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.113	0.217	0.144	0.109	0.354
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.1	1.7	1.8	1.5	1.7
202Hg	0.071	0.237	1.0	1.4	0.832	0.775	0.511
205Tl	0.001	0.003	0.013	0.006	0.012	0.006	0.010
208Pb	0.006	0.020	0.012	0.045	0.025	<0.006	0.012
238U	0.001	0.003	<0.001	0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-12-M_20210419	RG_ER-PCC-13-M_20210419	RG_GC-PCC-05-O_20210420	RG_GC-PCC-08-O_20210421	RG_GC-PCC-09-O_20210421
		Lab ID	097	098	099	100	101
		Wet Weight (g)	6.7872	9.2266	9.4625	4.3555	12.4405
		Dry Weight (g)	1.4895	2.0898	3.2886	1.5251	4.4933
		Moisture (%)	78.1	77.4	65.2	65.0	63.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.020	0.015	0.015	0.010	<0.007
11B	0.082	0.273	0.121	0.088	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,154	965	2,034	1,317	1,439
24Mg	0.026	0.087	1,855	1,145	1,102	1,143	912
27Al	0.052	0.173	7.0	2.8	1.4	3.6	0.551
31P	85	283	10,949	9,793	13,938	12,375	10,966
39K	11	37	21,944	22,526	12,332	8,732	10,454
44Ca	15	50	1,093	946	553	631	527
49Ti	0.335	1.1	1.4	1.1	1.3	0.950	0.633
51V	0.053	0.177	0.061	<0.053	0.125	<0.053	<0.053
52Cr	0.270	0.900	1.8	1.4	1.7	1.5	1.3
55Mn	0.040	0.133	0.685	0.472	6.1	8.4	11
57Fe	2.6	8.7	36	16	76	72	92
59Co	0.004	0.013	0.031	0.017	0.076	0.062	0.066
60Ni	0.027	0.090	0.141	0.141	0.090	0.060	0.030
63Cu	0.020	0.067	2.0	1.1	3.7	2.6	2.2
66Zn	0.676	2.3	35	26	134	108	95
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.4	4.4	8.4	7.2	8.4
88Sr	0.001	0.003	0.925	0.514	0.417	0.414	0.321
95Mo	0.014	0.047	<0.014	<0.014	0.136	0.136	0.136
107Ag	0.001	0.003	<0.001	<0.001	0.022	0.007	0.007
111Cd	0.067	0.223	<0.067	<0.067	0.090	0.090	<0.067
118Sn	0.037	0.123	0.108	0.175	0.205	0.134	0.115
121Sb	0.007	0.023	0.008	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	2.0	1.4	4.4	3.3	6.6
202Hg	0.071	0.237	1.5	0.492	<0.071	0.103	<0.071
205Tl	0.001	0.003	0.025	0.011	0.013	0.008	0.003
208Pb	0.006	0.020	0.027	0.016	0.009	0.020	0.009
238U	0.001	0.003	<0.001	<0.001	0.002	0.005	0.003

Notes:

ppm = parts per million

DL = detection limit

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g = grams

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-10-O_20210421	RG_GC-PCC-11-O_20210421	RG_GC-PCC-12-O_20210421	RG_GC-PCC-13-O_20210421	RG_GC-PCC-14-O_20210421
		Lab ID	102	103	104	105	106
		Wet Weight (g)	11.2669	8.1819	9.1422	12.3898	9.8825
		Dry Weight (g)	4.2208	3.2009	3.4281	4.8755	3.4380
		Moisture (%)	62.5	60.9	62.5	60.6	65.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	<0.007	<0.007	0.010
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,399	1,042	889	1,066	1,222
24Mg	0.026	0.087	1,021	869	892	850	914
27Al	0.052	0.173	1.2	4.1	3.0	1.1	0.318
31P	85	283	12,920	7,751	11,619	10,509	9,147
39K	11	37	12,281	6,535	5,942	7,161	7,118
44Ca	15	50	437	439	450	517	487
49Ti	0.335	1.1	0.950	0.633	0.950	0.633	0.633
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.5	1.4	1.4	1.3	1.3
55Mn	0.040	0.133	4.0	5.4	7.9	5.3	6.6
57Fe	2.6	8.7	85	83	79	62	70
59Co	0.004	0.013	0.062	0.069	0.071	0.062	0.052
60Ni	0.027	0.090	0.090	0.179	0.060	0.060	0.060
63Cu	0.020	0.067	3.5	3.1	3.9	2.4	3.7
66Zn	0.676	2.3	107	92	94	77	89
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	16	7.7	11	7.9	5.8
88Sr	0.001	0.003	0.334	0.349	0.340	0.387	0.247
95Mo	0.014	0.047	0.136	0.081	0.108	0.108	0.108
107Ag	0.001	0.003	0.022	0.014	0.014	0.014	0.014
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	<0.037	0.091	0.052	0.056	0.064
121Sb	0.007	0.023	<0.007	<0.007	0.007	0.007	<0.007
137Ba	0.001	0.003	1.9	4.5	3.8	3.3	1.3
202Hg	0.071	0.237	<0.071	<0.071	<0.071	<0.071	0.086
205Tl	0.001	0.003	0.006	0.002	0.004	0.010	0.009
208Pb	0.006	0.020	0.013	0.017	0.013	0.011	<0.006
238U	0.001	0.003	0.003	0.003	0.005	0.003	0.002

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-15-O_20210421	RG_GC-PCC-16-O_20210421	RG_GC-PCC-05-M_20210420	RG_GC-PCC-08-M_20210421	RG_GC-PCC-09-M_20210421
		Lab ID	107	108	109	110	111
		Wet Weight (g)	9.4858	8.3950	10.4144	7.9172	4.9476
		Dry Weight (g)	3.6861	3.0481	2.4082	1.8266	1.1213
		Moisture (%)	61.1	63.7	76.9	76.9	77.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	<0.007	<0.007	0.010
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	781	1,385	1,254	1,116	993
24Mg	0.026	0.087	932	1,020	974	859	1,215
27Al	0.052	0.173	0.352	2.3	1.3	1.6	1.8
31P	85	283	10,099	13,926	10,112	8,161	10,720
39K	11	37	5,920	9,264	26,010	18,735	24,208
44Ca	15	50	464	436	769	726	826
49Ti	0.335	1.1	1.2	1.2	0.851	0.709	0.567
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.4	1.5	1.1	1.3	1.3
55Mn	0.040	0.133	7.4	6.1	0.244	0.308	0.378
57Fe	2.6	8.7	64	85	11	16	23
59Co	0.004	0.013	0.081	0.062	0.013	0.018	0.022
60Ni	0.027	0.090	0.033	0.130	0.055	0.138	0.138
63Cu	0.020	0.067	3.3	3.5	0.793	0.769	1.4
66Zn	0.676	2.3	135	117	13	19	23
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	11	15	2.1	1.5	2.9
88Sr	0.001	0.003	0.373	0.284	0.350	0.367	0.442
95Mo	0.014	0.047	0.060	0.150	<0.014	<0.014	<0.014
107Ag	0.001	0.003	0.019	0.009	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.152	0.278	0.167	0.208	0.172
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	8.1	1.6	0.546	1.0	2.7
202Hg	0.071	0.237	<0.071	<0.071	1.1	1.6	0.785
205Tl	0.001	0.003	0.009	0.006	0.008	0.009	0.008
208Pb	0.006	0.020	0.009	0.014	0.012	0.012	0.012
238U	0.001	0.003	0.003	0.003	<0.001	<0.001	<0.001

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-10-M_20210421	RG_GC-PCC-11-M_20210421	RG_GC-PCC-12-M_20210421	RG_GC-PCC-13-M_20210421	RG_GC-PCC-14-M_20210421
		Lab ID	112	113	114	115	116
		Wet Weight (g)	9.3595	5.7468	5.8021	4.2025	3.4171
		Dry Weight (g)	2.2073	1.3789	1.3785	1.0092	0.7965
		Moisture (%)	76.4	76.0	76.2	76.0	76.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.010	0.010	0.010	0.010	0.010
11B	0.082	0.273	<0.082	<0.082	0.083	<0.082	<0.082
23Na	2.5	8.3	1,449	932	1,631	942	1,212
24Mg	0.026	0.087	1,132	1,285	1,462	1,313	1,073
27Al	0.052	0.173	1.9	3.6	2.4	0.756	0.562
31P	85	283	12,299	8,924	13,026	9,744	9,752
39K	11	37	26,298	19,471	29,317	19,687	22,931
44Ca	15	50	661	882	856	771	809
49Ti	0.335	1.1	0.567	1.1	0.851	0.851	0.567
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.2	1.4	1.4	1.3	1.2
55Mn	0.040	0.133	0.348	0.361	0.491	0.319	0.282
57Fe	2.6	8.7	14	21	20	21	16
59Co	0.004	0.013	0.013	0.018	0.022	0.027	0.013
60Ni	0.027	0.090	0.110	0.110	0.165	0.083	0.083
63Cu	0.020	0.067	0.859	1.1	1.1	1.3	1.2
66Zn	0.676	2.3	15	25	23	22	21
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	4.0	2.1	4.3	2.6	1.9
88Sr	0.001	0.003	0.275	0.559	0.435	0.534	0.425
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.112	0.289	0.295	0.241	0.143
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.717	1.2	2.9	2.3	0.683
202Hg	0.071	0.237	0.753	0.921	0.657	0.785	1.6
205Tl	0.001	0.003	0.007	0.009	0.006	0.017	0.015
208Pb	0.006	0.020	0.008	0.015	0.012	0.012	<0.006
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-15-M_20210421	RG_GC-PCC-16-M_20210421	RG_SC-PCC-01-O_20210419	RG_SC-PCC-04-O_20210419	RG_SC-PCC-16-O_20210420
		Lab ID	117	118	119	120	121
		Wet Weight (g)	5.2299	3.8979	10.2054	7.5229	9.9040
		Dry Weight (g)	1.2794	0.9661	4.2914	2.7998	4.2547
		Moisture (%)	75.5	75.2	57.9	62.8	57.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.017	<0.007	<0.007	<0.007
11B	0.082	0.273	<0.082	0.100	<0.082	<0.082	<0.082
23Na	2.5	8.3	913	1,071	1,044	1,392	714
24Mg	0.026	0.087	1,091	1,415	1,099	859	769
27Al	0.052	0.173	1.0	9.9	0.692	0.883	0.501
31P	85	283	9,949	11,909	11,346	12,035	8,793
39K	11	37	20,074	23,637	8,009	7,491	6,724
44Ca	15	50	794	1,092	480	479	315
49Ti	0.335	1.1	1.2	1.9	0.709	1.1	0.709
51V	0.053	0.177	<0.053	0.072	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.5	2.2	1.4	1.4	1.3
55Mn	0.040	0.133	0.310	0.606	6.4	3.7	3.8
57Fe	2.6	8.7	17	36	67	93	59
59Co	0.004	0.013	0.027	0.038	0.059	0.080	0.048
60Ni	0.027	0.090	0.098	0.716	0.063	0.095	0.032
63Cu	0.020	0.067	1.5	1.4	3.4	3.6	3.2
66Zn	0.676	2.3	25	33	124	142	102
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.8	3.0	6.3	8.7	5.9
88Sr	0.001	0.003	0.411	0.738	0.388	0.386	0.282
95Mo	0.014	0.047	<0.014	<0.014	0.124	0.155	0.093
107Ag	0.001	0.003	<0.001	<0.001	0.019	0.019	0.019
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.196	0.140	0.141	0.167	0.037
121Sb	0.007	0.023	<0.007	0.011	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.6	1.7	3.6	3.5	3.0
202Hg	0.071	0.237	0.718	1.1	<0.071	<0.071	<0.071
205Tl	0.001	0.003	0.017	0.011	0.008	0.006	0.008
208Pb	0.006	0.020	0.009	0.030	0.024	0.024	0.010
238U	0.001	0.003	<0.001	<0.001	0.002	0.017	0.002

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-17-O_20210420	RG_SC-PCC-18-O_20210420	RG_SC-PCC-19-O_20210420	RG_SC-PCC-20-O_20210420	RG_SC-PCC-22-O_20210420
		Lab ID	122	123	124	125	126
		Wet Weight (g)	20.1314	11.4071	9.1735	11.3920	8.0293
		Dry Weight (g)	7.5523	4.2133	3.8132	4.2113	3.0785
		Moisture (%)	62.5	63.1	58.4	63.0	61.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,888	914	839	1,956	1,185
24Mg	0.026	0.087	995	1,008	738	853	852
27Al	0.052	0.173	0.532	0.394	0.454	0.352	0.680
31P	85	283	14,299	10,537	12,197	18,389	13,080
39K	11	37	13,049	6,671	6,800	15,198	9,369
44Ca	15	50	512	509	344	444	518
49Ti	0.335	1.1	0.949	0.949	0.949	1.2	0.773
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.5	1.4	1.5	1.5	1.4
55Mn	0.040	0.133	6.7	5.1	4.4	5.5	6.1
57Fe	2.6	8.7	102	65	55	83	56
59Co	0.004	0.013	0.063	0.052	0.026	0.065	0.068
60Ni	0.027	0.090	<0.027	0.047	<0.027	0.033	0.065
63Cu	0.020	0.067	3.0	2.8	3.2	5.2	3.7
66Zn	0.676	2.3	119	138	102	122	129
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	14	7.8	6.7	9.8	12
88Sr	0.001	0.003	0.438	0.432	0.299	0.401	0.442
95Mo	0.014	0.047	0.115	0.092	0.092	0.090	0.120
107Ag	0.001	0.003	0.024	0.016	0.016	0.019	0.019
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.096	<0.037	0.140	0.042	0.096
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	4.9	6.3	1.9	4.4	2.6
202Hg	0.071	0.237	<0.071	0.093	<0.071	<0.071	<0.071
205Tl	0.001	0.003	0.007	0.002	0.005	0.005	0.020
208Pb	0.006	0.020	0.013	0.010	0.010	0.012	0.014
238U	0.001	0.003	0.004	0.004	0.001	0.003	0.002

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-24-O_20210421	RG_SC-PCC-26-O_20210421	RG_SC-PCC-28-O_20210421	RG_SC-PCC-29-O_20210421	RG_SC-PCC-30-O_20210421
		Lab ID	127	128	129	130	131
		Wet Weight (g)	7.6720	5.8611	8.8305	13.0034	4.8491
		Dry Weight (g)	3.0937	1.8942	3.4331	5.0201	1.5500
		Moisture (%)	59.7	67.7	61.1	61.4	68.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.023	0.009	0.029	<0.007	0.018
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	695	1,690	1,018	1,140	1,776
24Mg	0.026	0.087	799	1,359	764	800	1,202
27Al	0.052	0.173	1.9	1.4	2.7	0.680	0.769
31P	85	283	11,417	10,233	10,918	12,042	12,206
39K	11	37	5,762	10,831	7,051	7,410	12,677
44Ca	15	50	331	868	353	386	849
49Ti	0.335	1.1	0.773	0.949	0.773	0.709	1.3
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.4	1.5	1.3	1.3	1.5
55Mn	0.040	0.133	3.2	16	5.8	5.8	16
57Fe	2.6	8.7	63	142	58	49	85
59Co	0.004	0.013	0.071	0.077	0.049	0.064	0.063
60Ni	0.027	0.090	0.033	0.082	0.065	0.063	0.070
63Cu	0.020	0.067	2.4	3.4	2.4	2.5	3.8
66Zn	0.676	2.3	79	133	81	94	191
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	11	15	12	9.9	11
88Sr	0.001	0.003	0.332	0.487	0.290	0.274	0.655
95Mo	0.014	0.047	0.090	0.207	0.060	0.093	0.184
107Ag	0.001	0.003	0.019	0.016	0.019	0.019	0.016
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.061	0.225	0.077	0.094	0.156
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	2.6	0.946	3.3	2.3	6.1
202Hg	0.071	0.237	<0.071	<0.071	<0.071	<0.071	<0.071
205Tl	0.001	0.003	0.015	0.006	0.006	0.003	0.013
208Pb	0.006	0.020	0.014	0.013	0.014	0.015	0.007
238U	0.001	0.003	0.002	0.006	0.003	0.002	0.001

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-31-O_20210421	RG_SC-PCC-01-M_20210419	RG_SC-PCC-04-M_20210419	RG_SC-PCC-16-M_20210420	RG_SC-PCC-17-M_20210420
		Lab ID	132	133	134	135	136
		Wet Weight (g)	6.3999	10.9480	8.0022	9.9980	9.5277
		Dry Weight (g)	2.4046	2.8596	2.0707	2.6964	2.2961
		Moisture (%)	62.4	73.9	74.1	73.0	75.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.028	<0.007	<0.007	<0.007	<0.007
11B	0.082	0.273	<0.082	0.130	<0.082	<0.082	<0.082
23Na	2.5	8.3	978	778	734	635	835
24Mg	0.026	0.087	768	865	990	964	1,130
27Al	0.052	0.173	1.3	2.6	0.887	1.1	2.5
31P	85	283	10,789	8,145	8,431	8,930	8,807
39K	11	37	6,508	19,860	17,646	21,996	19,409
44Ca	15	50	350	921	747	990	656
49Ti	0.335	1.1	0.709	0.949	0.949	1.3	1.3
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.3	1.5	1.4	1.4	1.6
55Mn	0.040	0.133	6.8	0.418	0.322	0.316	0.348
57Fe	2.6	8.7	57	21	25	20	30
59Co	0.004	0.013	0.069	0.022	0.026	0.018	0.029
60Ni	0.027	0.090	0.063	0.281	0.234	0.094	0.305
63Cu	0.020	0.067	3.1	1.2	1.3	1.1	1.6
66Zn	0.676	2.3	102	41	37	32	23
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	11	1.5	3.1	1.4	2.6
88Sr	0.001	0.003	0.324	0.553	0.559	0.527	0.491
95Mo	0.014	0.047	0.124	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	0.009	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	<0.037	0.079	0.101	0.085	0.102
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.9	1.5	2.2	1.1	2.5
202Hg	0.071	0.237	<0.071	0.673	0.561	1.1	0.673
205Tl	0.001	0.003	0.005	0.007	0.007	0.012	0.011
208Pb	0.006	0.020	0.020	0.007	0.010	0.010	0.007
238U	0.001	0.003	0.002	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

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< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-18-M_20210420	RG_SC-PCC-19-M_20210420	RG_SC-PCC-20-M_20210420	RG_SC-PCC-22-M_20210420	RG_SC-PCC-24-M_20210421
		Lab ID	137	138	139	140	141
		Wet Weight (g)	9.4248	11.1095	7.7393	4.9202	4.3109
		Dry Weight (g)	2.1257	2.8318	1.8473	1.1862	1.1030
		Moisture (%)	77.4	74.5	76.1	75.9	74.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	<0.007	0.010	0.010
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	1,068	804	909	838	1,074
24Mg	0.026	0.087	1,194	1,193	1,376	975	1,472
27Al	0.052	0.173	4.4	2.9	3.3	3.2	4.2
31P	85	283	11,560	9,052	9,234	10,633	10,899
39K	11	37	25,556	18,821	19,322	23,359	24,355
44Ca	15	50	872	1,001	909	951	1,035
49Ti	0.335	1.1	1.2	1.3	1.3	1.3	1.3
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.5	1.4	1.6	1.5	1.5
55Mn	0.040	0.133	0.549	0.551	0.445	0.374	0.455
57Fe	2.6	8.7	36	29	33	19	19
59Co	0.004	0.013	0.022	0.020	0.027	0.020	0.020
60Ni	0.027	0.090	0.287	0.212	0.325	0.225	0.175
63Cu	0.020	0.067	1.3	1.6	1.5	1.2	1.2
66Zn	0.676	2.3	43	34	37	23	22
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.5	1.7	2.1	1.9	2.8
88Sr	0.001	0.003	0.575	0.533	0.632	0.491	0.625
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.143	0.079	0.209	0.095	0.050
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	4.3	2.7	3.8	1.1	1.5
202Hg	0.071	0.237	1.7	0.629	1.1	0.656	0.438
205Tl	0.001	0.003	0.005	0.013	0.007	0.023	0.027
208Pb	0.006	0.020	0.010	0.016	0.010	0.013	0.010
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-26-M_20210421	RG_SC-PCC-28-M_20210421	RG_SC-PCC-29-M_20210421	RG_SC-PCC-30-M_20210421	RG_SC-PCC-31-M_20210421
		Lab ID	142	143	144	145	146
		Wet Weight (g)	6.2496	3.7873	6.0429	5.2755	3.8903
		Dry Weight (g)	1.4559	0.9541	1.4340	1.2189	0.9593
		Moisture (%)	76.7	74.8	76.3	76.9	75.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.010	0.010	<0.007	<0.007	0.017
11B	0.082	0.273	<0.082	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	993	892	652	837	1,334
24Mg	0.026	0.087	1,470	1,451	1,434	1,113	1,204
27Al	0.052	0.173	3.3	2.9	3.0	0.563	1.8
31P	85	283	10,592	10,766	10,524	7,791	14,895
39K	11	37	23,933	22,745	22,425	18,057	33,465
44Ca	15	50	1,019	1,059	935	845	673
49Ti	0.335	1.1	1.3	1.3	1.3	0.992	1.1
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.4	1.3	1.4	1.3	1.3
55Mn	0.040	0.133	0.344	0.516	0.436	0.357	0.765
57Fe	2.6	8.7	18	20	17	14	47
59Co	0.004	0.013	0.016	0.018	0.023	0.008	0.058
60Ni	0.027	0.090	0.125	0.125	0.200	0.100	0.162
63Cu	0.020	0.067	1.1	1.2	1.3	0.772	12
66Zn	0.676	2.3	21	19	20	23	90
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	1.6	4.5	3.1	1.8	2.0
88Sr	0.001	0.003	0.697	0.474	0.612	0.565	0.379
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.187	0.043	0.112	0.038	0.066
121Sb	0.007	0.023	0.008	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.2	1.8	1.1	1.1	2.9
202Hg	0.071	0.237	0.547	0.459	0.536	0.919	0.528
205Tl	0.001	0.003	0.009	0.013	0.005	0.010	0.021
208Pb	0.006	0.020	0.006	0.008	0.013	<0.006	0.007
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-SS-01_20210429	RG_SC-SS-02_20210429	RG_GC-SS-01-O_20210420	RG_GC-SS-01-M_20210420	RG_GC-SS-02-O_20210420
		Lab ID	147	148	149	150	151
		Wet Weight (g)	0.0909	0.2328	0.8999	0.6514	1.4968
		Dry Weight (g)	0.0247	0.0544	0.3069	0.1516	0.5286
		Moisture (%)	72.8	76.6	65.9	76.7	64.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.040	0.017	0.011	0.026	<0.007
11B	0.082	0.273	0.123	0.098	<0.082	0.089	<0.082
23Na	2.5	8.3	3,692	2,964	2,922	3,215	2,427
24Mg	0.026	0.087	1,342	1,272	771	1,639	727
27Al	0.052	0.173	29	7.8	0.764	1.5	0.568
31P	85	283	15,708	11,319	14,300	12,660	14,275
39K	11	37	23,022	20,722	13,795	23,254	12,345
44Ca	15	50	8,041	2,651	590	1,706	614
49Ti	0.335	1.1	1.5	1.5	0.757	1.2	0.781
51V	0.053	0.177	0.114	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	3.3	1.6	1.4	1.7	1.4
55Mn	0.040	0.133	2.7	0.818	4.8	1.2	4.7
57Fe	2.6	8.7	131	79	34	19	33
59Co	0.004	0.013	0.234	0.122	0.165	0.070	0.139
60Ni	0.027	0.090	3.2	0.455	0.455	0.409	0.186
63Cu	0.020	0.067	2.6	1.7	2.3	1.4	3.1
66Zn	0.676	2.3	63	62	120	31	112
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	8.9	4.0	8.3	5.1	9.0
88Sr	0.001	0.003	13	2.2	2.0	1.0	1.8
95Mo	0.014	0.047	0.032	0.032	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.364	0.370	0.043	0.178	0.047
121Sb	0.007	0.023	0.020	0.015	<0.007	<0.007	<0.007
137Ba	0.001	0.003	10	1.1	2.2	0.646	3.7
202Hg	0.071	0.237	0.203	0.388	<0.071	0.313	<0.071
205Tl	0.001	0.003	0.026	0.031	0.045	0.040	0.027
208Pb	0.006	0.020	0.062	0.022	0.009	0.010	0.010
238U	0.001	0.003	0.002	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-SS-02-M_20210420	RG_GC-SS-07-O_20210427	RG_GC-SS-07-M_20210427	RG_GC-SS-09-O_20210428	RG_GC-SS-09-M_20210429
		Lab ID	152	153	154	155	156
		Wet Weight (g)	0.9894	0.5337	0.2220	0.7767	0.3303
		Dry Weight (g)	0.2375	0.1962	0.0667	0.2797	0.0813
		Moisture (%)	76.0	63.2	70.0	64.0	75.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.015	0.010	0.015	<0.007	0.030
11B	0.082	0.273	0.082	<0.082	<0.082	<0.082	0.103
23Na	2.5	8.3	2,560	2,780	849	2,638	2,527
24Mg	0.026	0.087	1,500	638	1,314	644	1,569
27Al	0.052	0.173	2.7	0.561	6.0	0.906	50
31P	85	283	13,025	14,088	9,927	15,381	12,985
39K	11	37	23,575	13,500	19,315	13,584	25,759
44Ca	15	50	2,137	528	1,068	534	1,753
49Ti	0.335	1.1	1.1	0.814	1.6	0.814	3.0
51V	0.053	0.177	<0.053	<0.053	0.054	<0.053	0.058
52Cr	0.270	0.900	2.0	1.5	1.9	1.5	2.4
55Mn	0.040	0.133	1.4	6.0	2.0	4.3	2.5
57Fe	2.6	8.7	36	40	42	41	75
59Co	0.004	0.013	0.080	0.241	0.054	0.250	0.137
60Ni	0.027	0.090	0.821	0.383	1.4	0.493	1.4
63Cu	0.020	0.067	1.6	2.8	1.2	2.6	1.4
66Zn	0.676	2.3	49	131	40	127	58
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	5.0	7.7	3.5	8.2	5.8
88Sr	0.001	0.003	1.4	1.6	0.589	1.5	1.0
95Mo	0.014	0.047	<0.014	<0.014	0.029	<0.014	0.029
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	0.776	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.233	0.194	0.117	0.150	0.255
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	1.5	2.4	0.744	2.2	1.6
202Hg	0.071	0.237	0.661	<0.071	0.673	<0.071	0.439
205Tl	0.001	0.003	0.057	0.024	0.036	0.018	0.029
208Pb	0.006	0.020	0.020	0.012	0.024	0.012	0.065
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC_SS-11-M_20210430	RG_GC_SS-11-O_20210430	RG_ER-SS-01-M_20210429	RG_ER-SS-03-M_20210430	RG_ER-SS-03-O_20210430
		Lab ID	157	158	159	160	161
		Wet Weight (g)	1.5055	1.6307	0.8308	0.7391	0.8883
		Dry Weight (g)	0.3564	0.5692	0.1943	0.1815	0.3068
		Moisture (%)	76.3	65.1	76.6	75.4	65.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	0.010	0.025	0.022
11B	0.082	0.273	0.103	<0.082	<0.082	0.123	<0.082
23Na	2.5	8.3	1,259	2,344	1,218	1,783	2,273
24Mg	0.026	0.087	1,459	827	910	1,088	782
27Al	0.052	0.173	1.1	0.399	2.0	0.949	0.695
31P	85	283	11,326	14,526	10,985	12,549	13,851
39K	11	37	19,952	10,516	23,174	22,057	12,761
44Ca	15	50	1,198	617	972	1,372	486
49Ti	0.335	1.1	1.1	0.814	1.2	1.4	1.1
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	1.5	1.4	1.4	1.5	1.3
55Mn	0.040	0.133	1.0	6.3	0.890	0.841	4.6
57Fe	2.6	8.7	18	42	17	14	41
59Co	0.004	0.013	0.043	0.161	0.047	0.043	0.145
60Ni	0.027	0.090	0.192	0.164	0.082	0.164	0.314
63Cu	0.020	0.067	1.5	2.4	1.5	1.1	1.7
66Zn	0.676	2.3	40	156	29	33	136
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	4.3	9.0	5.8	7.9	12
88Sr	0.001	0.003	0.388	1.8	0.261	0.544	1.8
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	0.028
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.162	0.143	<0.037	0.081	0.350
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.338	2.4	0.203	0.271	3.0
202Hg	0.071	0.237	0.479	<0.071	0.308	0.274	<0.071
205Tl	0.001	0.003	0.019	0.012	0.022	0.029	0.023
208Pb	0.006	0.020	0.012	0.006	0.012	0.016	0.012
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-SS-05-M_20210430	RG_ER-SS-06-M_20210430	RG_ER-SS-07-M_20210430	RG_ER-SS-08-M_20210430	RG_SC-RBT-01-M_20210420
		Lab ID	162	163	164	165	166
		Wet Weight (g)	0.1456	0.2452	0.1400	0.0990	0.0906
		Dry Weight (g)	0.0381	0.0626	0.0350	0.0247	0.0195
		Moisture (%)	73.8	74.5	75.0	75.1	78.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.044	0.066	0.061	0.061	<0.007
11B	0.082	0.273	0.207	0.316	0.243	0.292	<0.082
23Na	2.5	8.3	2,313	2,804	2,649	2,879	1,132
24Mg	0.026	0.087	1,032	1,325	1,226	1,117	1,353
27Al	0.052	0.173	11	27	9.0	24	2.6
31P	85	283	9,131	13,403	10,429	10,820	11,452
39K	11	37	16,378	19,931	16,509	17,289	22,644
44Ca	15	50	1,806	4,310	2,438	3,165	605
49Ti	0.335	1.1	1.3	1.8	1.4	1.8	1.1
51V	0.053	0.177	0.068	0.106	<0.053	0.099	<0.053
52Cr	0.270	0.900	2.7	2.1	2.1	2.3	1.8
55Mn	0.040	0.133	1.7	2.5	3.9	3.2	0.366
57Fe	2.6	8.7	84	136	98	82	28
59Co	0.004	0.013	0.158	0.220	0.383	0.238	0.031
60Ni	0.027	0.090	2.5	1.5	1.4	2.0	0.644
63Cu	0.020	0.067	1.8	2.8	2.7	2.6	1.3
66Zn	0.676	2.3	66	65	60	52	53
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	9.6	16	13	11	1.4
88Sr	0.001	0.003	1.7	5.6	2.5	3.7	0.361
95Mo	0.014	0.047	0.028	0.055	0.028	0.028	<0.014
107Ag	0.001	0.003	0.011	0.011	0.011	0.011	<0.001
111Cd	0.067	0.223	0.090	0.090	0.179	0.224	<0.067
118Sn	0.037	0.123	0.664	0.180	0.153	0.230	0.926
121Sb	0.007	0.023	0.009	0.009	0.018	0.011	<0.007
137Ba	0.001	0.003	1.2	4.8	2.1	4.0	0.250
202Hg	0.071	0.237	0.101	0.127	0.101	0.114	0.735
205Tl	0.001	0.003	0.025	0.026	0.033	0.038	0.021
208Pb	0.006	0.020	0.017	0.029	0.012	0.029	0.017
238U	0.001	0.003	<0.001	0.002	0.002	0.002	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-YP-01-M_20210420	RG_SC-YP-02-M_20210420	RG_SC-YP-03-M_20210420	RG_SC-YP-04-M_20210421	RG_SC-YP-05-M_20210421
		Lab ID	167	168	169	170	171
		Wet Weight (g)	0.0716	0.0891	0.1145	0.0534	0.0449
		Dry Weight (g)	0.0145	0.0247	0.0255	0.0146	0.0126
		Moisture (%)	79.7	72.3	77.7	72.7	71.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.037	0.059	0.022	0.007	0.007
11B	0.082	0.273	0.256	<0.082	<0.082	0.093	<0.082
23Na	2.5	8.3	1,967	2,661	2,079	961	937
24Mg	0.026	0.087	1,205	1,250	1,079	260	1,464
27Al	0.052	0.173	30	6.6	3.3	5.9	4.2
31P	85	283	11,141	11,009	11,381	2,134	12,136
39K	11	37	22,450	25,344	25,738	4,100	26,540
44Ca	15	50	1,313	1,239	807	356	653
49Ti	0.335	1.1	2.7	1.5	1.5	1.5	1.5
51V	0.053	0.177	0.055	<0.053	<0.053	0.062	<0.053
52Cr	0.270	0.900	2.7	1.8	1.9	2.7	3.1
55Mn	0.040	0.133	2.4	0.914	1.3	0.519	1.3
57Fe	2.6	8.7	57	35	27	13	40
59Co	0.004	0.013	0.063	0.054	0.045	0.029	0.086
60Ni	0.027	0.090	3.2	1.3	1.2	0.628	3.2
63Cu	0.020	0.067	0.895	0.732	0.732	0.323	1.1
66Zn	0.676	2.3	56	30	31	19	36
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	4.2	1.8	4.0	<0.439	0.857
88Sr	0.001	0.003	1.1	0.480	0.203	0.258	0.176
95Mo	0.014	0.047	0.019	<0.014	<0.014	0.019	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	0.078	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.150	0.113	0.114	0.110	0.103
121Sb	0.007	0.023	<0.007	<0.007	<0.007	0.032	<0.007
137Ba	0.001	0.003	1.6	0.281	0.141	0.141	0.211
202Hg	0.071	0.237	0.638	0.616	0.629	0.126	0.832
205Tl	0.001	0.003	0.020	0.028	0.023	0.013	0.028
208Pb	0.006	0.020	0.129	0.017	0.008	0.017	0.008
238U	0.001	0.003	0.002	<0.001	<0.001	0.003	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-WCT-01-M_20210420	RG_SC-WCT-02-M_20210420	RG_SC-WCT-03-M_20210424	RG_SC-BT-01-M_20210420	RG_SC-BT-02-M_20210420
		Lab ID	172	173	174	175	176
		Wet Weight (g)	0.0521	0.0338	0.0644	0.0777	0.0302
		Dry Weight (g)	0.0152	0.0110	0.0192	0.0212	0.0112
		Moisture (%)	70.8	67.5	70.2	72.7	62.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	0.041	0.041	0.011
11B	0.082	0.273	<0.082	<0.082	<0.082	0.256	<0.082
23Na	2.5	8.3	1,184	840	1,082	1,318	1,175
24Mg	0.026	0.087	1,295	461	1,178	1,318	1,076
27Al	0.052	0.173	4.0	6.0	90	70	8.2
31P	85	283	13,241	4,152	13,039	11,807	9,964
39K	11	37	27,503	8,244	28,393	14,987	20,222
44Ca	15	50	616	474	767	1,243	1,219
49Ti	0.335	1.1	1.5	1.2	3.9	4.7	1.1
51V	0.053	0.177	<0.053	<0.053	0.203	0.103	<0.053
52Cr	0.270	0.900	2.4	3.5	6.2	3.1	3.2
55Mn	0.040	0.133	0.662	0.701	3.3	3.3	0.832
57Fe	2.6	8.7	36	33	182	99	55
59Co	0.004	0.013	0.066	0.077	0.352	0.122	0.090
60Ni	0.027	0.090	2.0	2.6	12	3.6	3.4
63Cu	0.020	0.067	1.1	0.653	1.2	0.967	1.2
66Zn	0.676	2.3	45	20	20	43	23
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	8.5	0.643	1.1	1.6	1.2
88Sr	0.001	0.003	0.331	0.363	0.717	1.5	0.715
95Mo	0.014	0.047	<0.014	<0.014	<0.014	0.038	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.589	0.349	0.112	0.645	0.775
121Sb	0.007	0.023	0.008	0.011	0.011	0.017	<0.007
137Ba	0.001	0.003	0.141	0.387	1.8	3.8	0.316
202Hg	0.071	0.237	0.180	0.135	0.333	0.629	0.483
205Tl	0.001	0.003	0.017	0.007	0.019	0.064	0.048
208Pb	0.006	0.020	0.017	0.042	0.071	0.221	0.040
238U	0.001	0.003	<0.001	0.002	0.002	0.009	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-BT-03-M_20210421	RG_SC-BT-04-M_20210422	RG_SC-BT-05-M_20210423	RG_SC-BT-06-M_20210423	RG_SC-BT-07-M_20210426
		Lab ID	177	178	179	180	181
		Wet Weight (g)	0.0904	0.0741	0.0990	0.0861	0.0258
		Dry Weight (g)	0.0238	0.0196	0.0251	0.0231	0.0114
		Moisture (%)	73.7	73.5	74.6	73.2	55.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.080	0.017	0.115	0.026	0.013
11B	0.082	0.273	0.246	<0.082	0.197	0.089	0.089
23Na	2.5	8.3	1,067	2,541	1,293	1,453	778
24Mg	0.026	0.087	1,659	1,158	1,382	1,095	1,224
27Al	0.052	0.173	160	30	235	45	34
31P	85	283	13,642	9,451	11,996	9,466	9,316
39K	11	37	27,237	16,506	25,248	17,626	14,921
44Ca	15	50	1,386	1,078	1,288	1,250	971
49Ti	0.335	1.1	7.6	2.6	14	2.0	2.7
51V	0.053	0.177	0.243	<0.053	0.262	0.094	0.133
52Cr	0.270	0.900	7.6	1.9	8.6	3.0	6.2
55Mn	0.040	0.133	3.4	0.909	5.2	1.3	2.2
57Fe	2.6	8.7	228	43	307	67	115
59Co	0.004	0.013	0.393	0.058	0.239	0.087	0.214
60Ni	0.027	0.090	14	0.975	16	3.2	9.6
63Cu	0.020	0.067	1.8	1.2	1.7	1.3	1.7
66Zn	0.676	2.3	29	37	22	23	15
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.3	2.4	2.1	1.7	1.4
88Sr	0.001	0.003	1.9	0.819	2.3	1.2	1.1
95Mo	0.014	0.047	0.032	<0.014	0.064	<0.014	0.033
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.381	1.0	0.267	0.661	0.418
121Sb	0.007	0.023	0.010	<0.007	0.018	<0.007	<0.007
137Ba	0.001	0.003	3.7	0.752	4.5	0.923	0.923
202Hg	0.071	0.237	0.947	1.8	2.8	0.924	0.857
205Tl	0.001	0.003	0.033	0.027	0.071	0.031	0.034
208Pb	0.006	0.020	0.240	0.049	0.200	0.050	0.040
238U	0.001	0.003	0.005	<0.001	0.005	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-BT-08-M_20210426	RG_SC-MWF-01-M_20210420	RG_SC-MWF-02-M_20210421	RG_SC-MWF-03-M_20210421	RG_SC-MWF-04-M_20210421
		Lab ID	182	183	184	185	186
		Wet Weight (g)	0.0101	0.1111	0.0414	0.0533	0.0413
		Dry Weight (g)	0.0082	0.0306	0.0131	0.0147	0.0134
		Moisture (%)	18.8	72.5	68.4	72.4	67.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.055	0.022	0.031	0.039	0.017
11B	0.082	0.273	0.215	0.086	<0.082	<0.082	<0.082
23Na	2.5	8.3	364	1,255	966	1,229	733
24Mg	0.026	0.087	1,034	1,336	895	1,022	1,127
27Al	0.052	0.173	114	8.0	0.478	2.0	0.809
31P	85	283	7,048	11,008	9,744	10,271	9,268
39K	11	37	13,129	24,882	21,792	22,754	19,907
44Ca	15	50	1,451	737	473	528	400
49Ti	0.335	1.1	7.3	1.4	0.816	1.1	0.816
51V	0.053	0.177	0.199	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	3.4	1.5	1.3	2.2	1.1
55Mn	0.040	0.133	4.0	0.472	0.422	0.619	0.297
57Fe	2.6	8.7	151	25	15	35	11
59Co	0.004	0.013	0.115	0.059	0.024	0.067	0.020
60Ni	0.027	0.090	4.3	0.297	0.247	1.5	0.148
63Cu	0.020	0.067	0.999	1.1	0.823	1.2	0.750
66Zn	0.676	2.3	11	33	16	25	16
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	1.2	2.1	3.4	2.1	1.2
88Sr	0.001	0.003	2.9	0.524	0.114	0.228	0.133
95Mo	0.014	0.047	0.022	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.303	0.548	<0.037	0.068	0.244
121Sb	0.007	0.023	0.008	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	3.4	0.260	0.065	0.130	0.065
202Hg	0.071	0.237	0.754	0.479	0.443	0.255	0.311
205Tl	0.001	0.003	0.034	0.009	0.009	0.022	0.013
208Pb	0.006	0.020	0.158	0.106	<0.006	0.017	0.014
238U	0.001	0.003	0.003	0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-MWF-05-M_20210421	RG_SC-KO-01-M_20210421	RG_SC-KO-02-M_20210422	RG_ER-BT-01-M_20210421	RG_ER-BT-02-M_20210423
		Lab ID	187	188	189	190	191
		Wet Weight (g)	0.0496	0.0503	0.0690	0.0490	0.1200
		Dry Weight (g)	0.0159	0.0166	0.0172	0.0131	0.0297
		Moisture (%)	67.9	67.0	75.1	73.3	75.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.035	<0.007	0.009	0.009	0.009
11B	0.082	0.273	0.086	<0.082	<0.082	<0.082	<0.082
23Na	2.5	8.3	860	696	578	1,170	698
24Mg	0.026	0.087	1,510	1,264	1,152	1,081	845
27Al	0.052	0.173	15	0.616	21	3.1	10
31P	85	283	10,879	10,779	11,022	10,087	9,796
39K	11	37	25,385	21,573	22,546	19,850	21,246
44Ca	15	50	622	331	549	755	635
49Ti	0.335	1.1	1.4	0.544	1.4	1.4	1.1
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	<0.053
52Cr	0.270	0.900	2.9	1.4	2.1	1.4	1.3
55Mn	0.040	0.133	1.1	0.251	0.775	0.412	0.616
57Fe	2.6	8.7	40	11	38	14	17
59Co	0.004	0.013	0.061	0.016	0.055	0.040	0.024
60Ni	0.027	0.090	3.3	0.198	1.5	0.309	0.371
63Cu	0.020	0.067	1.1	0.930	0.949	1.1	1.2
66Zn	0.676	2.3	17	24	63	19	14
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.6	1.8	2.3	3.1	2.5
88Sr	0.001	0.003	0.433	0.192	0.661	0.262	0.420
95Mo	0.014	0.047	0.022	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.045	0.119	0.095	0.128	0.048
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.325	0.065	0.585	0.195	0.390
202Hg	0.071	0.237	0.326	0.428	0.489	0.234	0.341
205Tl	0.001	0.003	0.012	0.049	0.048	0.036	0.031
208Pb	0.006	0.020	0.024	0.007	0.034	0.021	0.041
238U	0.001	0.003	<0.001	<0.001	0.001	<0.001	<0.001

Notes:

ppm = parts per million

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< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-BT-03-M_20210424	RG_ER-BT-04-M_20210425	RG_ER-BT-05-M_20210425	RG_ER-BT-06-M_20210425	RG_ER-BT-07-M_20210426
		Lab ID	192	193	194	195	196
		Wet Weight (g)	0.0739	0.1644	0.0468	0.2493	0.0487
		Dry Weight (g)	0.0153	0.0325	0.0123	0.0635	0.0173
		Moisture (%)	79.3	80.2	73.7	74.5	64.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.120	0.068	0.016	0.010	0.010
11B	0.082	0.273	0.337	0.175	0.100	<0.082	0.150
23Na	2.5	8.3	1,145	631	744	1,457	928
24Mg	0.026	0.087	1,067	1,337	1,222	1,293	1,132
27Al	0.052	0.173	224	117	12	8.2	16
31P	85	283	12,938	10,333	10,432	11,202	8,354
39K	11	37	27,623	20,696	23,652	22,154	15,557
44Ca	15	50	1,062	1,222	564	377	608
49Ti	0.335	1.1	21	5.7	1.6	0.983	1.6
51V	0.053	0.177	0.270	0.135	<0.053	<0.053	<0.053
52Cr	0.270	0.900	4.4	1.9	1.5	1.5	2.5
55Mn	0.040	0.133	4.7	4.9	1.0	0.490	0.864
57Fe	2.6	8.7	224	95	24	30	34
59Co	0.004	0.013	0.140	0.090	0.036	0.027	0.038
60Ni	0.027	0.090	6.6	1.4	0.545	0.454	2.1
63Cu	0.020	0.067	1.6	1.2	1.2	1.5	1.2
66Zn	0.676	2.3	25	17	14	18	17
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.1	2.2	2.1	2.2	1.9
88Sr	0.001	0.003	1.6	1.8	0.623	0.304	0.558
95Mo	0.014	0.047	0.053	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.167	0.246	0.116	0.122	0.463
121Sb	0.007	0.023	0.015	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	5.6	5.4	0.699	0.388	0.621
202Hg	0.071	0.237	3.9	1.3	0.982	3.0	0.748
205Tl	0.001	0.003	0.028	0.026	0.021	0.022	0.046
208Pb	0.006	0.020	0.143	0.194	0.039	0.019	0.054
238U	0.001	0.003	0.007	0.007	0.002	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-BT-08-M_20210426	RG_ER-KO-01-M_20210421	RG_ER-KO-02-M_20210427	RG_ER-WCT-01-M_20210421	RG_ER-WCT-02-M_20210423
		Lab ID	197	198	199	200	201
		Wet Weight (g)	0.0194	0.0363	0.0200	0.0192	0.0622
		Dry Weight (g)	0.0143	0.0095	0.0152	0.0064	0.0197
		Moisture (%)	26.3	73.8	24.0	66.7	68.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.205	0.079	0.031	0.131	0.016
11B	0.082	0.273	0.344	0.204	0.172	0.409	<0.082
23Na	2.5	8.3	1,008	880	760	1,443	730
24Mg	0.026	0.087	1,291	1,088	1,199	1,045	607
27Al	0.052	0.173	344	112	40	219	7.4
31P	85	283	9,975	9,723	10,287	8,230	6,453
39K	11	37	19,830	17,780	18,215	19,277	11,161
44Ca	15	50	1,579	2,377	642	1,334	326
49Ti	0.335	1.1	20	5.3	2.4	12	0.526
51V	0.053	0.177	2.4	0.390	0.066	0.356	<0.053
52Cr	0.270	0.900	92	13	3.4	7.4	2.7
55Mn	0.040	0.133	19	3.8	2.0	4.1	0.508
57Fe	2.6	8.7	1,907	279	77	271	34
59Co	0.004	0.013	4.0	0.677	0.108	0.203	0.081
60Ni	0.027	0.090	177	27	3.6	13	2.2
63Cu	0.020	0.067	4.1	1.7	1.3	1.9	0.982
66Zn	0.676	2.3	21	53	31	23	14
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.6	2.6	1.6	1.3	2.0
88Sr	0.001	0.003	3.8	2.9	0.913	1.9	0.237
95Mo	0.014	0.047	0.325	0.025	0.025	0.100	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	1.1	<0.067	<0.067
118Sn	0.037	0.123	0.353	0.454	0.182	0.834	0.080
121Sb	0.007	0.023	0.035	0.008	<0.007	0.025	0.012
137Ba	0.001	0.003	5.5	2.4	1.5	5.7	0.263
202Hg	0.071	0.237	2.5	0.510	0.658	0.242	0.114
205Tl	0.001	0.003	0.082	0.048	0.063	0.009	0.008
208Pb	0.006	0.020	0.143	0.127	0.123	0.215	0.044
238U	0.001	0.003	0.005	0.003	0.001	0.006	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-WCT-03-M_20210423	RG_ER-WCT-04-M_20210424	RG_ER-WCT-05-M_20210424	RG_ER-WCT-06-M_20210425	RG_ER-WCT-07-M_20210427
		Lab ID	202	203*	204*	205	206
		Wet Weight (g)	0.0397	0.0341	0.0298	0.0619	0.0358
		Dry Weight (g)	0.0133	0.0125	0.0118	0.0185	0.0160
		Moisture (%)	66.5	63.3	60.4	70.1	55.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.105	1.7	0.649	0.016	0.026
11B	0.082	0.273	0.344	2.1	0.581	0.086	0.086
23Na	2.5	8.3	1,012	958	770	1,226	983
24Mg	0.026	0.087	1,279	2,127	1,211	1,243	1,152
27Al	0.052	0.173	159	2,956	1,127	2.5	30
31P	85	283	9,613	10,638	6,656	12,388	11,650
39K	11	37	17,736	23,169	11,317	25,978	24,257
44Ca	15	50	1,165	4,552	1,735	841	663
49Ti	0.335	1.1	8.7	184	55	1.1	1.6
51V	0.053	0.177	0.465	5.0	1.8	<0.053	0.085
52Cr	0.270	0.900	7.4	117	50	2.0	5.1
55Mn	0.040	0.133	5.9	42	19	0.604	1.5
57Fe	2.6	8.7	278	3,158	2,085	26	95
59Co	0.004	0.013	0.293	7.3	2.9	0.072	0.104
60Ni	0.027	0.090	15	208	153	0.785	6.6
63Cu	0.020	0.067	1.5	4.3	2.4	1.4	1.6
66Zn	0.676	2.3	33	30	19	21	45
75As	0.514	1.7	<0.514	0.776	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.9	2.9	0.964	3.1	1.7
88Sr	0.001	0.003	2.0	12	3.6	0.555	0.483
95Mo	0.014	0.047	0.025	0.125	0.162	0.025	0.050
107Ag	0.001	0.003	<0.001	0.008	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	0.650	<0.067	<0.067
118Sn	0.037	0.123	0.516	0.803	0.104	0.145	0.286
121Sb	0.007	0.023	0.016	0.071	0.032	0.011	0.009
137Ba	0.001	0.003	4.3	52	23	0.296	0.592
202Hg	0.071	0.237	0.188	0.269	0.128	0.269	0.242
205Tl	0.001	0.003	0.016	0.037	0.011	0.015	0.013
208Pb	0.006	0.020	0.250	1.3	0.390	0.016	0.034
238U	0.001	0.003	0.006	0.061	0.014	<0.001	0.001

Notes:

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-WCT-08-M_20210427	RG_ER-MWF-01-M_20210419	RG_ER-MWF-02-M_20210419	RG_ER-MWF-04-M_20210421	RG_ER-MWF-05-M_20210425
		Lab ID	207	208	209	210	211
		Wet Weight (g)	0.0366	0.0746	0.0828	0.0277	0.0711
		Dry Weight (g)	0.0139	0.0223	0.0241	0.0090	0.0206
		Moisture (%)	62.0	70.1	70.9	67.5	71.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.043	0.053	0.019	0.036	0.153
11B	0.082	0.273	0.086	0.107	<0.082	<0.082	0.193
23Na	2.5	8.3	1,381	1,116	813	824	778
24Mg	0.026	0.087	1,310	1,074	1,275	1,166	1,567
27Al	0.052	0.173	57	2.8	0.365	1.6	71
31P	85	283	10,773	12,855	10,611	8,274	13,774
39K	11	37	20,464	28,760	22,428	16,293	30,043
44Ca	15	50	1,970	685	632	510	926
49Ti	0.335	1.1	3.4	1.5	0.929	0.929	4.6
51V	0.053	0.177	0.204	0.064	<0.053	<0.053	0.260
52Cr	0.270	0.900	4.6	1.7	1.5	1.8	5.8
55Mn	0.040	0.133	1.4	0.653	0.637	0.542	2.6
57Fe	2.6	8.7	97	15	18	15	131
59Co	0.004	0.013	0.195	0.032	0.052	0.056	0.197
60Ni	0.027	0.090	6.5	0.382	0.254	0.305	8.0
63Cu	0.020	0.067	1.7	1.1	1.1	0.853	1.4
66Zn	0.676	2.3	22	21	20	17	21
75As	0.514	1.7	<0.514	0.895	<0.514	<0.514	<0.514
77Se	0.439	1.5	6.3	4.1	4.7	3.5	5.0
88Sr	0.001	0.003	1.7	0.127	0.101	0.135	0.976
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	0.025
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	0.149	0.372	0.223	<0.067
118Sn	0.037	0.123	0.427	0.131	0.107	0.118	0.136
121Sb	0.007	0.023	<0.007	0.016	<0.007	0.009	0.015
137Ba	0.001	0.003	1.0	0.130	0.065	0.130	1.7
202Hg	0.071	0.237	0.174	0.380	0.274	0.274	0.393
205Tl	0.001	0.003	0.014	0.052	0.029	0.029	0.032
208Pb	0.006	0.020	0.029	0.015	<0.006	0.007	0.080
238U	0.001	0.003	0.001	0.001	<0.001	<0.001	0.003

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-MWF-06-M_20210425	RG_ER-MWF-07-M_20210425	RG_ER-YP-01-M_20210421	RG_ER-YP-02-M_20210421	RG_ER-YP-03-M_20210421
		Lab ID	212	213	214	215	216
		Wet Weight (g)	0.0910	0.0588	0.0594	0.0373	0.1528
		Dry Weight (g)	0.0237	0.0154	0.0134	0.0084	0.0350
		Moisture (%)	74.0	73.8	77.4	77.5	77.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.131	0.088	0.033	0.066	0.016
11B	0.082	0.273	0.110	0.098	0.122	0.122	<0.082
23Na	2.5	8.3	637	763	1,925	1,713	852
24Mg	0.026	0.087	929	719	1,130	801	1,360
27Al	0.052	0.173	19	27	19	19	1.0
31P	85	283	10,393	7,617	11,147	7,587	8,335
39K	11	37	25,065	17,653	27,763	17,362	18,738
44Ca	15	50	788	766	985	814	928
49Ti	0.335	1.1	1.2	2.0	1.7	1.5	0.874
51V	0.053	0.177	0.057	0.102	0.059	<0.053	<0.053
52Cr	0.270	0.900	2.6	2.8	3.6	2.4	1.6
55Mn	0.040	0.133	1.2	1.5	1.5	0.955	0.879
57Fe	2.6	8.7	44	54	71	38	19
59Co	0.004	0.013	0.074	0.099	0.083	0.050	0.035
60Ni	0.027	0.090	2.1	2.3	4.3	1.7	0.705
63Cu	0.020	0.067	1.4	1.2	1.3	1.1	0.828
66Zn	0.676	2.3	20	26	47	29	26
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.0	1.3	3.8	2.7	3.2
88Sr	0.001	0.003	0.580	0.644	0.290	0.342	0.175
95Mo	0.014	0.047	<0.014	<0.014	0.027	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	0.504	<0.067	<0.067
118Sn	0.037	0.123	0.171	0.356	0.174	0.066	<0.037
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.736	1.1	0.736	0.883	0.147
202Hg	0.071	0.237	0.338	0.162	0.676	0.541	0.446
205Tl	0.001	0.003	0.014	0.011	0.013	0.007	0.017
208Pb	0.006	0.020	0.048	0.065	0.033	0.028	0.007
238U	0.001	0.003	<0.001	0.002	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-YP-04-M_20210423	RG_ER-YP-05-M_20210423	RG_ER-YP-06-M_20210423	RG_ER-YP-07-M_20210423	RG_ER-YP-08-M_20210423
		Lab ID	217	218	219	220	221
		Wet Weight (g)	0.0761	0.4833	0.0974	0.0798	0.0613
		Dry Weight (g)	0.0151	0.1083	0.0209	0.0170	0.0134
		Moisture (%)	80.2	77.6	78.5	78.7	78.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.049	0.049	0.041	0.038	0.033
11B	0.082	0.273	0.147	0.122	0.098	<0.082	<0.082
23Na	2.5	8.3	2,134	1,395	1,373	1,747	938
24Mg	0.026	0.087	964	1,007	1,161	1,265	1,055
27Al	0.052	0.173	7.4	35	5.5	21	5.9
31P	85	283	10,592	9,645	11,708	11,400	9,183
39K	11	37	23,271	24,552	27,080	29,591	22,754
44Ca	15	50	1,112	847	2,198	1,175	983
49Ti	0.335	1.1	1.5	1.9	1.5	1.5	1.2
51V	0.053	0.177	0.055	<0.053	0.072	0.066	<0.053
52Cr	0.270	0.900	2.2	1.6	3.9	3.3	1.7
55Mn	0.040	0.133	1.5	1.0	1.6	1.5	0.932
57Fe	2.6	8.7	57	44	62	62	23
59Co	0.004	0.013	0.079	0.039	0.110	0.083	0.026
60Ni	0.027	0.090	2.1	0.705	4.0	3.4	1.0
63Cu	0.020	0.067	0.920	0.842	0.773	0.879	0.676
66Zn	0.676	2.3	36	26	30	29	19
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	4.1	3.3	3.2	3.7	2.9
88Sr	0.001	0.003	0.426	0.381	1.0	0.331	0.279
95Mo	0.014	0.047	0.027	0.027	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.107	0.105	0.250	0.166	0.060
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.515	0.736	0.589	0.515	0.368
202Hg	0.071	0.237	0.676	0.716	0.486	0.764	0.541
205Tl	0.001	0.003	0.017	0.024	0.014	0.014	0.009
208Pb	0.006	0.020	0.014	0.041	0.010	0.014	0.007
238U	0.001	0.003	0.002	<0.001	<0.001	<0.001	<0.001

Notes:

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-YP-09-M_20210423	RG_ER-RBT-01-M_20210423	RG_GC-WCT-01-M_20210420	RG_GC-WCT-02-M_20210420	RG_GC-WCT-03-M_20210422
		Lab ID	222	223	224	225	226
		Wet Weight (g)	0.4152	0.0838	0.0408	0.0391	0.0240
		Dry Weight (g)	0.0808	0.0208	0.0084	0.0093	0.0061
		Moisture (%)	80.5	75.2	79.4	76.2	74.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.102	0.022	0.022	0.009	0.027
11B	0.082	0.273	<0.082	0.163	0.128	0.093	0.139
23Na	2.5	8.3	3,379	977	1,751	800	1,796
24Mg	0.026	0.087	1,171	1,340	1,053	1,285	1,084
27Al	0.052	0.173	6.3	40	10	2.2	50
31P	85	283	11,331	11,549	8,686	10,415	10,059
39K	11	37	22,311	24,020	17,442	21,374	19,785
44Ca	15	50	954	739	1,297	1,151	1,717
49Ti	0.335	1.1	1.5	2.7	1.8	0.907	2.1
51V	0.053	0.177	<0.053	0.089	<0.053	<0.053	0.189
52Cr	0.270	0.900	1.4	2.4	2.9	1.6	11
55Mn	0.040	0.133	0.793	1.1	0.919	0.362	3.6
57Fe	2.6	8.7	22	53	82	29	254
59Co	0.004	0.013	0.035	0.082	0.102	0.026	0.406
60Ni	0.027	0.090	0.419	2.3	3.5	0.603	25
63Cu	0.020	0.067	0.851	1.0	1.8	1.6	2.4
66Zn	0.676	2.3	26	28	82	22	42
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.6	2.9	5.0	1.5	2.4
88Sr	0.001	0.003	0.408	0.558	0.920	0.550	1.0
95Mo	0.014	0.047	<0.014	0.023	0.023	<0.014	0.136
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	0.526	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.088	0.225	0.629	0.155	0.245
121Sb	0.007	0.023	<0.007	<0.007	0.021	<0.007	<0.007
137Ba	0.001	0.003	0.505	0.793	0.865	0.433	0.793
202Hg	0.071	0.237	0.739	0.254	0.315	0.678	0.133
205Tl	0.001	0.003	0.039	0.023	0.013	0.010	0.007
208Pb	0.006	0.020	0.015	0.045	0.045	0.019	0.019
238U	0.001	0.003	<0.001	0.002	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-WCT-04-M_20210422	RG_GC-WCT-06-M_20210422	RG_GC-WCT-07-M_20210422	RG_GC-WCT-08-M_20210423	RG_GC-WCT-09-M_20210423
		Lab ID	227	228	229	230	231
		Wet Weight (g)	0.0324	0.0320	0.0559	0.0146	0.0303
		Dry Weight (g)	0.0068	0.0067	0.0131	0.0036	0.0039
		Moisture (%)	79.0	79.1	76.6	75.3	87.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.017	0.012	0.012	0.014	0.064
11B	0.082	0.273	0.131	<0.082	0.087	0.102	0.291
23Na	2.5	8.3	1,193	1,220	1,854	1,152	1,467
24Mg	0.026	0.087	1,214	1,356	1,173	898	916
27Al	0.052	0.173	15	9.9	3.1	3.4	89
31P	85	283	12,767	12,797	11,628	10,208	6,842
39K	11	37	28,231	26,033	22,991	18,208	11,775
44Ca	15	50	1,616	1,039	1,234	1,386	1,459
49Ti	0.335	1.1	1.0	1.0	1.0	1.4	5.0
51V	0.053	0.177	0.114	<0.053	<0.053	<0.053	0.137
52Cr	0.270	0.900	6.8	2.7	2.4	1.8	3.7
55Mn	0.040	0.133	2.0	0.933	0.494	0.532	2.7
57Fe	2.6	8.7	144	48	44	35	107
59Co	0.004	0.013	0.269	0.079	0.098	0.055	0.177
60Ni	0.027	0.090	5.5	2.4	1.7	0.773	5.5
63Cu	0.020	0.067	1.3	1.7	1.4	1.3	2.0
66Zn	0.676	2.3	32	18	26	22	54
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	1.5	4.0	3.6	4.9	3.8
88Sr	0.001	0.003	1.1	0.562	0.672	0.987	1.3
95Mo	0.014	0.047	0.064	<0.014	<0.014	<0.014	0.032
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.097	0.367	0.146	0.113	1.1
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	0.015
137Ba	0.001	0.003	1.0	0.521	0.261	0.868	4.0
202Hg	0.071	0.237	0.343	0.370	0.151	0.123	0.192
205Tl	0.001	0.003	0.009	0.014	0.018	0.011	0.017
208Pb	0.006	0.020	0.016	0.026	<0.006	0.010	0.150
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.004

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-BT-01-M_20210421	RG_GC-BT-02-M_20210422	RG_GC-BT-03-M_20210422	RG_GC-BT-04-M_20210423	RG_GC-BT-05-M_20210425
		Lab ID	232	233	234	235	236
		Wet Weight (g)	0.0346	0.0121	0.0171	0.0178	0.0201
		Dry Weight (g)	0.0037	0.0016	0.0031	0.0038	0.0041
		Moisture (%)	89.3	86.8	81.9	78.7	79.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.023	0.023	0.017	0.090	0.023
11B	0.082	0.273	0.175	1.1	0.233	0.379	0.146
23Na	2.5	8.3	2,558	770	3,252	4,362	2,274
24Mg	0.026	0.087	652	655	405	796	872
27Al	0.052	0.173	3.6	30	17	192	38
31P	85	283	4,888	5,092	4,256	7,093	7,168
39K	11	37	10,595	6,072	12,796	9,484	12,739
44Ca	15	50	877	434	567	1,773	1,085
49Ti	0.335	1.1	0.693	3.5	2.1	11	2.8
51V	0.053	0.177	<0.053	0.064	<0.053	0.877	0.310
52Cr	0.270	0.900	2.3	4.3	2.2	35	12
55Mn	0.040	0.133	0.718	1.5	0.508	9.7	3.9
57Fe	2.6	8.7	49	104	26	921	347
59Co	0.004	0.013	0.061	0.086	0.021	1.6	0.581
60Ni	0.027	0.090	1.8	2.2	0.442	73	36
63Cu	0.020	0.067	1.2	1.2	0.680	5.1	1.4
66Zn	0.676	2.3	26	12	21	100	34
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	2.2	2.2	1.5	2.3	3.0
88Sr	0.001	0.003	1.1	0.608	0.494	1.5	0.807
95Mo	0.014	0.047	<0.014	0.048	<0.014	0.161	0.032
107Ag	0.001	0.003	<0.001	0.011	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	2.7	0.235	1.5	1.4	1.5
121Sb	0.007	0.023	<0.007	0.041	0.012	0.025	0.011
137Ba	0.001	0.003	0.695	1.2	0.434	3.7	1.0
202Hg	0.071	0.237	2.6	1.2	0.638	2.2	0.316
205Tl	0.001	0.003	0.031	0.014	0.016	0.050	0.037
208Pb	0.006	0.020	0.072	0.264	0.145	0.171	0.041
238U	0.001	0.003	0.002	0.002	0.002	0.004	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-BT-06-M_20210425	RG_GC-BT-07-M_20210426	RG_GC-BT-08-M_20210426	RG_GC-YP-01-M_20210420	RG_GC-YP-02-M_20210420
		Lab ID	237	238	239	240	241
		Wet Weight (g)	0.0455	0.0458	0.0152	0.1020	0.1885
		Dry Weight (g)	0.0074	0.0101	0.0047	0.0205	0.0367
		Moisture (%)	83.7	77.9	69.1	79.9	80.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.063	<0.007	0.027	0.032	0.068
11B	0.082	0.273	0.384	<0.082	<0.082	<0.082	0.192
23Na	2.5	8.3	880	1,142	2,842	1,561	2,230
24Mg	0.026	0.087	1,024	658	808	1,246	1,038
27Al	0.052	0.173	102	1.5	61	13	73
31P	85	283	4,664	6,485	7,172	10,097	11,114
39K	11	37	6,423	13,113	14,344	23,171	27,571
44Ca	15	50	1,393	354	750	1,034	1,522
49Ti	0.335	1.1	7.2	0.988	4.9	2.0	4.9
51V	0.053	0.177	0.175	<0.053	0.310	0.122	0.137
52Cr	0.270	0.900	5.3	2.5	11	4.8	4.3
55Mn	0.040	0.133	3.1	0.477	3.5	1.8	2.6
57Fe	2.6	8.7	142	22	286	94	107
59Co	0.004	0.013	0.325	0.055	0.664	0.173	0.114
60Ni	0.027	0.090	11	1.8	25	8.7	7.5
63Cu	0.020	0.067	1.3	0.623	1.4	0.804	1.2
66Zn	0.676	2.3	25	14	53	25	49
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.4	1.5	1.8	2.8	2.6
88Sr	0.001	0.003	2.6	0.161	0.465	0.393	0.941
95Mo	0.014	0.047	0.023	<0.014	<0.014	0.023	0.046
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.505	0.415	0.570	0.065	0.098
121Sb	0.007	0.023	0.016	<0.007	0.009	<0.007	0.021
137Ba	0.001	0.003	3.5	0.073	1.0	0.364	1.5
202Hg	0.071	0.237	0.352	0.401	0.947	0.352	0.552
205Tl	0.001	0.003	0.013	0.026	0.056	0.021	0.021
208Pb	0.006	0.020	0.155	0.014	0.089	0.031	0.136
238U	0.001	0.003	0.005	<0.001	<0.001	<0.001	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-YP-03-M_20210421	RG_GC-YP-04-M_20210421	RG_GC-YP-05-M_20210422	RG_GC-YP-06-M_20210422	RG_GC-YP-07-M_20210422
		Lab ID	242	243	244	245	246
		Wet Weight (g)	0.0591	0.0355	0.1302	0.0887	0.1052
		Dry Weight (g)	0.0122	0.0063	0.0252	0.0152	0.0235
		Moisture (%)	79.4	82.3	80.6	82.9	77.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.082	0.088	0.055	0.077	0.025
11B	0.082	0.273	<0.082	0.113	0.142	0.085	<0.082
23Na	2.5	8.3	2,312	3,421	3,717	4,769	1,929
24Mg	0.026	0.087	897	1,077	1,008	1,005	1,445
27Al	0.052	0.173	1.4	73	52	31	1.6
31P	85	283	10,660	11,678	13,129	15,125	13,546
39K	11	37	25,310	26,594	29,888	37,595	32,089
44Ca	15	50	1,056	1,538	963	934	1,022
49Ti	0.335	1.1	1.5	4.0	2.6	2.6	1.1
51V	0.053	0.177	<0.053	0.607	0.066	0.097	<0.053
52Cr	0.270	0.900	3.3	18	2.4	3.2	1.9
55Mn	0.040	0.133	0.862	4.5	1.3	1.6	0.469
57Fe	2.6	8.7	37	372	66	70	19
59Co	0.004	0.013	0.099	0.705	0.064	0.113	0.035
60Ni	0.027	0.090	2.9	38	2.1	3.8	0.675
63Cu	0.020	0.067	0.737	1.7	1.8	2.1	1.1
66Zn	0.676	2.3	22	58	29	31	47
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.4	3.8	3.0	3.3	3.2
88Sr	0.001	0.003	0.274	0.933	0.363	0.423	0.322
95Mo	0.014	0.047	<0.014	0.090	0.030	0.030	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	0.610	<0.067	<0.067
118Sn	0.037	0.123	0.069	0.868	0.158	0.423	0.134
121Sb	0.007	0.023	<0.007	0.028	<0.007	0.007	<0.007
137Ba	0.001	0.003	0.084	1.3	1.3	1.1	0.167
202Hg	0.071	0.237	0.645	0.708	1.0	0.897	0.913
205Tl	0.001	0.003	0.015	0.019	0.029	0.031	0.041
208Pb	0.006	0.020	<0.006	0.084	0.042	0.052	<0.006
238U	0.001	0.003	<0.001	0.002	0.002	0.002	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-YP-08-M_20210422	RG_GC-YP-09-M_20210423	RG_GC-MWF-01-M_20210420	RG_GC-MWF-02-M_20210420	RG_GC-MWF-03-M_20210422
		Lab ID	247	248	249	250	251
		Wet Weight (g)	0.1063	0.3339	0.1387	0.2264	0.0448
		Dry Weight (g)	0.0202	0.0630	0.0284	0.0483	0.0099
		Moisture (%)	81.0	81.1	79.5	78.7	77.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.027	0.027	0.033	0.013	0.022
11B	0.082	0.273	0.085	0.085	<0.082	<0.082	0.093
23Na	2.5	8.3	1,848	2,592	637	893	881
24Mg	0.026	0.087	819	1,129	1,231	1,020	1,515
27Al	0.052	0.173	2.1	4.9	0.924	1.6	12
31P	85	283	12,416	13,737	12,470	10,538	10,818
39K	11	37	28,680	37,337	26,216	26,360	21,100
44Ca	15	50	955	698	584	627	630
49Ti	0.335	1.1	1.5	1.5	1.1	1.2	1.2
51V	0.053	0.177	<0.053	<0.053	<0.053	<0.053	0.085
52Cr	0.270	0.900	1.7	1.7	2.0	1.6	4.5
55Mn	0.040	0.133	0.995	1.1	0.777	0.672	1.0
57Fe	2.6	8.7	18	21	27	26	71
59Co	0.004	0.013	0.035	0.039	0.075	0.052	0.145
60Ni	0.027	0.090	0.877	0.515	1.1	0.655	6.2
63Cu	0.020	0.067	0.747	0.846	1.0	1.1	1.2
66Zn	0.676	2.3	26	23	38	22	21
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	3.5	3.4	2.9	2.5	5.6
88Sr	0.001	0.003	0.278	0.210	0.071	0.114	0.191
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	0.023
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.342	0.201	0.099	0.092	0.234
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	<0.007
137Ba	0.001	0.003	0.167	0.335	<0.001	0.072	0.144
202Hg	0.071	0.237	0.519	0.995	0.283	0.533	0.387
205Tl	0.001	0.003	0.016	0.042	0.048	0.026	0.056
208Pb	0.006	0.020	0.009	0.019	<0.006	0.007	0.011
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-MWF-04-M_20210422	RG_GC-MWF-05-M_20210422	RG_GC-MWF-06-M_20210422	RG_GC-MWF-07-M_20210422	RG_GC-MWF-08-M_20210421
		Lab ID	252	253	254	255	256
		Wet Weight (g)	0.0696	0.0503	0.0491	0.1012	0.0202
		Dry Weight (g)	0.0137	0.0132	0.0114	0.0254	0.0018
		Moisture (%)	80.3	73.8	76.8	74.9	91.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.022	0.022	0.033	0.027	0.027
11B	0.082	0.273	0.093	0.117	0.117	0.087	0.117
23Na	2.5	8.3	764	1,231	1,868	1,234	295
24Mg	0.026	0.087	904	969	1,500	1,074	709
27Al	0.052	0.173	11	23	39	23	7.6
31P	85	283	10,415	11,467	12,131	13,415	2,856
39K	11	37	22,106	24,398	29,714	30,875	3,185
44Ca	15	50	553	765	659	640	1,170
49Ti	0.335	1.1	1.2	1.5	2.6	1.9	1.1
51V	0.053	0.177	0.056	<0.053	0.106	<0.053	0.071
52Cr	0.270	0.900	2.9	1.8	5.1	2.7	3.7
55Mn	0.040	0.133	0.871	0.816	1.6	1.2	1.2
57Fe	2.6	8.7	40	48	91	47	41
59Co	0.004	0.013	0.112	0.040	0.182	0.103	0.140
60Ni	0.027	0.090	3.3	1.0	6.5	2.3	4.2
63Cu	0.020	0.067	0.803	1.0	1.9	1.5	0.672
66Zn	0.676	2.3	17	20	16	16	20
75As	0.514	1.7	<0.514	<0.514	<0.514	<0.514	<0.514
77Se	0.439	1.5	1.9	2.4	1.1	4.3	2.1
88Sr	0.001	0.003	0.170	0.428	0.199	0.197	2.8
95Mo	0.014	0.047	<0.014	<0.014	<0.014	<0.014	<0.014
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.067	0.223	<0.067	<0.067	<0.067	<0.067	<0.067
118Sn	0.037	0.123	0.059	0.268	0.128	0.051	0.399
121Sb	0.007	0.023	<0.007	<0.007	<0.007	<0.007	0.008
137Ba	0.001	0.003	0.288	0.436	0.786	0.698	2.4
202Hg	0.071	0.237	0.593	0.329	0.533	0.267	0.408
205Tl	0.001	0.003	0.024	0.008	0.016	0.042	0.009
208Pb	0.006	0.020	0.037	0.024	0.027	0.029	0.054
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.006

Notes:

ppm = parts per million

DL = detection limit

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

			Client ID	RG_GC-MWF-09-M_20210422	RG_TN_INV_2021 0427	RG_T4_INV_2021 0428
			Lab ID	257	258	259
			Wet Weight (g)	0.0665	0.0633	0.3262
			Dry Weight (g)	0.0062	0.0119	0.0974
			Moisture (%)	90.7	81.2	70.1
Parameter	DL (ppm)	LOQ (ppm)		(ppm)	(ppm)	(ppm)
7Li	0.007	0.023		0.033	8.5	6.8
11B	0.082	0.273		0.117	9.4	33
23Na	2.5	8.3		801	4,930	5,190
24Mg	0.026	0.087		1,088	5,517	3,646
27Al	0.052	0.173		51	16,032	12,288
31P	85	283		5,950	10,334	9,141
39K	11	37		13,157	12,729	12,521
44Ca	15	50		870	17,006	31,527
49Ti	0.335	1.1		1.9	1,534	1,265
51V	0.053	0.177		0.161	23	16
52Cr	0.270	0.900		13	516	76
55Mn	0.040	0.133		3.9	222	129
57Fe	2.6	8.7		259	17,950	10,945
59Co	0.004	0.013		0.251	19	6.7
60Ni	0.027	0.090		26	933	179
63Cu	0.020	0.067		1.9	48	41
66Zn	0.676	2.3		38	125	104
75As	0.514	1.7		<0.514	13	18
77Se	0.439	1.5		2.8	5.0	10
88Sr	0.001	0.003		0.886	52	60
95Mo	0.014	0.047		0.161	6.0	1.2
107Ag	0.001	0.003		<0.001	0.072	0.171
111Cd	0.067	0.223		<0.067	1.2	3.3
118Sn	0.037	0.123		0.944	2.8	1.1
121Sb	0.007	0.023		<0.007	0.479	0.389
137Ba	0.001	0.003		2.1	369	395
202Hg	0.071	0.237		0.643	0.110	0.094
205Tl	0.001	0.003		0.014	0.169	0.239
208Pb	0.006	0.020		0.487	12	7.2
238U	0.001	0.003		0.004	0.489	0.392

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_ER-PCC-01-O_20210419			RG_ER-PCC-12-O_20210419			RG_ER-PCC-03-M_20210419		
Lab ID		077			086			089		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	0.009	0.014	-	<0.007	<0.007	-	0.009	<0.007	-
11B	0.082	<0.082	<0.082	-	<0.082	<0.082	-	<0.082	<0.082	-
23Na	2.5	1,644	1,425	14	631	695	9.7	1,180	1,184	0.3
24Mg	0.026	710	881	22	713	808	13	1,327	1,802	30
27Al	0.052	1.1	1.1	0.0	1.5	1.7	13	0.699	0.876	23
31P	85	13,421	13,985	4.1	7,397	7,696	4.0	10,559	11,210	6.0
39K	11	14,235	13,754	3.4	3,943	5,084	25	26,479	24,871	6.3
44Ca	15	371	480	26	412	357	14	743	872	16
49Ti	0.335	0.762	1.0	-	0.762	0.762	-	0.813	1.1	-
51V	0.053	0.061	0.070	-	<0.053	<0.053	-	<0.053	<0.053	-
52Cr	0.270	1.2	1.5	-	1.2	1.3	-	1.3	1.4	-
55Mn	0.040	5.3	6.3	17	5.4	5.4	0.0	0.328	0.443	-
57Fe	2.6	66	99	40	45	58	25	15	21	-
59Co	0.004	0.066	0.081	20	0.050	0.043	15	0.016	0.020	-
60Ni	0.027	0.098	0.122	-	0.049	0.049	-	0.127	0.280	-
63Cu	0.020	2.9	4.1	34	3.1	3.2	3.2	1.1	1.2	8.7
66Zn	0.676	105	114	8.2	80	80	0.0	19	23	19
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	15	16	6.5	8.3	7.9	4.9	2.6	3.0	-
88Sr	0.001	0.271	0.391	36	0.333	0.285	16	0.467	0.660	34
95Mo	0.014	0.103	0.180	-	0.077	0.077	-	<0.014	<0.014	-
107Ag	0.001	0.019	0.013	38	0.023	0.023	0.0	<0.001	<0.001	-
111Cd	0.067	<0.067	0.075	-	<0.067	0.075	-	<0.067	<0.067	-
118Sn	0.037	<0.037	<0.037	-	<0.037	0.156	-	0.139	0.172	-
121Sb	0.007	<0.007	0.009	-	<0.007	<0.007	-	<0.007	<0.007	-
137Ba	0.001	1.7	2.0	16	2.3	2.4	4.3	1.1	1.2	8.7
202Hg	0.071	<0.071	<0.071	-	<0.071	<0.071	-	0.484	0.534	-
205Tl	0.001	0.007	0.012	-	0.010	0.014	-	0.009	0.011	-
208Pb	0.006	0.018	0.021	-	0.011	0.011	-	<0.006	0.008	-
238U	0.001	0.003	0.004	-	0.001	0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_ER-PCC-06-M_20210419			RG_ER-PCC-13-M_20210419			RG_GC-PCC-08-O_20210421		
Lab ID		092			098			100		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	<0.007	0.069	-	0.015	0.020	-	0.010	0.010	-
11B	0.082	<0.082	0.132	-	0.088	<0.082	-	<0.082	<0.082	-
23Na	2.5	1,113	1,265	13	965	915	5.3	1,317	1,876	35
24Mg	0.026	1,332	1,228	8.1	1,145	1,280	11	1,143	1,248	8.8
27Al	0.052	0.559	0.739	28	2.8	3.0	6.9	3.6	3.2	12
31P	85	10,630	9,608	10	9,793	10,635	8.2	12,375	14,878	18
39K	11	23,534	23,204	1.4	22,526	22,528	0.0	8,732	12,147	33
44Ca	15	964	877	9.5	946	1,014	6.9	631	662	4.8
49Ti	0.335	0.851	0.851	-	1.1	1.1	-	0.950	1.3	-
51V	0.053	<0.053	<0.053	-	<0.053	<0.053	-	<0.053	0.058	-
52Cr	0.270	1.3	1.4	-	1.4	1.5	-	1.5	1.7	-
55Mn	0.040	0.378	0.376	-	0.472	0.699	39	8.4	8.8	4.7
57Fe	2.6	17	14	-	16	28	-	72	85	17
59Co	0.004	0.022	0.013	-	0.017	0.026	-	0.062	0.066	6.3
60Ni	0.027	0.085	0.085	-	0.141	0.169	-	0.060	0.090	-
63Cu	0.020	0.971	1.1	13	1.1	1.4	24	2.6	3.0	14
66Zn	0.676	21	21	0.0	26	35	30	108	128	17
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	2.0	2.0	-	4.4	4.6	-	7.2	7.9	9.3
88Sr	0.001	0.777	0.528	38	0.514	0.554	7.5	0.414	0.479	15
95Mo	0.014	<0.014	<0.014	-	<0.014	<0.014	-	0.136	0.163	-
107Ag	0.001	<0.001	<0.001	-	<0.001	<0.001	-	0.007	0.014	-
111Cd	0.067	<0.067	<0.067	-	<0.067	<0.067	-	0.090	0.090	-
118Sn	0.037	0.113	0.205	-	0.175	0.200	-	0.134	0.197	-
121Sb	0.007	<0.007	<0.007	-	<0.007	<0.007	-	<0.007	0.007	-
137Ba	0.001	1.1	1.3	17	1.4	1.8	25	3.3	3.7	11
202Hg	0.071	1.0	1.1	9.5	0.492	0.548	-	0.103	0.120	-
205Tl	0.001	0.013	0.007	-	0.011	0.015	31	0.008	0.009	-
208Pb	0.006	0.012	0.021	-	0.016	0.025	-	0.020	0.017	-
238U	0.001	<0.001	<0.001	-	<0.001	<0.001	-	0.005	0.005	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_GC-PCC-11-O_20210421			RG_GC-PCC-15-O_20210421			RG_GC-PCC-08-M_20210421		
Lab ID		103			107			110		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	<0.007	0.010	-	<0.007	<0.007	-	<0.007	0.010	-
11B	0.082	<0.082	<0.082	-	<0.082	<0.082	-	<0.082	<0.082	-
23Na	2.5	1,042	1,394	29	781	1,014	26	1,116	940	17
24Mg	0.026	869	872	0.3	932	926	0.6	859	1,035	19
27Al	0.052	4.1	4.2	2.4	0.352	0.234	-	1.6	1.3	21
31P	85	7,751	11,044	35	10,099	11,479	13	8,161	7,444	9.2
39K	11	6,535	8,006	20	5,920	6,217	4.9	18,735	19,357	3.3
44Ca	15	439	420	4.4	464	436	6.2	726	773	6.3
49Ti	0.335	0.633	0.633	-	1.2	1.2	-	0.709	0.851	-
51V	0.053	<0.053	<0.053	-	<0.053	<0.053	-	<0.053	<0.053	-
52Cr	0.270	1.4	1.5	-	1.4	1.5	-	1.3	1.3	-
55Mn	0.040	5.4	5.3	1.9	7.4	7.2	2.7	0.308	0.361	-
57Fe	2.6	83	80	3.7	64	67	4.6	16	25	-
59Co	0.004	0.069	0.062	11	0.081	0.081	0.0	0.018	0.022	-
60Ni	0.027	0.179	0.179	-	0.033	0.033	-	0.138	0.193	-
63Cu	0.020	3.1	3.3	6.2	3.3	3.1	6.2	0.769	0.924	18
66Zn	0.676	92	109	17	135	104	26	19	25	27
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	7.7	9.5	21	11	11	0.0	1.5	1.7	-
88Sr	0.001	0.349	0.350	0.3	0.373	0.312	18	0.367	0.546	39
95Mo	0.014	0.081	0.081	-	0.060	0.090	-	<0.014	<0.014	-
107Ag	0.001	0.014	0.014	0.0	0.019	0.019	0.0	<0.001	<0.001	-
111Cd	0.067	<0.067	<0.067	-	<0.067	<0.067	-	<0.067	<0.067	-
118Sn	0.037	0.091	0.090	-	0.152	0.125	-	0.208	0.136	-
121Sb	0.007	<0.007	<0.007	-	<0.007	<0.007	-	<0.007	<0.007	-
137Ba	0.001	4.5	4.1	9.3	8.1	6.7	19	1.0	1.5	40
202Hg	0.071	<0.071	<0.071	-	<0.071	<0.071	-	1.6	1.5	6.5
205Tl	0.001	0.002	0.003	-	0.009	0.010	-	0.009	0.010	-
208Pb	0.006	0.017	0.017	-	0.009	0.009	-	0.012	0.008	-
238U	0.001	0.003	0.003	-	0.003	0.003	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_GC-PCC-14-M_20210421			RG_SC-PCC-22-O_20210420			RG_SC-PCC-01-M_20210419		
Lab ID		116			126			133		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	0.010	0.010	-	<0.007	<0.007	-	<0.007	<0.007	-
11B	0.082	<0.082	<0.082	-	<0.082	<0.082	-	0.130	0.130	-
23Na	2.5	1,212	1,352	11	1,185	827	36	778	779	0.1
24Mg	0.026	1,073	1,163	8.1	852	921	7.8	865	926	6.8
27Al	0.052	0.562	0.756	29	0.680	0.879	26	2.6	3.0	14
31P	85	9,752	11,897	20	13,080	10,097	26	8,145	8,179	0.4
39K	11	22,931	27,954	20	9,369	7,783	19	19,860	19,430	2.2
44Ca	15	809	934	14	518	512	1.2	921	982	6.4
49Ti	0.335	0.567	0.851	-	0.773	1.2	-	0.949	1.3	-
51V	0.053	<0.053	<0.053	-	<0.053	<0.053	-	<0.053	<0.053	-
52Cr	0.270	1.2	1.3	-	1.4	1.4	-	1.5	1.5	-
55Mn	0.040	0.282	0.366	-	6.1	6.4	4.8	0.418	0.408	2.4
57Fe	2.6	16	21	-	56	52	7.4	21	19	-
59Co	0.004	0.013	0.027	-	0.068	0.060	13	0.022	0.022	-
60Ni	0.027	0.083	0.083	-	0.065	0.065	-	0.281	0.305	8.2
63Cu	0.020	1.2	1.2	0.0	3.7	3.6	2.7	1.2	1.1	8.7
66Zn	0.676	21	25	17	129	129	0.0	41	39	5.0
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	1.9	1.9	-	12	13	8.0	1.5	1.5	-
88Sr	0.001	0.425	0.539	24	0.442	0.425	3.9	0.553	0.704	24
95Mo	0.014	<0.014	<0.014	-	0.120	0.090	-	<0.014	<0.014	-
107Ag	0.001	<0.001	<0.001	-	0.019	0.019	0.0	<0.001	<0.001	-
111Cd	0.067	<0.067	<0.067	-	<0.067	<0.067	-	<0.067	0.120	-
118Sn	0.037	0.143	0.110	-	0.096	0.076	-	0.079	0.109	-
121Sb	0.007	<0.007	<0.007	-	<0.007	<0.007	-	<0.007	<0.007	-
137Ba	0.001	0.683	0.765	11	2.6	3.0	14	1.5	1.8	18
202Hg	0.071	1.6	1.7	6.1	<0.071	<0.071	-	0.673	0.888	-
205Tl	0.001	0.015	0.016	6.5	0.020	0.018	11	0.007	0.007	-
208Pb	0.006	<0.006	0.012	-	0.014	0.014	-	0.007	0.013	-
238U	0.001	<0.001	<0.001	-	0.002	0.002	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_SC-PCC-18-M_20210420			RG_GC-SS-02-M_20210420			RG_ER-SS-03-O_20210430		
Lab ID		137			152			161		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	<0.007	0.010	-	0.015	0.015	-	0.022	0.022	-
11B	0.082	<0.082	<0.082	-	0.082	0.082	-	<0.082	<0.082	-
23Na	2.5	1,068	1,065	0.3	2,560	2,861	11	2,273	2,430	6.7
24Mg	0.026	1,194	1,270	6.2	1,500	1,392	7.5	782	836	6.7
27Al	0.052	4.4	5.5	22	2.7	2.4	12	0.695	0.683	1.7
31P	85	11,560	11,956	3.4	13,025	12,339	5.4	13,851	15,426	11
39K	11	25,556	29,663	15	23,575	23,398	0.8	12,761	13,407	4.9
44Ca	15	872	1,000	14	2,137	1,411	41	486	532	9.0
49Ti	0.335	1.2	1.7	-	1.1	1.4	-	1.1	0.720	-
51V	0.053	<0.053	<0.053	-	<0.053	<0.053	-	<0.053	<0.053	-
52Cr	0.270	1.5	1.6	-	2.0	2.1	-	1.3	1.4	-
55Mn	0.040	0.549	0.722	27	1.4	1.2	15	4.6	4.9	6.3
57Fe	2.6	36	31	15	36	32	12	41	49	18
59Co	0.004	0.022	0.031	-	0.080	0.095	17	0.145	0.166	14
60Ni	0.027	0.287	0.312	8.3	0.821	1.0	20	0.314	0.314	0.0
63Cu	0.020	1.3	1.2	8.0	1.6	1.6	0.0	1.7	2.1	21
66Zn	0.676	43	34	23	49	47	4.2	136	139	2.2
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	2.5	2.6	-	5.0	5.1	-	12	13	8.0
88Sr	0.001	0.575	0.703	20	1.4	1.0	33	1.8	2.0	11
95Mo	0.014	<0.014	<0.014	-	<0.014	<0.014	-	0.028	0.028	-
107Ag	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-
111Cd	0.067	<0.067	<0.067	-	<0.067	<0.067	-	<0.067	0.090	-
118Sn	0.037	0.143	0.129	-	0.233	0.174	-	0.350	0.186	-
121Sb	0.007	<0.007	<0.007	-	<0.007	<0.007	-	<0.007	<0.007	-
137Ba	0.001	4.3	2.9	39	1.5	1.9	24	3.0	3.3	9.5
202Hg	0.071	1.7	1.8	5.7	0.661	0.730	-	<0.071	<0.071	-
205Tl	0.001	0.005	0.006	-	0.057	0.058	1.7	0.023	0.028	20
208Pb	0.006	0.010	0.019	-	0.020	0.020	-	0.012	0.012	-
238U	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_SC-YP-03-M_20210420			RG_ER-BT-06-M_20210425			RG_ER-YP-09-M_20210423		
Lab ID		169			195			222		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	0.022	0.026	-	0.010	0.010	-	0.102	0.107	4.8
11B	0.082	<0.082	0.105	-	<0.082	<0.082	-	<0.082	0.093	-
23Na	2.5	2,079	2,056	1.1	1,457	1,363	6.7	3,379	3,609	6.6
24Mg	0.026	1,079	1,154	6.7	1,293	1,305	0.9	1,171	1,147	2.1
27Al	0.052	3.3	4.5	31	8.2	9.6	16	6.3	7.8	21
31P	85	11,381	11,440	0.5	11,202	11,646	3.9	11,331	10,807	4.7
39K	11	25,738	27,224	5.6	22,154	22,505	1.6	22,311	25,858	15
44Ca	15	807	760	6.0	377	368	2.4	954	985	3.2
49Ti	0.335	1.5	1.5	-	0.983	0.983	-	1.5	1.2	-
51V	0.053	<0.053	<0.053	-	<0.053	<0.053	-	<0.053	<0.053	-
52Cr	0.270	1.9	1.9	-	1.5	1.5	-	1.4	1.6	-
55Mn	0.040	1.3	1.5	14	0.490	0.517	5.4	0.793	0.846	6.5
57Fe	2.6	27	32	17	30	32	6.5	22	25	-
59Co	0.004	0.045	0.059	27	0.027	0.023	-	0.035	0.039	-
60Ni	0.027	1.2	1.2	0.0	0.454	0.484	6.4	0.419	0.603	36
63Cu	0.020	0.732	0.774	5.6	1.5	1.5	0.0	0.851	1.0	16
66Zn	0.676	31	32	3.2	18	17	5.7	26	32	21
75As	0.514	<0.514	<0.514	-	<0.514	<0.514	-	<0.514	<0.514	-
77Se	0.439	4.0	3.9	-	2.2	2.1	-	2.6	2.9	-
88Sr	0.001	0.203	0.194	4.5	0.304	0.321	5.4	0.408	0.343	17
95Mo	0.014	<0.014	<0.014	-	<0.014	<0.014	-	<0.014	<0.014	-
107Ag	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-
111Cd	0.067	<0.067	<0.067	-	<0.067	<0.067	-	<0.067	<0.067	-
118Sn	0.037	0.114	0.182	-	0.122	0.126	-	0.088	0.150	-
121Sb	0.007	<0.007	0.009	-	<0.007	<0.007	-	<0.007	<0.007	-
137Ba	0.001	0.141	0.141	0.0	0.388	0.388	0.0	0.505	0.397	24
202Hg	0.071	0.629	0.616	-	3.0	2.7	11	0.739	0.739	0.0
205Tl	0.001	0.023	0.027	16	0.022	0.022	0.0	0.039	0.041	5.0
208Pb	0.006	0.008	0.008	-	0.019	0.019	-	0.015	0.015	-
238U	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID	RG_T4_INV_20210428
Lab ID	259

Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	6.8	6.7	1.5
11B	0.082	33	31	6.2
23Na	2.5	5,190	5,227	0.7
24Mg	0.026	3,646	3,727	2.2
27Al	0.052	12,288	12,758	3.8
31P	85	9,141	8,269	10
39K	11	12,521	10,866	14
44Ca	15	31,527	39,957	24
49Ti	0.335	1,265	1,411	11
51V	0.053	16	16	0.0
52Cr	0.270	76	62	20
55Mn	0.040	129	115	12
57Fe	2.6	10,945	9,152	18
59Co	0.004	6.7	5.7	16
60Ni	0.027	179	152	16
63Cu	0.020	41	38	7.6
66Zn	0.676	104	92	12
75As	0.514	18	15	18
77Se	0.439	10	9.6	4.1
88Sr	0.001	60	70	15
95Mo	0.014	1.2	0.902	28
107Ag	0.001	0.171	0.149	14
111Cd	0.067	3.3	2.6	24
118Sn	0.037	1.1	0.985	11
121Sb	0.007	0.389	0.314	21
137Ba	0.001	395	392	0.8
202Hg	0.071	0.094	0.102	-
205Tl	0.001	0.239	0.206	15
208Pb	0.006	7.2	7.1	1.4
238U	0.001	0.392	0.365	7.1

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	01			02	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	109	5.7	1.3	104	4.4
11B	0.082	4.5	5.2	115	2.1	4.6	103	2.4
23Na	2.5	14,000	15,722	112	5.6	13,974	100	4.2
24Mg	0.026	910	1,035	114	4.4	920	101	4.2
27Al	0.052	197.2	191	97	5.1	184	93	6.4
31P	85	8,000	8,681	108	5.2	7,681	96	5.3
39K	11	15,500	17,193	111	5.5	15,838	102	4.9
44Ca	15	2,360	2,731	116	4.3	2,322	98	2.9
49Ti	0.335	12.24	12	97	7.0	11	92	12
51V	0.053	1.57	1.7	106	6.4	1.6	101	8.6
52Cr	0.270	1.87	2.2	116	8.3	1.9	101	4.3
55Mn	0.040	3.17	3.8	120	7.1	3.3	104	3.3
57Fe	2.6	343	420	122	5.3	347	101	4.5
59Co	0.004	0.25	0.316	127	6.8	0.264	106	3.7
60Ni	0.027	1.34	1.6	118	6.6	1.5	108	3.3
63Cu	0.020	15.7	19	123	6.4	16	101	3.1
66Zn	0.676	51.6	57	111	3.3	52	100	1.1
75As	0.514	6.87	7.3	108	2.7	6.7	98	3.4
77Se	0.439	3.45	3.7	110	6.0	3.6	103	4.1
88Sr	0.001	10.1	12	120	2.3	10	103	2.5
95Mo	0.014	0.29	0.351	121	12	0.290	100	6.5
107Ag	0.001	0.0252	0.031	123	0.0	0.030	119	12
111Cd	0.067	0.299	0.390	130	5.1	0.313	104	13
118Sn	0.037	0.061	0.075	123	16	0.065	106	4.5
121Sb	0.007	0.011	0.011	102	8.2	0.010	91	10
137Ba	0.001	8.6	9.4	109	2.4	8.8	102	2.5
202Hg	0.071	0.412	0.489	119	6.5	0.420	102	2.8
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.500	124	14	0.413	102	6.6
238U	0.001	0.05	0.059	118	14	0.049	99	9.2

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	03			04	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	109	7.4	1.4	113	10
11B	0.082	4.5	4.9	108	2.2	5.1	114	2.0
23Na	2.5	14,000	14,774	106	1.2	15,879	113	4.1
24Mg	0.026	910	993	109	2.3	1,063	117	4.8
27Al	0.052	197.2	214	108	4.2	193	98	7.1
31P	85	8,000	7,744	97	4.1	8,623	108	2.3
39K	11	15,500	17,092	110	3.5	17,783	115	4.5
44Ca	15	2,360	2,628	111	2.3	2,749	116	5.3
49Ti	0.335	12.24	14	111	11	12	98	4.9
51V	0.053	1.57	1.8	113	8.6	1.9	121	10
52Cr	0.270	1.87	2.0	107	4.4	2.2	116	5.2
55Mn	0.040	3.17	3.4	108	4.1	4.0	126	2.6
57Fe	2.6	343	391	114	3.1	423	123	4.4
59Co	0.004	0.25	0.299	120	4.1	0.311	124	3.3
60Ni	0.027	1.34	1.6	118	5.4	1.6	123	4.9
63Cu	0.020	15.7	19	122	4.6	18	117	6.1
66Zn	0.676	51.6	58	112	4.8	58	113	5.7
75As	0.514	6.87	7.2	104	3.1	7.3	106	5.5
77Se	0.439	3.45	3.7	106	2.5	3.4	98	7.6
88Sr	0.001	10.1	11	107	5.2	12	115	5.5
95Mo	0.014	0.29	0.317	109	14	0.355	122	8.7
107Ag	0.001	0.0252	0.032	129	15	0.026	103	15
111Cd	0.067	0.299	0.343	115	7.2	0.349	117	10
118Sn	0.037	0.061	0.064	105	17	0.071	116	16
121Sb	0.007	0.011	0.009	82	18	0.022	**198**	16
137Ba	0.001	8.6	9.4	109	3.0	9.4	109	3.6
202Hg	0.071	0.412	0.494	120	8.3	0.457	111	4.2
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.452	112	18	0.523	129	12
238U	0.001	0.05	0.057	114	5.8	0.065	130	4.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	05			06	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.5	121	5.3	1.4	118	4.6
11B	0.082	4.5	5.1	113	3.3	5.1	113	1.6
23Na	2.5	14,000	16,490	118	3.0	15,685	112	2.7
24Mg	0.026	910	1,116	123	3.3	1,043	115	1.8
27Al	0.052	197.2	198	101	3.6	187	95	3.4
31P	85	8,000	8,925	112	2.5	8,248	103	3.7
39K	11	15,500	17,534	113	2.5	16,693	108	5.6
44Ca	15	2,360	2,743	116	3.5	2,646	112	3.5
49Ti	0.335	12.24	14	111	6.7	13	102	6.6
51V	0.053	1.57	1.8	115	7.4	1.6	104	12
52Cr	0.270	1.87	2.2	118	4.3	2.1	111	2.1
55Mn	0.040	3.17	3.9	122	0.9	3.7	117	8.0
57Fe	2.6	343	423	123	3.7	411	120	4.7
59Co	0.004	0.25	0.321	128	2.3	0.304	122	7.0
60Ni	0.027	1.34	1.6	120	4.3	1.6	119	5.2
63Cu	0.020	15.7	20	129	7.2	18	117	4.1
66Zn	0.676	51.6	62	121	5.5	56	110	5.4
75As	0.514	6.87	7.7	113	2.2	7.2	105	3.2
77Se	0.439	3.45	3.7	108	5.7	3.5	102	4.7
88Sr	0.001	10.1	12	121	3.2	12	114	5.0
95Mo	0.014	0.29	0.324	112	4.1	0.307	106	10
107Ag	0.001	0.0252	0.032	128	16	0.027	106	15
111Cd	0.067	0.299	0.419	**140**	0.0	0.384	128	8.7
118Sn	0.037	0.061	0.074	121	14	0.076	124	15
121Sb	0.007	0.011	0.011	99	19	0.010	90	**22**
137Ba	0.001	8.6	9.5	110	1.7	9.5	110	2.5
202Hg	0.071	0.412	0.519	126	7.0	0.480	116	7.2
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.529	**131**	9.3	0.483	120	14
238U	0.001	0.05	0.062	124	6.7	0.060	119	9.9

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	07			08	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	110	5.8	1.3	107	9.3
11B	0.082	4.5	5.0	111	1.7	5.1	112	1.9
23Na	2.5	14,000	14,975	107	3.0	15,661	112	2.3
24Mg	0.026	910	970	107	2.7	1,015	112	4.1
27Al	0.052	197.2	208	105	4.8	209	106	2.6
31P	85	8,000	8,494	106	1.5	8,415	105	2.9
39K	11	15,500	16,053	104	2.9	17,021	110	1.7
44Ca	15	2,360	2,478	105	3.0	2,665	113	3.1
49Ti	0.335	12.24	13	105	7.3	15	126	12
51V	0.053	1.57	1.6	102	9.2	1.7	110	6.5
52Cr	0.270	1.87	2.0	107	4.4	2.2	116	3.1
55Mn	0.040	3.17	3.4	107	3.5	3.6	113	4.0
57Fe	2.6	343	366	107	4.9	382	111	3.9
59Co	0.004	0.25	0.262	105	6.8	0.296	118	5.9
60Ni	0.027	1.34	1.4	106	4.4	1.6	122	4.7
63Cu	0.020	15.7	17	107	2.6	18	112	3.1
66Zn	0.676	51.6	56	108	2.7	58	113	2.2
75As	0.514	6.87	7.2	105	1.4	7.2	105	1.3
77Se	0.439	3.45	3.7	108	6.2	3.5	101	4.0
88Sr	0.001	10.1	11	104	2.0	11	111	4.7
95Mo	0.014	0.29	0.348	120	7.5	0.308	106	4.1
107Ag	0.001	0.0252	0.027	109	7.7	0.033	131	11
111Cd	0.067	0.299	0.299	100	0.0	0.380	127	5.8
118Sn	0.037	0.061	0.061	100	16	0.066	108	16
121Sb	0.007	0.011	0.012	105	**28**	0.014	125	19
137Ba	0.001	8.6	9.5	111	3.1	9.9	115	2.1
202Hg	0.071	0.412	0.473	115	15	0.439	107	5.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.419	104	8.6	0.496	123	7.5
238U	0.001	0.05	0.049	98	7.4	0.060	120	4.1

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	09			10	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	106	6.3	1.4	114	4.2
11B	0.082	4.5	4.7	104	3.6	5.0	111	4.9
23Na	2.5	14,000	14,601	104	6.0	16,067	115	6.0
24Mg	0.026	910	933	102	3.5	1,005	110	6.2
27Al	0.052	197.2	195	99	5.6	213	108	5.1
31P	85	8,000	8,257	103	3.3	8,674	108	3.0
39K	11	15,500	15,717	101	4.4	17,568	113	3.1
44Ca	15	2,360	2,417	102	6.6	2,634	112	4.4
49Ti	0.335	12.24	13	105	9.5	14	113	12
51V	0.053	1.57	1.7	107	7.4	1.6	102	16
52Cr	0.270	1.87	2.0	108	7.1	2.1	114	5.7
55Mn	0.040	3.17	3.3	103	4.3	3.6	112	6.2
57Fe	2.6	343	368	107	4.2	399	116	7.1
59Co	0.004	0.25	0.268	107	4.5	0.287	115	5.2
60Ni	0.027	1.34	1.4	105	2.2	1.6	120	4.3
63Cu	0.020	15.7	17	110	2.6	19	120	6.2
66Zn	0.676	51.6	54	105	3.2	61	118	3.7
75As	0.514	6.87	7.3	106	2.9	7.6	110	4.6
77Se	0.439	3.45	3.7	107	3.5	3.7	106	1.6
88Sr	0.001	10.1	11	106	5.3	11	111	4.9
95Mo	0.014	0.29	0.322	111	7.1	0.338	117	11
107Ag	0.001	0.0252	0.022	87	14	0.026	102	17
111Cd	0.067	0.299	0.316	106	7.4	0.305	102	12
118Sn	0.037	0.061	0.056	93	12	0.073	119	**21**
121Sb	0.007	0.011	0.011	97	24	0.014	127	0.0
137Ba	0.001	8.6	9.1	105	5.4	9.4	109	2.9
202Hg	0.071	0.412	0.483	117	5.5	0.500	121	8.0
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.415	103	20	0.392	97	19
238U	0.001	0.05	0.052	103	11	0.059	117	13

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	11			12	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	110	8.1	1.4	117	8.0
11B	0.082	4.5	5.0	112	3.7	5.1	114	2.7
23Na	2.5	14,000	15,161	108	5.4	16,354	117	5.5
24Mg	0.026	910	1,006	110	6.4	1,067	117	3.8
27Al	0.052	197.2	198	101	5.0	209	106	11
31P	85	8,000	8,731	109	1.0	9,123	114	4.9
39K	11	15,500	16,911	109	2.3	17,187	111	4.2
44Ca	15	2,360	2,528	107	2.9	2,771	117	3.4
49Ti	0.335	12.24	13	107	5.6	12	97	15
51V	0.053	1.57	1.6	104	9.9	1.8	112	5.0
52Cr	0.270	1.87	2.0	106	1.5	2.3	122	4.7
55Mn	0.040	3.17	3.6	113	3.5	3.6	115	0.9
57Fe	2.6	343	376	110	1.9	423	123	1.9
59Co	0.004	0.25	0.272	109	1.9	0.312	125	6.5
60Ni	0.027	1.34	1.5	109	4.2	1.6	122	6.2
63Cu	0.020	15.7	16	104	2.3	20	128	6.4
66Zn	0.676	51.6	55	106	2.2	64	124	5.0
75As	0.514	6.87	7.3	106	2.6	8.1	117	2.3
77Se	0.439	3.45	3.7	106	1.8	3.6	105	4.2
88Sr	0.001	10.1	11	110	2.0	12	119	3.1
95Mo	0.014	0.29	0.288	99	6.4	0.377	130	0.0
107Ag	0.001	0.0252	0.023	92	0.0	0.032	128	10
111Cd	0.067	0.299	0.308	103	9.1	0.373	125	10
118Sn	0.037	0.061	0.062	101	11	0.067	110	10
121Sb	0.007	0.011	0.013	120	16	0.012	112	20
137Ba	0.001	8.6	9.1	106	3.4	9.5	110	3.9
202Hg	0.071	0.412	0.443	108	6.6	0.517	126	11
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.436	108	18	0.452	112	9.8
238U	0.001	0.05	0.052	104	8.1	0.058	116	6.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	13			14	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	112	5.7	1.1	95	2.4
11B	0.082	4.5	5.3	118	3.0	5.2	116	2.9
23Na	2.5	14,000	15,524	111	4.8	14,682	105	5.7
24Mg	0.026	910	1,036	114	6.2	882	97	6.7
27Al	0.052	197.2	204	104	6.1	207	105	4.6
31P	85	8,000	8,899	111	4.3	8,050	101	7.2
39K	11	15,500	17,139	111	3.7	15,356	99	3.3
44Ca	15	2,360	2,523	107	3.3	2,379	101	4.6
49Ti	0.335	12.24	16	133	12	13	104	17
51V	0.053	1.57	1.8	116	6.4	1.6	103	12
52Cr	0.270	1.87	2.1	112	2.1	2.0	108	2.9
55Mn	0.040	3.17	3.7	116	9.3	3.4	107	2.4
57Fe	2.6	343	386	113	3.5	359	104	2.2
59Co	0.004	0.25	0.280	112	4.3	0.269	108	6.0
60Ni	0.027	1.34	1.6	116	6.5	1.5	110	2.3
63Cu	0.020	15.7	18	115	4.2	17	107	2.8
66Zn	0.676	51.6	59	114	2.3	52	101	4.5
75As	0.514	6.87	7.6	111	3.4	6.9	100	3.2
77Se	0.439	3.45	3.7	108	5.6	3.5	102	3.7
88Sr	0.001	10.1	11	108	1.9	10	104	3.6
95Mo	0.014	0.29	0.276	95	7.1	0.282	97	7.4
107Ag	0.001	0.0252	0.035	137	14	0.028	111	11
111Cd	0.067	0.299	0.364	122	11	0.319	107	14
118Sn	0.037	0.061	0.065	107	15	0.060	98	16
121Sb	0.007	0.011	0.012	112	8.1	0.015	138	**25**
137Ba	0.001	8.6	11	123	1.9	9.8	114	3.4
202Hg	0.071	0.412	0.459	111	5.9	0.438	106	4.5
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.444	110	13	0.367	91	15
238U	0.001	0.05	0.055	111	3.8	0.049	98	1.3

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	15			16	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	118	5.5	1.2	99	2.1
11B	0.082	4.5	4.2	93	4.3	5.2	116	2.8
23Na	2.5	14,000	16,417	117	2.8	14,601	104	5.5
24Mg	0.026	910	1,108	122	1.5	896	98	3.9
27Al	0.052	197.2	166	84	3.8	210	106	6.0
31P	85	8,000	9,066	113	1.4	8,376	105	3.3
39K	11	15,500	18,278	118	1.6	15,742	102	6.4
44Ca	15	2,360	2,712	115	2.2	2,467	104	2.2
49Ti	0.335	12.24	11	90	6.5	15	125	12
51V	0.053	1.57	1.6	105	8.2	1.8	115	6.2
52Cr	0.270	1.87	2.1	113	4.0	2.0	108	4.8
55Mn	0.040	3.17	3.7	116	3.1	3.3	104	5.6
57Fe	2.6	343	397	116	2.4	352	103	3.6
59Co	0.004	0.25	0.288	115	4.1	0.260	104	3.3
60Ni	0.027	1.34	1.5	113	3.6	1.4	107	4.4
63Cu	0.020	15.7	19	120	3.2	17	107	5.1
66Zn	0.676	51.6	63	121	2.0	53	102	1.8
75As	0.514	6.87	8.0	116	2.0	7.1	104	2.2
77Se	0.439	3.45	3.7	107	7.6	3.5	103	4.2
88Sr	0.001	10.1	12	115	2.6	10	103	3.5
95Mo	0.014	0.29	0.339	117	2.9	0.306	106	7.7
107Ag	0.001	0.0252	0.030	120	12	0.028	112	0.0
111Cd	0.067	0.299	0.359	120	9.5	0.299	100	12
118Sn	0.037	0.061	0.063	103	12	0.067	109	**21**
121Sb	0.007	0.011	0.010	91	8.2	0.010	94	12
137Ba	0.001	8.6	7.9	92	3.5	10	118	4.2
202Hg	0.071	0.412	0.473	115	3.8	0.453	110	16
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.411	102	11	0.443	110	8.3
238U	0.001	0.05	0.054	109	2.8	0.057	115	1.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	17			18	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	110	4.4	1.3	104	12
11B	0.082	4.5	4.5	100	2.8	4.9	110	3.9
23Na	2.5	14,000	15,122	108	5.7	14,341	102	5.4
24Mg	0.026	910	1,063	117	4.4	895	98	8.8
27Al	0.052	197.2	182	92	4.2	201	102	5.9
31P	85	8,000	8,782	110	2.5	8,171	102	4.0
39K	11	15,500	17,089	110	5.0	15,543	100	9.7
44Ca	15	2,360	2,467	104	5.3	2,403	102	7.6
49Ti	0.335	12.24	10	85	11	14	114	11
51V	0.053	1.57	1.6	99	6.7	1.5	98	14
52Cr	0.270	1.87	2.0	107	5.4	2.0	106	5.6
55Mn	0.040	3.17	3.6	112	3.8	3.2	101	8.0
57Fe	2.6	343	395	115	5.0	346	101	7.7
59Co	0.004	0.25	0.284	114	4.7	0.259	104	11
60Ni	0.027	1.34	1.5	113	8.8	1.5	108	7.5
63Cu	0.020	15.7	18	113	8.4	17	109	7.2
66Zn	0.676	51.6	58	113	5.2	57	111	4.9
75As	0.514	6.87	7.4	108	4.9	7.5	109	5.1
77Se	0.439	3.45	3.7	108	6.0	3.6	106	5.3
88Sr	0.001	10.1	11	107	5.0	11	105	5.0
95Mo	0.014	0.29	0.290	100	7.7	0.287	99	8.7
107Ag	0.001	0.0252	0.025	100	0.0	0.034	133	18
111Cd	0.067	0.299	0.324	108	20	0.333	111	5.7
118Sn	0.037	0.061	0.067	109	19	0.067	110	11
121Sb	0.007	0.011	0.012	112	12	0.011	100	9.1
137Ba	0.001	8.6	8.7	101	3.7	9.2	106	2.8
202Hg	0.071	0.412	0.443	108	8.1	0.467	113	4.4
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.444	110	**21**	0.367	91	13
238U	0.001	0.05	0.054	109	9.4	0.045	90	9.2

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	19			20	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	118	10	1.4	112	6.7
11B	0.082	4.5	4.9	109	3.9	4.9	108	3.0
23Na	2.5	14,000	14,821	106	7.2	17,454	125	7.0
24Mg	0.026	910	1,044	115	9.8	1,056	116	6.8
27Al	0.052	197.2	181	92	8.6	188	95	5.1
31P	85	8,000	8,013	100	9.8	9,779	122	3.5
39K	11	15,500	16,369	106	9.4	18,218	118	7.7
44Ca	15	2,360	2,626	111	9.0	2,913	123	8.4
49Ti	0.335	12.24	11	94	13	13	105	11
51V	0.053	1.57	1.6	99	17	1.8	114	16
52Cr	0.270	1.87	2.0	107	9.7	2.3	123	5.6
55Mn	0.040	3.17	3.7	118	10	3.8	121	4.3
57Fe	2.6	343	410	120	9.8	426	124	7.4
59Co	0.004	0.25	0.295	118	5.3	0.306	122	12
60Ni	0.027	1.34	1.7	123	9.1	1.7	123	7.5
63Cu	0.020	15.7	19	120	9.8	20	130	4.7
66Zn	0.676	51.6	58	113	6.7	64	124	5.0
75As	0.514	6.87	6.6	97	12	8.2	119	4.9
77Se	0.439	3.45	3.6	103	3.2	3.8	109	9.4
88Sr	0.001	10.1	11	110	7.3	12	120	4.4
95Mo	0.014	0.29	0.294	101	14	0.316	109	14
107Ag	0.001	0.0252	0.029	117	14	0.031	123	13
111Cd	0.067	0.299	0.333	111	19	0.399	**133**	0.0
118Sn	0.037	0.061	0.076	125	12	0.072	118	11
121Sb	0.007	0.011	0.012	113	7.4	0.014	125	16
137Ba	0.001	8.6	8.9	103	3.4	9.2	107	3.4
202Hg	0.071	0.412	0.415	101	18	0.535	130	19
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.426	106	16	0.410	101	20
238U	0.001	0.05	0.053	106	11	0.057	114	10

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	21			22	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	106	9.0	1.2	102	2.6
11B	0.082	4.5	4.5	100	2.9	4.7	103	1.9
23Na	2.5	14,000	13,767	98	2.2	14,379	103	2.2
24Mg	0.026	910	917	101	4.0	945	104	5.9
27Al	0.052	197.2	190	97	4.1	190	96	3.1
31P	85	8,000	8,046	101	2.8	7,841	98	4.2
39K	11	15,500	15,928	103	3.0	15,824	102	5.0
44Ca	15	2,360	2,230	94	1.9	2,313	98	4.2
49Ti	0.335	12.24	11	93	8.7	13	109	9.4
51V	0.053	1.57	1.6	99	14	1.7	106	6.5
52Cr	0.270	1.87	1.9	102	2.1	1.9	99	3.7
55Mn	0.040	3.17	3.2	101	2.9	3.3	103	4.4
57Fe	2.6	343	354	103	2.3	347	101	3.2
59Co	0.004	0.25	0.277	111	4.6	0.264	106	4.5
60Ni	0.027	1.34	1.4	103	6.2	1.3	100	4.7
63Cu	0.020	15.7	17	107	2.0	17	106	2.9
66Zn	0.676	51.6	53	102	2.3	51	98	4.0
75As	0.514	6.87	7.1	103	3.3	6.9	101	3.2
77Se	0.439	3.45	3.6	106	5.9	3.4	97	4.1
88Sr	0.001	10.1	10	99	2.6	10	101	2.9
95Mo	0.014	0.29	0.290	100	7.9	0.299	103	6.4
107Ag	0.001	0.0252	0.030	120	16	0.023	93	16
111Cd	0.067	0.299	0.280	94	14	0.261	87	8.6
118Sn	0.037	0.061	0.066	109	7.7	0.062	102	15
121Sb	0.007	0.011	0.010	94	5.6	0.010	89	13
137Ba	0.001	8.6	8.6	100	3.7	8.7	101	3.3
202Hg	0.071	0.412	0.360	87	3.2	0.416	101	5.5
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.406	100	18	0.408	101	9.0
238U	0.001	0.05	0.053	106	20	0.049	98	4.5

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	23			24	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	112	6.3	1.2	100	3.5
11B	0.082	4.5	4.7	104	5.2	4.6	103	2.0
23Na	2.5	14,000	15,806	113	3.7	15,199	109	3.9
24Mg	0.026	910	1,009	111	4.8	962	106	2.6
27Al	0.052	197.2	206	105	4.0	196	100	6.7
31P	85	8,000	9,016	113	4.1	8,410	105	1.1
39K	11	15,500	17,285	112	2.9	16,073	104	2.6
44Ca	15	2,360	2,586	110	6.8	2,581	109	1.6
49Ti	0.335	12.24	14	112	9.4	13	102	8.4
51V	0.053	1.57	1.7	107	10	1.6	102	14
52Cr	0.270	1.87	2.1	110	1.9	2.0	106	3.5
55Mn	0.040	3.17	3.6	113	4.4	3.3	104	3.4
57Fe	2.6	343	373	109	4.3	367	107	3.2
59Co	0.004	0.25	0.283	113	3.8	0.258	103	6.7
60Ni	0.027	1.34	1.5	114	6.3	1.5	108	3.1
63Cu	0.020	15.7	18	115	4.2	17	106	3.5
66Zn	0.676	51.6	60	116	4.0	54	106	4.0
75As	0.514	6.87	7.5	110	2.0	7.4	108	2.5
77Se	0.439	3.45	3.7	108	1.5	3.8	109	3.9
88Sr	0.001	10.1	11	107	4.5	11	108	4.9
95Mo	0.014	0.29	0.335	116	12	0.313	108	4.6
107Ag	0.001	0.0252	0.031	121	16	0.025	100	16
111Cd	0.067	0.299	0.367	123	15	0.317	106	8.4
118Sn	0.037	0.061	0.062	101	20	0.066	108	**22**
121Sb	0.007	0.011	0.011	102	7.4	0.013	121	3.8
137Ba	0.001	8.6	9.4	109	5.7	9.0	104	5.3
202Hg	0.071	0.412	0.519	126	5.7	0.410	100	7.5
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.006	0.404	0.473	117	7.6	0.390	97	14
238U	0.001	0.05	0.054	109	5.0	0.049	98	7.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_ER-PCC-01-O_20210419	077	19 May 2021
	RG_ER-PCC-03-O_20210419	078	
	RG_ER-PCC-04-O_20210419	079	
	RG_ER-PCC-06-O_20210419	081	
	RG_ER-PCC-08-O_20210419	083	
	RG_ER-PCC-10-O_20210419	084	
	RG_ER-PCC-11-O_20210419	085	
	RG_ER-PCC-12-O_20210419	086	
02	RG_ER-PCC-05-O_20210419	080	19 May 2021
	RG_ER-PCC-07-O_20210419	082	
	RG_ER-PCC-13-O_20210419	087	
	RG_ER-PCC-01-M_20210419	088	
	RG_ER-PCC-03-M_20210419	089	
	RG_ER-PCC-04-M_20210419	090	
	RG_ER-PCC-05-M_20210419	091	
03	RG_ER-PCC-06-M_20210419	092	19 May 2021
	RG_ER-PCC-07-M_20210419	093	
	RG_ER-PCC-08-M_20210419	094	
	RG_ER-PCC-10-M_20210419	095	
	RG_ER-PCC-11-M_20210419	096	
	RG_ER-PCC-12-M_20210419	097	
	RG_ER-PCC-13-M_20210419	098	
04	RG_GC-PCC-05-O_20210420	099	19 May 2021
	RG_GC-PCC-08-O_20210421	100	
	RG_GC-PCC-09-O_20210421	101	
	RG_GC-PCC-10-O_20210421	102	
	RG_GC-PCC-11-O_20210421	103	
	RG_GC-PCC-12-O_20210421	104	
	RG_GC-PCC-13-O_20210421	105	
	RG_GC-PCC-14-O_20210421	106	
05	RG_GC-PCC-15-O_20210421	107	20 May 2021
	RG_GC-PCC-16-O_20210421	108	
	RG_GC-PCC-15-M_20210421	117	
	RG_GC-PCC-16-M_20210421	118	
	RG_SC-PCC-20-O_20210420	125	
	RG_SC-PCC-22-O_20210420	126	
	RG_SC-PCC-24-O_20210421	127	
	RG_SC-PCC-28-O_20210421	129	
06	RG_GC-PCC-05-M_20210420	109	19 May 2021
	RG_GC-PCC-08-M_20210421	110	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
06	RG_GC-PCC-09-M_20210421	111	19 May 2021
	RG_GC-PCC-10-M_20210421	112	
	RG_GC-PCC-11-M_20210421	113	
	RG_GC-PCC-12-M_20210421	114	
	RG_GC-PCC-13-M_20210421	115	
	RG_GC-PCC-14-M_20210421	116	
07	RG_SC-PCC-01-O_20210419	119	20 May 2021
	RG_SC-PCC-04-O_20210419	120	
	RG_SC-PCC-16-O_20210420	121	
	RG_SC-PCC-29-O_20210421	130	
	RG_SC-PCC-31-O_20210421	132	
08	RG_SC-PCC-17-O_20210420	122	24 May 2021
	RG_SC-PCC-18-O_20210420	123	
	RG_SC-PCC-19-O_20210420	124	
	RG_SC-PCC-26-O_20210421	128	
	RG_SC-PCC-30-O_20210421	131	
	RG_SC-PCC-01-M_20210419	133	
	RG_SC-PCC-04-M_20210419	134	
	RG_SC-PCC-16-M_20210420	135	
	RG_SC-PCC-17-M_20210420	136	
09	RG_SC-PCC-18-M_20210420	137	24 May 2021
	RG_SC-PCC-19-M_20210420	138	
	RG_SC-PCC-20-M_20210420	139	
	RG_SC-PCC-22-M_20210420	140	
	RG_SC-PCC-24-M_20210421	141	
	RG_SC-PCC-26-M_20210421	142	
	RG_SC-PCC-28-M_20210421	143	
	RG_SC-PCC-29-M_20210421	144	
	RG_SC-PCC-30-M_20210421	145	
10	RG_SC-PCC-31-M_20210421	146	20 May 2021
	RG_SC-SS-01_20210429	147	
	RG_SC-SS-02_20210429	148	
	RG_GC-SS-01-O_20210420	149	
	RG_SC-BT-02-M_20210420	176	
	RG_SC-BT-03-M_20210421	177	
	RG_SC-BT-04-M_20210422	178	
	RG_SC-BT-05-M_20210423	179	
11	RG_GC-SS-01-M_20210420	150	20 May 2021
	RG_GC-SS-02-O_20210420	151	
	RG_SC-BT-06-M_20210423	180	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
11	RG_SC-BT-07-M_20210426	181	20 May 2021
12	RG_GC-SS-02-M_20210420	152	24 May 2021
	RG_GC-SS-07-O_20210427	153	
	RG_GC-SS-07-M_20210427	154	
	RG_GC-SS-09-O_20210428	155	
	RG_GC-SS-09-M_20210429	156	
	RG_GC_SS-11-M_20210430	157	
	RG_GC_SS-11-O_20210430	158	
	RG_ER-SS-01-M_20210429	159	
	RG_ER-SS-03-M_20210430	160	
13	RG_ER-SS-03-O_20210430	161	24 May 2021
	RG_ER-SS-05-M_20210430	162	
	RG_ER-SS-06-M_20210430	163	
	RG_ER-SS-07-M_20210430	164	
	RG_ER-SS-08-M_20210430	165	
	RG_SC-RBT-01-M_20210420	166	
14	RG_SC-YP-01-M_20210420	167	25 May 2021
	RG_SC-YP-02-M_20210420	168	
	RG_SC-YP-03-M_20210420	169	
	RG_SC-YP-04-M_20210421	170	
	RG_SC-YP-05-M_20210421	171	
	RG_SC-WCT-01-M_20210420	172	
	RG_SC-WCT-02-M_20210420	173	
	RG_SC-WCT-03-M_20210424	174	
	RG_SC-BT-01-M_20210420	175	
15	RG_SC-BT-08-M_20210426	182	25 May 2021
	RG_SC-MWF-01-M_20210420	183	
	RG_SC-MWF-02-M_20210421	184	
	RG_SC-MWF-03-M_20210421	185	
	RG_SC-MWF-04-M_20210421	186	
	RG_SC-MWF-05-M_20210421	187	
	RG_SC-KO-01-M_20210421	188	
	RG_SC-KO-02-M_20210422	189	
	RG_ER-BT-01-M_20210421	190	
	RG_ER-BT-02-M_20210423	191	
16	RG_ER-BT-03-M_20210424	192	25 May 2021
	RG_ER-BT-04-M_20210425	193	
	RG_ER-BT-05-M_20210425	194	
	RG_ER-BT-06-M_20210425	195	
	RG_ER-BT-07-M_20210426	196	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
17	RG_ER-BT-08-M_20210426	197	25 May 2021
	RG_ER-KO-01-M_20210421	198	
	RG_ER-KO-02-M_20210427	199	
	RG_ER-WCT-01-M_20210421	200	
	RG_ER-WCT-02-M_20210423	201	
	RG_ER-WCT-03-M_20210423	202	
	RG_ER-WCT-04-M_20210424	203	
	RG_ER-WCT-05-M_20210424	204	
	RG_ER-WCT-06-M_20210425	205	
	RG_ER-WCT-07-M_20210427	206	
18	RG_ER-WCT-08-M_20210427	207	25 May 2021
	RG_ER-MWF-01-M_20210419	208	
	RG_ER-MWF-02-M_20210419	209	
	RG_ER-MWF-04-M_20210421	210	
	RG_ER-MWF-05-M_20210425	211	
19	RG_ER-MWF-06-M_20210425	212	26 May 2021
	RG_ER-MWF-07-M_20210425	213	
	RG_ER-YP-01-M_20210421	214	
	RG_ER-YP-02-M_20210421	215	
	RG_ER-YP-03-M_20210421	216	
	RG_ER-YP-04-M_20210423	217	
	RG_ER-YP-05-M_20210423	218	
	RG_ER-YP-06-M_20210423	219	
	RG_ER-YP-07-M_20210423	220	
	RG_ER-YP-08-M_20210423	221	
20	RG_ER-YP-09-M_20210423	222	26 May 2021
	RG_ER-RBT-01-M_20210423	223	
	RG_GC-WCT-01-M_20210420	224	
	RG_GC-WCT-02-M_20210420	225	
	RG_GC-WCT-03-M_20210422	226	
	RG_GC-MWF-02-M_20210420	250	
	RG_GC-MWF-03-M_20210422	251	
	RG_GC-MWF-04-M_20210422	252	
21	RG_GC-WCT-04-M_20210422	227	26 May 2021
	RG_GC-WCT-06-M_20210422	228	
	RG_GC-WCT-07-M_20210422	229	
	RG_GC-WCT-08-M_20210423	230	
	RG_GC-WCT-09-M_20210423	231	
	RG_GC-BT-01-M_20210421	232	
	RG_GC-BT-02-M_20210422	233	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
21	RG_GC-BT-03-M_20210422	234	26 May 2021
	RG_GC-BT-04-M_20210423	235	
	RG_GC-BT-05-M_20210425	236	
22	RG_GC-BT-06-M_20210425	237	26 May 2021
	RG_GC-BT-07-M_20210426	238	
	RG_GC-BT-08-M_20210426	239	
	RG_GC-YP-01-M_20210420	240	
	RG_GC-YP-02-M_20210420	241	
23	RG_GC-YP-03-M_20210421	242	26 May 2021
	RG_GC-YP-04-M_20210421	243	
	RG_GC-YP-05-M_20210422	244	
	RG_GC-YP-06-M_20210422	245	
	RG_GC-YP-07-M_20210422	246	
	RG_GC-YP-08-M_20210422	247	
	RG_GC-YP-09-M_20210423	248	
	RG_GC-MWF-01-M_20210420	249	
24	RG_GC-MWF-05-M_20210422	253	26 May 2021
	RG_GC-MWF-06-M_20210422	254	
	RG_GC-MWF-07-M_20210422	255	
	RG_GC-MWF-08-M_20210421	256	
	RG_GC-MWF-09-M_20210422	257	
	RG_TN_INV_20210427	258	
	RG_T4_INV_20210428	259	

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample type
077 ✓	RG_ER-PCC-01-O_20210419	Peamouth Chub	Ovary
078 ✓	RG_ER-PCC-03-O_20210419	Peamouth Chub	Ovary
079 ✓	RG_ER-PCC-04-O_20210419	Peamouth Chub	Ovary
080 ✓	RG_ER-PCC-05-O_20210419	Peamouth Chub	Ovary
081 ✓	RG_ER-PCC-06-O_20210419	Peamouth Chub	Ovary
082 ✓	RG_ER-PCC-07-O_20210419	Peamouth Chub	Ovary
083 ✓	RG_ER-PCC-08-O_20210419	Peamouth Chub	Ovary
084 ✓	RG_ER-PCC-10-O_20210419	Peamouth Chub	Ovary
085 ✓	RG_ER-PCC-11-O_20210419	Peamouth Chub	Ovary
086 ✓	RG_ER-PCC-12-O_20210419	Peamouth Chub	Ovary
087 ✓	RG_ER-PCC-13-O_20210419	Peamouth Chub	Ovary
088 ✓	RG_ER-PCC-01-M_20210419	Peamouth Chub	Muscle
089 ✓	RG_ER-PCC-03-M_20210419	Peamouth Chub	Muscle
090 ✓	RG_ER-PCC-04-M_20210419	Peamouth Chub	Muscle
091 ✓	RG_ER-PCC-05-M_20210419	Peamouth Chub	Muscle
092 ✓	RG_ER-PCC-06-M_20210419	Peamouth Chub	Muscle
093 ✓	RG_ER-PCC-07-M_20210419	Peamouth Chub	Muscle
094 ✓	RG_ER-PCC-08-M_20210419	Peamouth Chub	Muscle
095 ✓	RG_ER-PCC-10-M_20210419	Peamouth Chub	Muscle
096 ✓	RG_ER-PCC-11-M_20210419	Peamouth Chub	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project #: 2021-217)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler + ice packs
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

TrichSampleID:	Sample Identification:	Sample Type: Species	Sample type
097 ✓	RG_ER-PCC-12-M_20210419	Peamouth Chub	Muscle
098 ✓	RG_ER-PCC-13-M_20210419	Peamouth Chub	Muscle
099 ✓	RG_GC-PCC-05-O_20210420	Peamouth Chub	Ovary
100 ✓	RG_GC-PCC-08-O_20210421	Peamouth Chub	Ovary
101 ✓	RG_GC-PCC-09-O_20210421	Peamouth Chub	Ovary
102 ✓	RG_GC-PCC-10-O_20210421	Peamouth Chub	Ovary
103 ✓	RG_GC-PCC-11-O_20210421	Peamouth Chub	Ovary
104 ✓	RG_GC-PCC-12-O_20210421	Peamouth Chub	Ovary
105 ✓	RG_GC-PCC-13-O_20210421	Peamouth Chub	Ovary
106 ✓	RG_GC-PCC-14-O_20210421	Peamouth Chub	Ovary
107 ✓	RG_GC-PCC-15-O_20210421	Peamouth Chub	Ovary
108 ✓	RG_GC-PCC-16-O_20210421	Peamouth Chub	Ovary
109 ✓	RG_GC-PCC-05-M_20210420	Peamouth Chub	Muscle
110 ✓	RG_GC-PCC-08-M_20210421	Peamouth Chub	Muscle
111 ✓	RG_GC-PCC-09-M_20210421	Peamouth Chub	Muscle
112 ✓	RG_GC-PCC-10-M_20210421	Peamouth Chub	Muscle
113 ✓	RG_GC-PCC-11-M_20210421	Peamouth Chub	Muscle
114 ✓	RG_GC-PCC-12-M_20210421	Peamouth Chub	Muscle
115 ✓	RG_GC-PCC-13-M_20210421	Peamouth Chub	Muscle
116 ✓	RG_GC-PCC-14-M_20210421	Peamouth Chub	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project #2021-17)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler + ice pack.
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample type
117 ✓	RG_GC-PCC-15-M_20210421	Peamouth Chub	Muscle
118 ✓	RG_GC-PCC-16-M_20210421	Peamouth Chub	Muscle
119 ✓	RG_SC-PCC-01-O_20210419	Peamouth Chub	Ovary
120 ✓	RG_SC-PCC-04-O_20210419	Peamouth Chub	Ovary
121 ✓	RG_SC-PCC-16-O_20210420	Peamouth Chub	Ovary
122 ✓	RG_SC-PCC-17-O_20210420	Peamouth Chub	Ovary
123 ✓	RG_SC-PCC-18-O_20210420	Peamouth Chub	Ovary
124 ✓	RG_SC-PCC-19-O_20210420	Peamouth Chub	Ovary
125 ✓	RG_SC-PCC-20-O_20210420	Peamouth Chub	Ovary
126 ✓	RG_SC-PCC-22-O_20210420	Peamouth Chub	Ovary
127 ✓	RG_SC-PCC-24-O_20210421	Peamouth Chub	Ovary
128 ✓	RG_SC-PCC-26-O_20210421	Peamouth Chub	Ovary
129 ✓	RG_SC-PCC-28-O_20210421	Peamouth Chub	Ovary
130 ✓	RG_SC-PCC-29-O_20210421	Peamouth Chub	Ovary
131 ✓	RG_SC-PCC-30-O_20210421	Peamouth Chub	Ovary
132 ✓	RG_SC-PCC-31-O_20210421	Peamouth Chub	Ovary
133 ✓	RG_SC-PCC-01-M_20210419	Peamouth Chub	Muscle
134 ✓	RG_SC-PCC-04-M_20210419	Peamouth Chub	Muscle
135 ✓	RG_SC-PCC-16-M_20210420	Peamouth Chub	Muscle
136 ✓	RG_SC-PCC-17-M_20210420	Peamouth Chub	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Elliot Howell
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: ~~EPMZ~~ 11 May 2021 (Project #: 2021-217)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler & Ice
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:		Sample Identification:	Sample Type: Species	Sample Type: Sample type
137	✓1	RG_SC-PCC-18-M_20210420	Peamouth Chub	Muscle
138	✓2	RG_SC-PCC-19-M_20210420	Peamouth Chub	Muscle
139	✓3	RG_SC-PCC-20-M_20210420	Peamouth Chub	Muscle
140	✓4	RG_SC-PCC-22-M_20210420	Peamouth Chub	Muscle
141	✓5	RG_SC-PCC-24-M_20210421	Peamouth Chub	Muscle
142	✓6	RG_SC-PCC-26-M_20210421	Peamouth Chub	Muscle
143	✓7	RG_SC-PCC-28-M_20210421	Peamouth Chub	Muscle
144	✓8	RG_SC-PCC-29-M_20210421	Peamouth Chub	Muscle
145	✓9	RG_SC-PCC-30-M_20210421	Peamouth Chub	Muscle
146	✓10	RG_SC-PCC-31-M_20210421	Peamouth Chub	Muscle
147	✓11	RG_SC-SS-01_20210429	Slimy Sculpin	
148	✓12	RG_SC-SS-02_20210429	Slimy Sculpin	
149	✓13	RG_GC-SS-01-O_20210420	Slimy Sculpin	Ovary
150	✓14	RG_GC-SS-01-M_20210420	Slimy Sculpin	Muscle
151	✓15	RG_GC-SS-02-O_20210420	Slimy Sculpin	Ovary
152	✓16	RG_GC-SS-02-M_20210420	Slimy Sculpin	Muscle
153	✓17	RG_GC-SS-07-O_20210427	Slimy Sculpin	Ovary
154	✓18	RG_GC-SS-07-M_20210427	Slimy Sculpin	Muscle
155	✓19	RG_GC-SS-09-O_20210428	Slimy Sculpin	Ovary
* 156	20	RG_GC-SS-09-M_20210428 ~~9~~ *	Slimy Sculpin	Muscle

Sample(s) Released By: Alex McClymont		Sample(s) Received By:	Alex Wade
Signature:		Signature:	
Date Sent: 11-May-2021		Date Received:	11 May 2021 (Project # 2021-217)
Sample(s) Returned to Client By:		Shipping Conditions:	~~Ice~~ Gel Immediately Frozen
		Shipping Container:	Cooler
Signature:		Date Sent:	

* as confirmed by client on 14 May 2021, sample ID should end in a "9" instead of "8".
DJS 14 May 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested			
Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample type
157 ✓ 1	RG_GC_SS-11-M_20210430	Slimy Sculpin	Muscle
158 ✓ 2	RG_GC_SS-11-O_20210430	Slimy Sculpin	Ovary
159 ✓ 3	RG_ER-SS-01-M_20210429	Slimy Sculpin	Muscle
160 ✓ 4	RG_ER-SS-03-M_20210430	Slimy Sculpin	Muscle
161 ✓ 5	RG_ER-SS-03-O_20210430	Slimy Sculpin	Ovary
162 ✓ 6	RG_ER-SS-05-M_20210430	Slimy Sculpin	Whole body
163 ✓ 7	RG_ER-SS-06-M_20210430	Slimy Sculpin	Whole body
164 ✓ 8	RG_ER-SS-07-M_20210430	Slimy Sculpin	Whole body
165 ✓ 9	RG_ER-SS-08-M_20210430	Slimy Sculpin	Whole body
166 ✓ 10	RG_SC-RBT-01-M_20210420	Rainbow Trout	Muscle
167 11	RG_SC-YP-01-M_20210420	Yellow Perch	Muscle
168 ✓ 12	RG_SC-YP-02-M_20210420	Yellow Perch	Muscle
169 ✓ 13	RG_SC-YP-03-M_20210420	Yellow Perch	Muscle
170 ✓ 14	RG_SC-YP-04-M_20210421	Yellow Perch	Muscle
171 ✓ 15	RG_SC-YP-05-M_20210421	Yellow Perch	Muscle
172 ✓ 16	RG_SC-WCT-01-M_20210420	Westslope Cutthroat Trout	Muscle
173 ✓ 17	RG_SC-WCT-02-M_20210420	Westslope Cutthroat Trout	Muscle
174 ✓ 18	RG_SC-WCT-03-M_20210424	Westslope Cutthroat Trout	Muscle
175 ✓ 19	RG_SC-BT-01-M_20210420	Bull Trout	Muscle
176 ✓ 20	RG_SC-BT-02-M_20210420	Bull Trout	Muscle

Sample(s) Released By: Alex McClymont	Elliot Hazell
Signature:	
Date Sent: 11-May-2021	11 May 2021 (Project # 2021-217)
Sample(s) Returned to Client By:	frozen cooler & Ice pack
Signature:	

* as confirmed by client on 14 May 2021 COC is correct as sample containers were missing "M" designation. DJS 14 May 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample Type: Sample type
177 ✓	RG_SC-BT-03-M_20210421	Bull Trout	Muscle
178 ✓	RG_SC-BT-04-M_20210422	Bull Trout	Muscle
179 ✓	RG_SC-BT-05-M_20210423	Bull Trout	Muscle
180 ✓	RG_SC-BT-06-M_20210423	Bull Trout	Muscle
181 ✓	RG_SC-BT-07-M_20210426	Bull Trout	Muscle
182 ✓	RG_SC-BT-08-M_20210426	Bull Trout	Muscle
183	RG_SC-MWF-01-M_20210420 *	Mountain Whitefish	Muscle
184 ✓	RG_SC-MWF-02-M_20210421	Mountain Whitefish	Muscle
185 ✓	RG_SC-MWF-03-M_20210421	Mountain Whitefish	Muscle
186 ✓	RG_SC-MWF-04-M_20210421	Mountain Whitefish	Muscle
187 ✓	RG_SC-MWF-05-M_20210421	Mountain Whitefish	Muscle
188 ✓	RG_SC-KO-01-M_20210421	Kokanee	Muscle
189 ✓	RG_SC-KO-02-M_20210422	Kokanee	Muscle
190 ✓	RG_ER-BT-01-M_20210421	Bull Trout	Muscle
191 ✓	RG_ER-BT-02-M_20210423	Bull Trout	Muscle
192 ✓	RG_ER-BT-03-M_20210424	Bull Trout	Muscle
193 ✓	RG_ER-BT-04-M_20210425	Bull Trout	Muscle
194 ✓	RG_ER-BT-05-M_20210425	Bull Trout	Muscle
195 ✓	RG_ER-BT-06-M_20210425	Bull Trout	Muscle
196 ✓	RG_ER-BT-07-M_20210426	Bull Trout	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Allison Holman
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project # 2021-47)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: cooler & Ice pack
Signature:	Date Sent:

* As confirmed by client on 14 May 2021, COC is correct as sample container was missing "M" designation.

COM-011.01 DJT 14 May 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:		Sample Identification:	Sample Type: Species	Sample Type: Sample type
197		RG_ER-BT-08-M_20210426 *	Bull Trout	Muscle
198	✓	RG_ER-KO-01-M_20210421	Kokanee	Muscle
199	✓	RG_ER-KO-02-M_20210427	Kokanee	Muscle
200	✓	RG_ER-WCT-01-M_20210421	Westslope Cutthroat Trout	Muscle
201	✓	RG_ER-WCT-02-M_20210423	Westslope Cutthroat Trout	Muscle
202	✓	RG_ER-WCT-03-M_20210423	Westslope Cutthroat Trout	Muscle
203	✓	RG_ER-WCT-04-M_20210424	Westslope Cutthroat Trout	Muscle
204		RG_ER-WCT-05-M_20210424 *	Westslope Cutthroat Trout	Muscle
205	✓	RG_ER-WCT-06-M_20210425	Westslope Cutthroat Trout	Muscle
206	✓	RG_ER-WCT-07-M_20210427	Westslope Cutthroat Trout	Muscle
207	✓	RG_ER-WCT-08-M_20210427	Westslope Cutthroat Trout	Muscle
208	✓	RG_ER-MWF-01-M_20210419	Mountain Whitefish	Muscle
209	✓	RG_ER-MWF-02-M_20210419	Mountain Whitefish	Muscle
210	✓	RG_ER-MWF-04-M_20210421	Mountain Whitefish	Muscle
211	✓	RG_ER-MWF-05-M_20210425	Mountain Whitefish	Muscle
212	✓	RG_ER-MWF-06-M_20210425	Mountain Whitefish	Muscle
213	✓	RG_ER-MWF-07-M_20210425	Mountain Whitefish	Muscle
214	✓	RG_ER-YP-01-M_20210421	Yellow Perch	Muscle
215	✓	RG_ER-YP-02-M_20210421	Yellow Perch	Muscle
216	✓	RG_ER-YP-03-M_20210421	Yellow Perch	Muscle

Sample(s) Released By: Alex McClymont		Sample(s) Received By:	Alex Wade
Signature:		Signature:	
Date Sent: 11-May-2021		Date Received:	11 May 2021 (Project #: 2021-217)
Sample(s) Returned to Client By:		Shipping Conditions:	aw 11May2021 ~~Cafe~~ Frozen
		Shipping Container:	Cooler
Signature:		Date Sent:	

* As confirmed by client on 14 May 2021, COC is correct as sample containers were mislabeled. DTS 14 May 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

TrichSample ID:	Sample Identification:	Sample Type: Species	Sample Type: Sample type
217 ✓	RG_ER-YP-04-M_20210423	Yellow Perch	Muscle
218 ✓	RG_ER-YP-05-M_20210423	Yellow Perch	Muscle
219 ✓	RG_ER-YP-06-M_20210423	Yellow Perch	Muscle
220 ✓	RG_ER-YP-07-M_20210423	Yellow Perch	Muscle
221 ✓	RG_ER-YP-08-M_20210423	Yellow Perch	Muscle
222 ✓	RG_ER-YP-09-M_20210423	Yellow Perch	Muscle
223 ✓	RG_ER-RBT-01-M_20210423	Rainbow Trout	Muscle
224 ✓	RG_GC-WCT-01-M_20210420	Westslope Cutthroat Trout	Muscle
225 ✓	RG_GC-WCT-02-M_20210420	Westslope Cutthroat Trout	Muscle
226 ✓	RG_GC-WCT-03-M_20210422	Westslope Cutthroat Trout	Muscle
227 ✓	RG_GC-WCT-04-M_20210422	Westslope Cutthroat Trout	Muscle
228 ✓	RG_GC-WCT-06-M_20210422	Westslope Cutthroat Trout	Muscle
229 ✓	RG_GC-WCT-07-M_20210422	Westslope Cutthroat Trout	Muscle
230 ✓	RG_GC-WCT-08-M_20210423	Westslope Cutthroat Trout	Muscle
231 ✓	RG_GC-WCT-09-M_20210423	Westslope Cutthroat Trout	Muscle
232 ✓	RG_GC-BT-01-M_20210421	Bull Trout	Muscle
233 ✓	RG_GC-BT-02-M_20210422	Bull Trout	Muscle
234 ✓	RG_GC-BT-03-M_20210422	Bull Trout	Muscle
235 ✓	RG_GC-BT-04-M_20210423	Bull Trout	Muscle
236 ✓	RG_GC-BT-05-M_20210425	Bull Trout	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project #: 2021-17)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:	Sample Identification:	Sample Type: Species	Sample Type: Sample type
237 ✓	RG_GC-BT-06-M_20210425	Bull Trout	Muscle
238 ✓	RG_GC-BT-07-M_20210426	Bull Trout	Muscle
239 ✓	RG_GC-BT-08-M_20210426	Bull Trout	Muscle
240 ✓	RG_GC-YP-01-M_20210420	Yellow Perch	Muscle
241 ✓	RG_GC-YP-02-M_20210420	Yellow Perch	Muscle
242 ✓	RG_GC-YP-03-M_20210421	Yellow Perch	Muscle
243 ✓	RG_GC-YP-04-M_20210421	Yellow Perch	Muscle
244 ✓	RG_GC-YP-05-M_20210422	Yellow Perch	Muscle
245 ✓	RG_GC-YP-06-M_20210422	Yellow Perch	Muscle
246 ✓	RG_GC-YP-07-M_20210422	Yellow Perch	Muscle
247 ✓	RG_GC-YP-08-M_20210422	Yellow Perch	Muscle
248 ✓	RG_GC-YP-09-M_20210423	Yellow Perch	Muscle
249	RG_GC-MWF-01-M_20210420 *	Mountain Whitefish	Muscle
250 ✓	RG_GC-MWF-02-M_20210420	Mountain Whitefish	Muscle
251 ✓	RG_GC-MWF-03-M_20210422	Mountain Whitefish	Muscle
252 ✓	RG_GC-MWF-04-M_20210422	Mountain Whitefish	Muscle
253 ✓	RG_GC-MWF-05-M_20210422	Mountain Whitefish	Muscle
254 ✓	RG_GC-MWF-06-M_20210422	Mountain Whitefish	Muscle
255 ✓	RG_GC-MWF-07-M_20210422	Mountain Whitefish	Muscle
256 ✓	RG_GC-MWF-08-M_20210421	Mountain Whitefish	Muscle

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Alex Wade
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project #: 2021-217)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler
Signature:	Date Sent:

* As confirmed by client on 14 May 2021, COC is correct as sample container was missing "M" designation.

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis
Invoicing	Reporting (if different from Invoicing)

Project Number: 21-17

Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

TrichSample ID:	Sample Identification:	Sample Type: Species	Sample Type: Sample type
257 ✓	RG_GC-MWF-09-M_20210422	Mountain Whitefish	Muscle
258 ✓	RG_TN_INV_20210427	Composite	Benthic invertebrate composite tissue sample
259 ✓	RG_T4_INV_20210428	Composite	Benthic invertebrate composite tissue sample

Sample(s) Released By: Alex McClymont	Sample(s) Received By: Elliot Howell
Signature:	Signature:
Date Sent: 11-May-2021	Date Received: 11 May 2021 (Project # 2021-217)
Sample(s) Returned to Client By:	Shipping Conditions: Frozen
	Shipping Container: Cooler & Ice packs
Signature:	Date Sent:

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client: Heidi Currier
Aquatic Toxicologist
Minnow Environmental
Phone: 905-691-6183
Email: hcurrier@minnow.ca

Date Received: 09 Jun 2021
Date of Analysis: 16 Jun 2021
17 Jun 2021
22 Jun 2021
Final Report Date: 23 Jun 2021
Project No.: 2021-227
Method No.: MET-002.05

Client Project: Teck Coal Limited Project 21-17 (Koocanusa)

Analytical Request: Fish Tissue and Benthic Invertebrate Microchemistry (total metals and moisture) - 65 samples. See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in part per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
Client specific DQO for Selenium accuracy is 90 - 110% of the certified value; (average achieved 105%, range 95 - 110%).
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio — 23 Jun 2021 Date

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Coal Limited

Tissue Analysis Results

			RG_SAND_INV_20210528	RG_T4_INV_20210527	RG_TN_INV_20210527	RG_SC-PCC-01-O_20210527	RG_SC-PCC-01-M_20210527
		Client ID					
		Lab ID	057	058	059	060	061
		Wet Weight (g)	0.1539	0.2820	0.2471	19.7866	3.0182
		Dry Weight (g)	0.0320	0.0509	0.0533	8.0420	0.6678
		Moisture (%)	79.2	82.0	78.4	59.4	77.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	11	5.3	4.2	<0.007	<0.007
11B	0.077	0.257	10	7.2	4.6	<0.077	<0.077
23Na	1.9	6.3	5,325	6,435	6,367	1,699	1,294
24Mg	0.025	0.083	5,899	3,224	3,305	1,007	1,640
27Al	0.086	0.287	18,613	9,940	8,780	0.717	6.5
31P	56	187	10,003	11,389	11,916	19,769	12,820
39K	8.3	28	16,078	14,830	15,746	11,629	24,788
44Ca	18	60	12,841	11,917	6,673	388	1,166
49Ti	0.001	0.003	1,893	1,015	907	1.1	1.7
51V	0.059	0.197	18	13	7.8	<0.059	<0.059
52Cr	0.320	1.1	75	49	32	1.6	1.3
55Mn	0.008	0.027	133	83	60	3.7	0.828
57Fe	2.3	7.7	9,796	5,683	4,938	64	27
59Co	0.005	0.017	8.3	5.2	4.4	0.067	0.034
60Ni	0.001	0.003	172	106	75	0.031	0.277
63Cu	0.008	0.027	27	41	24	5.0	1.3
66Zn	0.370	1.2	111	135	125	135	33
75As	0.477	1.6	16	5.8	4.8	<0.477	<0.477
77Se	0.386	1.3	5.9	12	3.1	9.1	2.2
88Sr	0.001	0.003	52	34	30	0.350	0.754
95Mo	0.001	0.003	1.8	0.613	0.753	0.079	<0.001
107Ag	0.001	0.003	0.076	0.193	0.042	0.039	<0.001
111Cd	0.063	0.210	0.338	3.6	0.972	<0.063	0.182
118Sn	0.030	0.100	2.4	1.0	1.3	0.454	0.073
121Sb	0.008	0.027	0.322	0.192	0.121	<0.008	<0.008
137Ba	0.001	0.003	425	301	182	4.2	3.0
202Hg	0.043	0.143	0.154	0.141	0.090	<0.043	1.1
205Tl	0.001	0.003	0.201	0.201	0.103	0.014	0.023
208Pb	0.003	0.010	14	5.1	5.0	0.009	0.018
238U	0.001	0.003	0.636	0.294	0.211	0.005	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-02-O_20210527	RG_SC-PCC-02-M_20210527	RG_SC-PCC-03-O_20210528	RG_SC-PCC-03-M_20210528	RG_SC-PCC-04-O_20210528
		Lab ID	062	063	064	065	066
		Wet Weight (g)	10.9933	4.7845	30.9503	4.1860	22.7165
		Dry Weight (g)	3.8569	1.0641	11.9662	0.8670	8.9763
		Moisture (%)	64.9	77.8	61.3	79.3	60.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.012	0.025	<0.007	0.049	<0.007
11B	0.077	0.257	0.078	<0.077	<0.077	0.117	<0.077
23Na	1.9	6.3	2,871	1,498	2,234	1,958	1,071
24Mg	0.025	0.083	737	1,225	1,215	1,633	822
27Al	0.086	0.287	2.4	8.1	0.743	3.3	0.333
31P	56	187	16,421	11,554	23,172	14,834	12,072
39K	8.3	28	13,258	24,385	12,938	32,221	7,709
44Ca	18	60	312	1,067	462	1,029	361
49Ti	0.001	0.003	1.3	1.3	1.3	1.3	0.871
51V	0.059	0.197	0.076	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	1.2	1.4	1.6	1.3	1.2
55Mn	0.008	0.027	0.822	0.819	7.3	1.0	6.3
57Fe	2.3	7.7	256	49	105	61	57
59Co	0.005	0.017	0.227	0.056	0.084	0.050	0.062
60Ni	0.001	0.003	0.092	0.955	0.062	0.246	0.031
63Cu	0.008	0.027	4.0	1.4	6.1	2.8	3.5
66Zn	0.370	1.2	165	27	147	55	84
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	5.6	1.6	16	3.0	6.4
88Sr	0.001	0.003	0.456	1.3	0.359	0.749	0.285
95Mo	0.001	0.003	0.126	<0.001	0.126	<0.001	0.063
107Ag	0.001	0.003	0.019	<0.001	0.039	<0.001	0.019
111Cd	0.063	0.210	0.091	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.451	0.105	0.226	0.272	0.132
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	<0.008
137Ba	0.001	0.003	3.3	2.5	3.1	4.4	3.8
202Hg	0.043	0.143	0.066	1.3	0.073	1.8	0.044
205Tl	0.001	0.003	0.003	0.007	0.008	0.033	0.004
208Pb	0.003	0.010	0.040	0.022	0.009	0.027	0.004
238U	0.001	0.003	0.032	0.002	0.004	<0.001	0.004

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-04-M_20210528	RG_SC-PCC-05-O_20210528	RG_SC-PCC-05-M_20210528	RG_SC-PCC-06-O_20210528	RG_SC-PCC-06-M_20210528
		Lab ID	067	068	069	070	071
		Wet Weight (g)	5.5323	32.9946	5.1057	16.4792	2.7725
		Dry Weight (g)	1.1208	12.9643	1.0975	6.6073	0.6009
		Moisture (%)	79.7	60.7	78.5	59.9	78.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	0.011	<0.007	0.017
11B	0.077	0.257	0.078	<0.077	<0.077	<0.077	<0.077
23Na	1.9	6.3	978	1,298	1,194	883	1,398
24Mg	0.025	0.083	1,124	720	1,124	752	1,073
27Al	0.086	0.287	0.410	3.3	1.6	0.270	6.4
31P	56	187	9,284	11,793	10,828	9,718	11,101
39K	8.3	28	26,135	7,964	24,497	5,746	28,550
44Ca	18	60	801	323	825	273	826
49Ti	0.001	0.003	0.871	0.871	1.3	0.885	1.3
51V	0.059	0.197	<0.059	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	0.969	0.932	0.861	0.940	1.2
55Mn	0.008	0.027	0.302	3.5	0.411	4.5	0.542
57Fe	2.3	7.7	13	63	24	50	33
59Co	0.005	0.017	0.017	0.056	0.025	0.062	0.037
60Ni	0.001	0.003	0.062	0.062	0.100	0.033	0.565
63Cu	0.008	0.027	0.809	2.6	1.1	3.1	1.4
66Zn	0.370	1.2	14	73	16	62	27
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	1.3	5.5	1.5	4.4	1.5
88Sr	0.001	0.003	0.456	0.320	0.531	0.238	0.554
95Mo	0.001	0.003	<0.001	0.063	<0.001	0.060	<0.001
107Ag	0.001	0.003	<0.001	0.019	<0.001	0.022	<0.001
111Cd	0.063	0.210	0.182	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.082	0.062	0.126	0.117	0.304
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	0.010
137Ba	0.001	0.003	0.814	2.4	1.5	3.2	2.6
202Hg	0.043	0.143	1.1	0.044	1.3	<0.043	1.3
205Tl	0.001	0.003	0.005	0.004	0.008	0.003	0.009
208Pb	0.003	0.010	0.009	0.018	0.015	0.005	0.015
238U	0.001	0.003	<0.001	0.002	<0.001	0.004	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-07-O_20210528	RG_SC-PCC-07-M_20210528	RG_SC-PCC-08-O_20210528	RG_SC-PCC-08-M_20210528	RG_SC-PCC-09-O_20210528
		Lab ID	072	073	074	075	076
		Wet Weight (g)	6.4978	6.2285	16.3925	4.2467	7.0847
		Dry Weight (g)	2.1639	1.3149	6.3984	0.9326	2.6689
		Moisture (%)	66.7	78.9	61.0	78.0	62.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.011	<0.007	0.037	<0.007
11B	0.077	0.257	<0.077	<0.077	<0.077	<0.077	<0.077
23Na	1.9	6.3	2,036	1,132	1,229	1,535	1,196
24Mg	0.025	0.083	1,055	960	808	1,360	1,023
27Al	0.086	0.287	1.3	2.2	0.594	8.0	0.378
31P	56	187	12,942	10,120	12,314	14,421	10,480
39K	8.3	28	13,255	23,197	7,456	30,334	7,311
44Ca	18	60	692	708	355	978	483
49Ti	0.001	0.003	1.3	0.885	0.885	1.3	0.885
51V	0.059	0.197	0.073	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	1.1	0.863	0.976	1.3	0.976
55Mn	0.008	0.027	8.9	0.330	5.5	0.778	6.2
57Fe	2.3	7.7	92	18	48	29	56
59Co	0.005	0.017	0.092	0.022	0.062	0.049	0.068
60Ni	0.001	0.003	0.299	0.133	0.033	0.964	0.033
63Cu	0.008	0.027	4.0	0.896	3.5	1.2	4.2
66Zn	0.370	1.2	104	21	82	26	117
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	11	2.1	5.2	1.8	16
88Sr	0.001	0.003	0.369	0.450	0.328	0.869	0.423
95Mo	0.001	0.003	0.270	<0.001	0.090	<0.001	0.090
107Ag	0.001	0.003	0.032	<0.001	0.022	<0.001	0.022
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.293	0.136	0.250	0.279	0.147
121Sb	0.008	0.027	0.011	<0.008	<0.008	0.009	<0.008
137Ba	0.001	0.003	5.2	1.4	3.6	2.1	6.3
202Hg	0.043	0.143	<0.043	0.660	0.050	1.4	<0.043
205Tl	0.001	0.003	0.010	0.006	0.003	0.006	0.005
208Pb	0.003	0.010	0.010	0.010	0.015	0.031	0.010
238U	0.001	0.003	0.004	<0.001	0.002	0.002	0.004

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-09-M_20210528	RG_SC-PCC-10-O_20210528	RG_SC-PCC-10-M_20210528	RG_GC_PCC-01-O_20210525	RG_GC_PCC-01-M_20210525
		Lab ID	077	078	079	080	081
		Wet Weight (g)	5.5873	14.8773	3.1480	4.0204	3.7395
		Dry Weight (g)	1.2767	5.9162	0.6929	1.0087	0.7871
		Moisture (%)	77.1	60.2	78.0	74.9	79.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	<0.007	<0.007	0.048	0.018
11B	0.077	0.257	<0.077	<0.077	<0.077	0.082	<0.077
23Na	1.9	6.3	1,018	1,299	918	9,119	1,125
24Mg	0.025	0.083	1,303	798	974	761	936
27Al	0.086	0.287	2.8	0.129	0.566	2.2	1.2
31P	56	187	9,825	12,847	8,512	15,029	8,827
39K	8.3	28	20,927	10,131	19,832	9,260	20,989
44Ca	18	60	819	189	665	1,457	744
49Ti	0.001	0.003	0.885	0.813	0.813	0.813	0.813
51V	0.059	0.197	<0.059	<0.059	<0.059	0.207	<0.059
52Cr	0.320	1.1	0.917	0.772	0.769	0.715	0.722
55Mn	0.008	0.027	0.515	2.4	0.303	2.5	0.325
57Fe	2.3	7.7	25	47	16	258	19
59Co	0.005	0.017	0.025	0.064	0.023	0.123	0.018
60Ni	0.001	0.003	0.133	0.028	0.193	0.138	0.110
63Cu	0.008	0.027	1.0	2.6	0.824	3.5	0.868
66Zn	0.370	1.2	16	80	18	196	19
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	2.9	7.0	2.5	7.2	3.2
88Sr	0.001	0.003	0.486	0.186	0.293	2.0	0.483
95Mo	0.001	0.003	<0.001	0.083	<0.001	0.055	<0.001
107Ag	0.001	0.003	<0.001	0.022	<0.001	0.011	<0.001
111Cd	0.063	0.210	<0.063	<0.063	0.584	0.159	<0.063
118Sn	0.030	0.100	0.118	0.154	0.093	0.432	0.116
121Sb	0.008	0.027	<0.008	<0.008	<0.008	0.011	<0.008
137Ba	0.001	0.003	1.4	2.6	1.3	6.4	1.7
202Hg	0.043	0.143	0.667	<0.043	0.724	0.097	1.3
205Tl	0.001	0.003	0.007	0.004	0.008	0.007	0.004
208Pb	0.003	0.010	0.010	0.010	0.005	0.076	0.010
238U	0.001	0.003	<0.001	0.002	<0.001	0.022	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC_PCC-02-O_20210525	RG_GC_PCC-02-M_20210525	RG_GC_PCC-03-O_20210525	RG_GC_PCC-03-M_20210525	RG_GC_PCC-04-O_20210525
		Lab ID	082	083	084	085	086
		Wet Weight (g)	17.1474	2.3322	17.6229	2.1950	12.6308
		Dry Weight (g)	6.3857	0.5095	6.8103	0.5041	4.3656
		Moisture (%)	62.8	78.2	61.4	77.0	65.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.012	0.012	0.012	<0.007
11B	0.077	0.257	<0.077	0.082	<0.077	<0.077	<0.077
23Na	1.9	6.3	1,092	1,482	1,161	1,270	1,291
24Mg	0.025	0.083	802	1,297	671	1,106	794
27Al	0.086	0.287	0.643	0.674	0.964	0.643	0.849
31P	56	187	10,728	12,697	10,681	10,155	9,960
39K	8.3	28	7,790	30,190	6,689	25,420	7,201
44Ca	18	60	438	751	273	712	383
49Ti	0.001	0.003	0.813	1.2	0.813	1.2	0.813
51V	0.059	0.197	<0.059	<0.059	<0.059	<0.059	0.066
52Cr	0.320	1.1	0.830	0.800	0.737	0.673	0.674
55Mn	0.008	0.027	8.2	0.587	4.5	0.371	6.8
57Fe	2.3	7.7	48	25	51	16	45
59Co	0.005	0.017	0.047	0.023	0.053	0.023	0.041
60Ni	0.001	0.003	0.028	0.303	0.028	0.083	0.028
63Cu	0.008	0.027	2.8	1.4	2.7	1.5	2.6
66Zn	0.370	1.2	98	31	77	21	84
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	13	2.0	5.2	2.4	11
88Sr	0.001	0.003	0.346	0.390	0.262	0.310	0.328
95Mo	0.001	0.003	0.083	<0.001	0.055	<0.001	0.055
107Ag	0.001	0.003	0.022	<0.001	0.011	<0.001	0.022
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.173	0.220	0.097	0.033	0.177
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	<0.008
137Ba	0.001	0.003	3.8	2.8	3.4	1.3	5.3
202Hg	0.043	0.143	0.070	0.974	<0.043	0.919	<0.043
205Tl	0.001	0.003	0.009	0.016	0.008	0.017	0.003
208Pb	0.003	0.010	0.014	0.019	0.014	0.010	0.019
238U	0.001	0.003	0.002	<0.001	0.004	<0.001	0.005

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC_PCC-04-M_20210525	RG_GC_PCC-05-O_20210528	RG_GC_PCC-05-M_20210528	RG_GC_PCC-06-O_20210528	RG_GC_PCC-06-M_20210528
		Lab ID	087	088	089	090	091
		Wet Weight (g)	2.5438	7.5282	8.3090	6.5186	3.4254
		Dry Weight (g)	0.5078	2.3414	1.8135	1.6803	0.7952
		Moisture (%)	80.0	68.9	78.2	74.2	76.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.013	<0.007	<0.007	0.025	0.013
11B	0.077	0.257	<0.077	<0.077	<0.077	<0.077	0.090
23Na	1.9	6.3	1,715	2,417	893	7,428	1,828
24Mg	0.025	0.083	1,522	1,553	1,333	785	2,305
27Al	0.086	0.287	4.2	0.591	0.620	0.704	3.6
31P	56	187	13,559	8,893	9,818	8,898	19,290
39K	8.3	28	29,897	8,937	20,153	4,860	40,255
44Ca	18	60	1,028	1,474	725	1,293	1,201
49Ti	0.001	0.003	0.913	1.4	0.913	0.913	1.4
51V	0.059	0.197	<0.059	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	0.873	0.846	0.771	0.775	1.2
55Mn	0.008	0.027	0.495	14	0.437	10	0.726
57Fe	2.3	7.7	19	174	21	167	42
59Co	0.005	0.017	0.019	0.102	0.019	0.115	0.038
60Ni	0.001	0.003	0.151	0.060	0.060	0.030	0.302
63Cu	0.008	0.027	0.984	4.6	1.3	5.1	1.9
66Zn	0.370	1.2	23	99	19	118	41
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	2.9	22	9.7	6.1	2.6
88Sr	0.001	0.003	0.832	0.963	0.430	1.8	0.712
95Mo	0.001	0.003	<0.001	0.084	<0.001	0.056	<0.001
107Ag	0.001	0.003	<0.001	0.038	<0.001	0.025	<0.001
111Cd	0.063	0.210	<0.063	0.107	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.231	0.148	0.219	0.294	0.288
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	<0.008
137Ba	0.001	0.003	3.5	7.4	2.2	3.6	2.3
202Hg	0.043	0.143	2.6	<0.043	0.537	0.065	1.2
205Tl	0.001	0.003	0.005	0.011	0.007	0.006	0.010
208Pb	0.003	0.010	0.021	0.021	0.005	0.010	0.010
238U	0.001	0.003	<0.001	0.004	<0.001	0.002	<0.001

Notes:

ppm = parts per million

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LOQ = limit of quantitation

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC_PCC-07-O_20210528	RG_GC_PCC-07-M_20210528	RG_GC_PCC-08-O_20210528	RG_GC_PCC-08-M_20210528	RG_GC-PCC-09-O_20210528
		Lab ID	092	093	094	095	096
		Wet Weight (g)	5.1941	3.4542	6.2004	4.1572	12.9763
		Dry Weight (g)	1.5689	0.7476	2.3434	0.9391	5.0701
		Moisture (%)	69.8	78.4	62.2	77.4	60.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.013	<0.007	0.013	<0.007	<0.007
11B	0.077	0.257	<0.077	<0.077	<0.077	<0.077	<0.077
23Na	1.9	6.3	6,990	1,301	2,167	1,702	1,047
24Mg	0.025	0.083	1,694	1,876	1,303	1,758	827
27Al	0.086	0.287	0.958	0.958	1.5	0.760	0.978
31P	56	187	20,563	17,489	20,193	18,271	11,398
39K	8.3	28	19,298	33,480	17,702	43,918	6,762
44Ca	18	60	1,340	1,162	503	1,151	377
49Ti	0.001	0.003	1.4	1.4	1.8	1.4	0.954
51V	0.059	0.197	0.065	<0.059	0.059	<0.059	<0.059
52Cr	0.320	1.1	1.1	0.929	1.1	0.974	0.917
55Mn	0.008	0.027	23	0.402	8.5	0.382	4.8
57Fe	2.3	7.7	121	23	95	17	63
59Co	0.005	0.017	0.083	0.019	0.089	0.025	0.048
60Ni	0.001	0.003	0.091	0.060	0.091	0.060	<0.001
63Cu	0.008	0.027	5.3	1.4	5.0	1.5	3.0
66Zn	0.370	1.2	204	31	169	27	68
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	17	3.5	18	6.1	6.6
88Sr	0.001	0.003	0.918	0.602	0.318	0.365	0.295
95Mo	0.001	0.003	0.195	<0.001	0.139	<0.001	0.062
107Ag	0.001	0.003	0.050	<0.001	0.050	<0.001	0.025
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.221	0.379	0.238	0.275	0.158
121Sb	0.008	0.027	<0.008	<0.008	0.009	<0.008	<0.008
137Ba	0.001	0.003	10	3.8	6.2	1.1	3.2
202Hg	0.043	0.143	0.081	0.928	0.065	0.847	0.050
205Tl	0.001	0.003	0.014	0.013	0.013	0.012	0.003
208Pb	0.003	0.010	0.016	<0.003	0.016	0.005	0.011
238U	0.001	0.003	0.008	<0.001	0.004	<0.001	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-09-M_20210528	RG_GC-PCC-10-O_20210528	RG_GC-PCC-10-M_20210528	RG_ER-PCC-01-O_20210528	RG_ER-PCC-01-M_20210528
		Lab ID	097	098	099	100	101
		Wet Weight (g)	4.2982	15.9466	3.4652	24.7342	4.4492
		Dry Weight (g)	0.8873	6.2711	0.7494	9.5320	0.9426
		Moisture (%)	79.4	60.7	78.4	61.5	78.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.025	<0.007	<0.007	<0.007	0.013
11B	0.077	0.257	0.093	<0.077	<0.077	<0.077	<0.077
23Na	1.9	6.3	1,640	1,180	925	785	1,235
24Mg	0.025	0.083	1,864	797	1,385	946	1,236
27Al	0.086	0.287	3.3	0.279	2.1	0.279	0.419
31P	56	187	12,981	10,647	10,539	11,289	11,193
39K	8.3	28	20,217	7,557	19,283	5,015	25,771
44Ca	18	60	1,017	251	1,084	279	795
49Ti	0.001	0.003	1.4	0.954	0.954	0.954	0.954
51V	0.059	0.197	0.064	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	0.850	0.841	0.835	0.858	0.955
55Mn	0.008	0.027	0.738	4.1	0.432	3.6	0.320
57Fe	2.3	7.7	42	52	19	52	16
59Co	0.005	0.017	0.037	0.048	0.014	0.061	0.014
60Ni	0.001	0.003	0.174	0.035	0.069	0.035	0.035
63Cu	0.008	0.027	1.0	2.2	0.844	3.0	1.0
66Zn	0.370	1.2	25	66	15	68	15
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	2.4	7.1	2.2	14	3.5
88Sr	0.001	0.003	1.6	0.174	0.899	0.212	0.365
95Mo	0.001	0.003	<0.001	0.062	<0.001	0.062	<0.001
107Ag	0.001	0.003	<0.001	0.019	<0.001	0.025	<0.001
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	<0.063
118Sn	0.030	0.100	0.459	0.249	0.134	0.094	0.130
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	0.010
137Ba	0.001	0.003	6.8	2.7	1.4	2.2	0.817
202Hg	0.043	0.143	1.4	0.050	0.841	0.050	1.4
205Tl	0.001	0.003	0.009	0.002	0.008	0.001	0.008
208Pb	0.003	0.010	0.038	0.005	0.011	0.011	0.005
238U	0.001	0.003	0.004	0.002	<0.001	0.002	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-02-O_20210528	RG_ER-PCC-02-M_20210528	RG_ER-PCC-03-O_20210528	RG_ER-PCC-03-M_20210528	RG_ER-PCC-04-O_20210529
		Lab ID	102	103	104	105	106
		Wet Weight (g)	21.7795	6.2836	22.0524	7.9431	21.5398
		Dry Weight (g)	8.4436	1.3772	8.7262	1.7543	8.2514
		Moisture (%)	61.2	78.1	60.4	77.9	61.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.019	0.013	0.034	0.014
11B	0.077	0.257	<0.077	0.078	<0.077	0.090	<0.077
23Na	1.9	6.3	1,436	957	1,027	1,693	1,209
24Mg	0.025	0.083	847	1,447	708	1,648	812
27Al	0.086	0.287	2.5	7.4	0.391	4.8	0.216
31P	56	187	13,255	8,931	9,164	12,999	11,260
39K	8.3	28	9,551	17,622	6,797	26,336	7,763
44Ca	18	60	275	835	223	894	280
49Ti	0.001	0.003	0.954	1.4	0.954	1.9	0.749
51V	0.059	0.197	<0.059	<0.059	<0.059	0.101	<0.059
52Cr	0.320	1.1	0.984	0.958	0.757	1.4	1.2
55Mn	0.008	0.027	4.1	0.515	3.1	0.873	2.8
57Fe	2.3	7.7	62	22	48	34	45
59Co	0.005	0.017	0.075	0.027	0.048	0.038	0.040
60Ni	0.001	0.003	0.069	0.174	0.035	0.164	0.027
63Cu	0.008	0.027	2.2	1.8	2.5	2.1	0.905
66Zn	0.370	1.2	72	20	56	32	79
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	11	4.2	11	6.1	11
88Sr	0.001	0.003	0.232	0.471	0.169	0.747	0.165
95Mo	0.001	0.003	0.062	<0.001	0.031	0.026	0.077
107Ag	0.001	0.003	0.025	<0.001	0.025	0.007	0.007
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	0.353
118Sn	0.030	0.100	0.230	0.206	0.267	0.426	0.073
121Sb	0.008	0.027	0.009	0.012	<0.008	0.057	<0.008
137Ba	0.001	0.003	2.7	2.1	2.2	2.6	2.2
202Hg	0.043	0.143	<0.043	0.707	<0.043	0.632	0.051
205Tl	0.001	0.003	0.002	0.007	0.001	0.026	0.003
208Pb	0.003	0.010	0.021	0.027	0.005	0.050	0.009
238U	0.001	0.003	0.002	<0.001	0.002	0.003	0.002

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-04-M_20210529	RG_ER-PCC-05-O_20210529	RG_ER-PCC-05-M_20210529	RG_ER-PCC-06-O_20210529	RG_ER-PCC-06-M_20210529
		Lab ID	107	108	109	110	111
		Wet Weight (g)	3.5135	10.2491	6.9538	18.9741	5.9725
		Dry Weight (g)	0.7539	3.7922	1.6257	7.6068	1.3313
		Moisture (%)	78.5	63.0	76.6	59.9	77.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.014	0.010	0.010	0.010	0.019
11B	0.077	0.257	<0.077	<0.077	<0.077	<0.077	0.136
23Na	1.9	6.3	1,160	1,125	1,098	1,357	852
24Mg	0.025	0.083	1,026	817	1,402	795	1,338
27Al	0.086	0.287	0.431	0.407	0.503	0.264	0.503
31P	56	187	9,364	9,878	10,496	12,271	8,794
39K	8.3	28	21,223	6,572	23,393	8,176	17,594
44Ca	18	60	684	370	667	229	914
49Ti	0.001	0.003	1.1	0.749	1.1	0.749	1.9
51V	0.059	0.197	<0.059	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	1.1	1.0	1.2	1.2	1.1
55Mn	0.008	0.027	0.348	8.8	0.424	3.8	0.567
57Fe	2.3	7.7	19	66	21	46	33
59Co	0.005	0.017	0.010	0.061	0.015	0.066	0.030
60Ni	0.001	0.003	0.082	0.055	0.055	0.027	0.055
63Cu	0.008	0.027	0.761	2.9	1.7	3.3	1.1
66Zn	0.370	1.2	17	92	34	86	21
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	2.6	13	4.1	7.8	1.6
88Sr	0.001	0.003	0.413	0.280	0.395	0.251	0.612
95Mo	0.001	0.003	<0.001	0.077	<0.001	0.051	<0.001
107Ag	0.001	0.003	<0.001	0.015	<0.001	0.022	<0.001
111Cd	0.063	0.210	<0.063	<0.063	<0.063	<0.063	0.201
118Sn	0.030	0.100	0.168	0.061	0.158	0.211	0.132
121Sb	0.008	0.027	<0.008	0.010	<0.008	<0.008	<0.008
137Ba	0.001	0.003	1.4	3.5	2.6	1.6	2.1
202Hg	0.043	0.143	1.4	<0.043	0.523	<0.043	0.983
205Tl	0.001	0.003	0.007	0.011	0.022	0.008	0.016
208Pb	0.003	0.010	0.014	0.009	0.009	0.009	0.016
238U	0.001	0.003	<0.001	0.007	<0.001	0.002	<0.001

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-07-O_20210529	RG_ER-PCC-07-M_20210529	RG_ER-PCC-08-O_20210529	RG_ER-PCC-08-M_20210529	RG_ER-PCC-09-O_20210529
		Lab ID	112	113	114	115	116
		Wet Weight (g)	18.6532	6.8042	10.3842	3.3034	5.9405
		Dry Weight (g)	7.5981	1.5656	3.7507	0.6997	1.9070
		Moisture (%)	59.3	77.0	63.9	78.8	67.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	<0.007	0.010	<0.007	0.026	<0.007
11B	0.077	0.257	<0.077	<0.077	<0.077	<0.077	<0.077
23Na	1.9	6.3	907	1,057	1,399	1,334	2,641
24Mg	0.025	0.083	632	1,151	973	1,232	768
27Al	0.086	0.287	0.240	0.383	4.3	2.0	0.508
31P	56	187	9,574	10,008	12,678	12,402	9,677
39K	8.3	28	4,981	22,363	10,188	23,812	5,815
44Ca	18	60	191	472	526	958	406
49Ti	0.001	0.003	0.749	0.749	1.9	1.9	0.979
51V	0.059	0.197	<0.059	<0.059	<0.059	<0.059	<0.059
52Cr	0.320	1.1	1.0	0.828	1.5	1.3	0.994
55Mn	0.008	0.027	3.3	0.295	7.0	0.321	6.8
57Fe	2.3	7.7	42	12	60	18	83
59Co	0.005	0.017	0.050	0.020	0.051	0.017	0.077
60Ni	0.001	0.003	0.027	0.027	0.107	0.080	0.047
63Cu	0.008	0.027	2.5	0.981	3.4	1.1	3.2
66Zn	0.370	1.2	65	15	105	19	129
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	8.4	3.3	15	2.8	8.8
88Sr	0.001	0.003	0.165	0.287	0.386	0.524	0.351
95Mo	0.001	0.003	0.051	<0.001	0.132	<0.001	0.112
107Ag	0.001	0.003	0.015	<0.001	0.034	<0.001	0.013
111Cd	0.063	0.210	<0.063	<0.063	<0.063	0.128	1.2
118Sn	0.030	0.100	0.345	0.138	0.334	0.427	0.327
121Sb	0.008	0.027	<0.008	<0.008	0.011	0.013	<0.008
137Ba	0.001	0.003	1.8	1.4	3.8	0.836	2.3
202Hg	0.043	0.143	<0.043	0.364	0.090	1.6	0.066
205Tl	0.001	0.003	0.002	0.005	0.012	0.018	0.010
208Pb	0.003	0.010	0.009	0.005	0.015	0.007	0.004
238U	0.001	0.003	0.003	<0.001	0.005	<0.001	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-09-M_20210529	RG_ER-PCC-10-O_20210529	RG_ER-PCC-10-M_20210529	RG_ER-RBT-02-M_20210529	RG_SC-WCT-04-M
		Lab ID	117	118	119	120	121
		Wet Weight (g)	5.3897	11.4076	5.4203	0.0106	0.0332
		Dry Weight (g)	1.1955	4.5000	1.1776	0.0007	0.0063
		Moisture (%)	77.8	60.6	78.3	93.4	81.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.007	0.023	0.014	<0.007	0.010	0.023	0.029
11B	0.077	0.257	<0.077	<0.077	<0.077	0.650	0.295
23Na	1.9	6.3	1,207	1,031	1,355	1,423	1,567
24Mg	0.025	0.083	1,169	733	1,502	383	1,224
27Al	0.086	0.287	1.4	0.643	1.5	39	39
31P	56	187	10,378	11,730	12,379	3,860	10,724
39K	8.3	28	23,369	6,972	21,153	5,337	26,779
44Ca	18	60	667	286	1,046	686	660
49Ti	0.001	0.003	1.3	1.3	1.6	2.5	2.3
51V	0.059	0.197	<0.059	<0.059	<0.059	0.084	0.269
52Cr	0.320	1.1	1.1	1.3	1.3	3.7	7.8
55Mn	0.008	0.027	0.401	4.0	0.465	1.4	2.3
57Fe	2.3	7.7	21	50	28	102	186
59Co	0.005	0.017	0.017	0.059	0.021	0.079	0.378
60Ni	0.001	0.003	0.094	0.053	0.080	5.0	15
63Cu	0.008	0.027	1.2	3.2	1.5	2.4	0.970
66Zn	0.370	1.2	31	85	36	56	23
75As	0.477	1.6	<0.477	<0.477	<0.477	<0.477	<0.477
77Se	0.386	1.3	2.0	23	3.2	1.0	1.3
88Sr	0.001	0.003	0.348	0.266	0.489	0.773	0.358
95Mo	0.001	0.003	<0.001	0.079	<0.001	0.056	<0.001
107Ag	0.001	0.003	<0.001	0.014	<0.001	<0.001	<0.001
111Cd	0.063	0.210	0.119	<0.063	<0.063	<0.063	0.972
118Sn	0.030	0.100	0.224	0.260	0.181	0.903	0.861
121Sb	0.008	0.027	<0.008	0.010	<0.008	<0.008	<0.008
137Ba	0.001	0.003	1.1	3.1	2.0	1.2	0.551
202Hg	0.043	0.143	0.707	<0.043	0.750	0.128	0.410
205Tl	0.001	0.003	0.021	0.011	0.030	0.012	0.028
208Pb	0.003	0.010	0.012	0.011	0.011	0.068	0.026
238U	0.001	0.003	<0.001	0.003	<0.001	0.002	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_SC-PCC-01-O_20210527			RG_SC-PCC-05-M_20210528			RG_SC-PCC-10-O_20210528		
Lab ID		060			069			078		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	<0.007	<0.007	-	0.011	0.011	-	<0.007	<0.007	-
11B	0.077	<0.077	<0.077	-	<0.077	<0.077	-	<0.077	<0.077	-
23Na	1.9	1,699	1,450	16	1,194	1,018	16	1,299	1,393	7.0
24Mg	0.025	1,007	966	4.2	1,124	1,046	7.2	798	906	13
27Al	0.086	0.717	0.359	-	1.6	1.8	12	0.129	0.180	-
31P	56	19,769	16,918	16	10,828	9,141	17	12,847	13,551	5.3
39K	8.3	11,629	10,652	8.8	24,497	19,538	23	10,131	9,968	1.6
44Ca	18	388	388	0.0	825	776	6.1	189	216	13
49Ti	0.001	1.1	0.871	23	1.3	1.3	0.0	0.813	0.813	0.0
51V	0.059	<0.059	<0.059	-	<0.059	<0.059	-	<0.059	<0.059	-
52Cr	0.320	1.6	1.6	-	0.861	0.965	-	0.772	0.842	-
55Mn	0.008	3.7	4.0	7.8	0.411	0.477	15	2.4	2.6	8.0
57Fe	2.3	64	66	3.1	24	26	8.0	47	48	2.1
59Co	0.005	0.067	0.067	0.0	0.025	0.031	-	0.064	0.076	17
60Ni	0.001	0.031	0.031	0.0	0.100	0.108	7.7	0.028	0.028	0.0
63Cu	0.008	5.0	5.2	3.9	1.1	1.4	24	2.6	2.9	11
66Zn	0.370	135	133	1.5	16	16	0.0	80	90	12
75As	0.477	<0.477	<0.477	-	<0.477	<0.477	-	<0.477	<0.477	-
77Se	0.386	9.1	9.0	1.1	1.5	1.8	-	7.0	7.7	9.5
88Sr	0.001	0.350	0.379	8.0	0.531	0.572	7.4	0.186	0.204	9.2
95Mo	0.001	0.079	0.095	18	<0.001	<0.001	-	0.083	0.067	21
107Ag	0.001	0.039	0.039	0.0	<0.001	<0.001	-	0.022	0.022	0.0
111Cd	0.063	<0.063	<0.063	-	<0.063	<0.063	-	<0.063	<0.063	-
118Sn	0.030	0.454	0.075	-	0.126	0.084	-	0.154	0.202	-
121Sb	0.008	<0.008	<0.008	-	<0.008	0.010	-	<0.008	<0.008	-
137Ba	0.001	4.2	4.7	11	1.5	1.5	0.0	2.6	3.3	24
202Hg	0.043	<0.043	0.058	-	1.3	1.3	0.0	<0.043	<0.043	-
205Tl	0.001	0.014	0.012	15	0.008	0.012	-	0.004	0.005	-
208Pb	0.003	0.009	0.009	-	0.015	0.015	-	0.010	0.005	-
238U	0.001	0.005	0.005	-	<0.001	<0.001	-	0.002	0.002	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_ER-PCC-08-O_20210529			RG_ER-PCC-08-M_20210529			RG_ER-PCC-10-O_20210529		
Lab ID		114			115			118		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	<0.007	0.016	-	0.026	0.016	-	<0.005	0.010	-
11B	0.077	<0.077	<0.077	-	<0.077	<0.077	-	<0.077	<0.077	-
23Na	1.9	1,399	1,086	25	1,334	1,264	5.4	1,031	1,271	21
24Mg	0.025	973	896	8.2	1,232	1,296	5.1	733	760	3.6
27Al	0.086	4.3	5.6	26	2.0	1.7	16	.6	0.560	14
31P	56	12,678	9,859	25	12,402	10,247	19	11,730	13,458	14
39K	8.3	10,188	7,731	27	23,812	20,937	13	6,972	8,609	21
44Ca	18	526	564	7.0	958	914	4.7	286	286	0
49Ti	0.001	1.9	1.9	0.0	1.9	1.9	0.0	1.3	1.3	0
51V	0.059	<0.059	<0.059	-	<0.059	<0.059	-	<0.059	<0.059	-
52Cr	0.320	1.5	1.3	-	1.3	1.3	-	1.3	1.4	-
55Mn	0.008	7.0	7.1	1.4	0.321	0.348	8.1	4.0	4.1	2.5
57Fe	2.3	60	66	10	18	17	-	50	55	10
59Co	0.005	0.051	0.059	15	0.017	0.025	-	0.059	0.063	6.6
60Ni	0.001	0.107	0.107	0.0	0.080	0.107	29	0.053	0.053	0
63Cu	0.008	3.4	3.1	9.2	1.1	1.1	0.0	3.2	3.4	6.1
66Zn	0.370	105	104	1.0	19	21	10	85	94	10
75As	0.477	<0.477	<0.477	-	<0.477	<0.477	-	<0.477	<0.477	-
77Se	0.386	15	14	6.9	2.8	3.1	-	23	21	9.1
88Sr	0.001	0.386	0.450	15	0.524	0.500	4.7	0.266	0.251	5.8
95Mo	0.001	0.132	0.105	23	<0.001	<0.001	-	0.079	0.079	0.0
107Ag	0.001	0.034	0.027	23	<0.001	<0.001	-	0.014	0.014	0.0
111Cd	0.063	<0.063	<0.063	-	0.128	<0.063	-	<0.063	<0.063	-
118Sn	0.030	0.334	0.171	-	0.427	0.480	12	0.260	0.396	-
121Sb	0.008	0.011	<0.008	-	0.013	<0.008	-	0.010	<0.008	-
137Ba	0.001	3.8	5.2	31	0.836	0.767	8.6	3.1	2.9	6.7
202Hg	0.043	0.090	0.090	-	1.6	1.4	13	<0.043	<0.043	-
205Tl	0.001	0.012	0.012	0.0	0.018	0.014	25	0.011	0.012	8.7
208Pb	0.003	0.015	0.017	-	0.007	0.015	-	0.011	0.019	-
238U	0.001	0.005	0.005	-	<0.001	<0.001	-	0.003	0.003	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID	RG_ER-PCC-10-M_20210529
Lab ID	119

Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.007	0.010	0.010	-
11B	0.077	<0.077	<0.077	-
23Na	1.9	1,355	1,037	27
24Mg	0.025	1,502	1,333	12
27Al	0.086	1.5	1.1	31
31P	56	12,379	9,077	31
39K	8.3	21,153	17,752	17
44Ca	18	1,046	881	17
49Ti	0.001	1.6	1.3	21
51V	0.059	<0.059	<0.059	-
52Cr	0.320	1.3	1.2	-
55Mn	0.008	0.465	0.452	2.8
57Fe	2.3	28	24	15
59Co	0.005	0.021	0.025	-
60Ni	0.001	0.080	0.080	0.0
63Cu	0.008	1.5	1.8	18
66Zn	0.370	36	36	0.0
75As	0.477	<0.477	<0.477	-
77Se	0.386	3.2	3.0	-
88Sr	0.001	0.489	0.546	11
95Mo	0.001	<0.001	<0.001	-
107Ag	0.001	<0.001	<0.001	-
111Cd	0.063	<0.063	<0.063	-
118Sn	0.030	0.181	0.371	-
121Sb	0.008	<0.008	<0.008	-
137Ba	0.001	2.0	2.1	4.9
202Hg	0.043	0.750	0.644	15
205Tl	0.001	0.030	0.039	26
208Pb	0.003	0.011	0.011	-
238U	0.001	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	01			02	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.4	114	8.8	1.3	106	6.4
11B	0.077	4.5	4.6	102	3.5	5.0	110	2.7
23Na	1.9	14,000	15,954	114	5.8	14,567	104	3.7
24Mg	0.025	910	1,056	116	2.6	916	101	5.9
27Al	0.086	197.2	178	90	7.0	208	106	4.3
31P	56	8,000	8,793	110	1.6	7,886	99	3.4
39K	8.3	15,500	17,032	110	4.0	15,364	99	5.8
44Ca	18	2,360	2,662	113	3.1	2,376	101	6.6
49Ti	0.001	12.24	12	98	10	14	115	9.9
51V	0.059	1.57	1.9	118	16	1.6	102	10
52Cr	0.320	1.87	2.3	125	3.0	2.1	110	6.5
55Mn	0.008	3.17	3.9	125	4.0	3.3	105	4.1
57Fe	2.3	343	416	121	3.4	360	105	4.3
59Co	0.005	0.25	0.297	119	3.5	0.278	111	8.2
60Ni	0.001	1.34	1.7	124	6.3	1.5	115	10
63Cu	0.008	15.7	18	116	5.5	17	108	5.7
66Zn	0.370	51.6	58	113	3.6	56	108	2.5
75As	0.477	6.87	7.4	108	5.0	7.2	104	4.3
77Se	0.386	3.45	3.6	105	6.3	3.5	101	10
88Sr	0.001	10.1	12	118	3.7	10	103	4.2
95Mo	0.001	0.29	0.346	119	4.4	0.328	113	8.6
107Ag	0.001	0.0252	0.029	113	16	0.029	115	0.0
111Cd	0.063	0.299	0.371	124	12	0.340	114	15
118Sn	0.030	0.061	0.070	115	5.7	0.073	120	20
121Sb	0.008	0.011	0.011	100	20	0.012	111	17
137Ba	0.001	8.6	8.4	98	3.1	9.9	115	5.0
202Hg	0.043	0.412	0.476	116	14	0.471	114	5.9
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.003	0.404	0.506	125	19	0.405	100	5.1
238U	0.001	0.05	0.056	112	9.9	0.050	100	12

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	03			04	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.1	91	6.3	1.3	106	8.1
11B	0.077	4.5	5.2	115	4.7	5.0	112	1.7
23Na	1.9	14,000	13,551	97	3.4	14,948	107	7.3
24Mg	0.025	910	897	98	4.9	973	107	3.4
27Al	0.086	197.2	201	102	5.6	203	103	6.9
31P	56	8,000	7,892	99	2.7	8,374	105	1.3
39K	8.3	15,500	15,204	98	3.6	16,917	109	6.2
44Ca	18	2,360	2,422	103	1.2	2,468	105	3.5
49Ti	0.001	12.24	12	102	12	13	109	8.2
51V	0.059	1.57	1.4	88	11	1.7	109	5.2
52Cr	0.320	1.87	1.8	96	1.8	1.8	98	2.6
55Mn	0.008	3.17	3.1	98	3.6	3.4	109	5.5
57Fe	2.3	343	341	99	2.5	378	110	3.5
59Co	0.005	0.25	0.248	99	1.8	0.280	112	2.9
60Ni	0.001	1.34	1.4	103	3.5	1.4	103	6.8
63Cu	0.008	15.7	16	105	2.7	18	113	6.4
66Zn	0.370	51.6	54	104	3.4	57	110	5.9
75As	0.477	6.87	6.7	98	2.3	7.4	108	6.3
77Se	0.386	3.45	3.7	108	2.8	3.8	109	3.3
88Sr	0.001	10.1	10	99	2.9	11	112	5.2
95Mo	0.001	0.29	0.276	95	4.9	0.342	118	9.2
107Ag	0.001	0.0252	0.028	111	20	0.031	122	16
111Cd	0.063	0.299	0.329	110	13	0.356	119	9.8
118Sn	0.030	0.061	0.050	82	17	0.065	106	20
121Sb	0.008	0.011	0.014	123	26	0.013	116	13
137Ba	0.001	8.6	9.2	107	4.5	9.4	109	1.8
202Hg	0.043	0.412	0.404	98	4.1	0.474	115	3.9
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.003	0.404	0.376	93	12	0.472	117	10
238U	0.001	0.05	0.048	96	11	0.057	114	8.8

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	05			06	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	104	6.3	1.2	102	2.8
11B	0.077	4.5	5.0	110	3.5	4.7	104	1.9
23Na	1.9	14,000	15,252	109	2.7	13,927	100	2.0
24Mg	0.025	910	979	108	5.1	950	104	3.6
27Al	0.086	197.2	205	104	7.0	191	97	7.5
31P	56	8,000	8,691	109	2.5	8,115	101	1.3
39K	8.3	15,500	16,612	107	2.5	15,665	101	2.3
44Ca	18	2,360	2,619	111	3.3	2,345	99	3.0
49Ti	0.001	12.24	14	112	8.7	13	104	9.4
51V	0.059	1.57	1.7	106	10	1.7	107	8.4
52Cr	0.320	1.87	2.0	107	7.9	2.3	123	4.7
55Mn	0.008	3.17	3.4	106	8.1	3.7	117	4.1
57Fe	2.3	343	377	110	3.5	376	110	1.6
59Co	0.005	0.25	0.277	111	4.0	0.282	113	0.6
60Ni	0.001	1.34	1.5	111	7.0	1.6	116	4.8
63Cu	0.008	15.7	17	108	3.2	17	106	2.0
66Zn	0.370	51.6	56	109	3.2	54	104	1.3
75As	0.477	6.87	7.3	107	1.0	7.1	103	2.0
77Se	0.386	3.45	3.7	107	7.2	3.6	105	1.6
88Sr	0.001	10.1	11	108	1.6	10	99	5.0
95Mo	0.001	0.29	0.293	101	6.7	0.323	111	9.2
107Ag	0.001	0.0252	0.029	115	19	0.025	100	0.0
111Cd	0.063	0.299	0.306	102	9.5	0.275	92	12
118Sn	0.030	0.061	0.069	113	14	0.067	110	16
121Sb	0.008	0.011	0.012	113	20	0.016	**144**	**21**
137Ba	0.001	8.6	9.7	113	4.1	9.0	104	4.3
202Hg	0.043	0.412	0.481	117	6.6	0.427	104	4.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.003	0.404	0.413	102	12	0.491	122	12
238U	0.001	0.05	0.053	106	6.8	0.055	110	5.2

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	07			08	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.007	1.21	1.3	105	4.8	1.2	103	11
11B	0.077	4.5	5.0	112	2.5	4.9	109	3.1
23Na	1.9	14,000	14,872	106	6.0	14,580	104	10
24Mg	0.025	910	996	110	4.8	894	98	12
27Al	0.086	197.2	207	105	4.4	185	94	7.0
31P	56	8,000	8,578	107	3.7	7,657	96	9.2
39K	8.3	15,500	16,667	108	4.4	15,533	100	13
44Ca	18	2,360	2,594	110	1.9	2,465	104	8.4
49Ti	0.001	12.24	14	115	13	12	102	15
51V	0.059	1.57	1.9	121	9.7	1.6	102	13
52Cr	0.320	1.87	2.1	113	3.0	2.0	105	9.7
55Mn	0.008	3.17	3.5	111	2.5	3.2	101	8.2
57Fe	2.3	343	391	114	3.5	354	103	9.3
59Co	0.005	0.25	0.283	113	4.5	0.283	113	11
60Ni	0.001	1.34	1.5	114	4.7	1.5	114	12
63Cu	0.008	15.7	18	117	4.6	19	119	9.7
66Zn	0.370	51.6	59	114	4.0	58	113	6.5
75As	0.477	6.87	7.4	108	3.7	6.9	100	9.9
77Se	0.386	3.45	3.8	110	3.4	3.3	95	8.0
88Sr	0.001	10.1	11	109	3.3	10	104	12
95Mo	0.001	0.29	0.334	115	7.7	0.290	100	18
107Ag	0.001	0.0252	0.030	118	18	0.032	126	19
111Cd	0.063	0.299	0.336	112	6.2	0.289	97	10
118Sn	0.030	0.061	0.057	94	14	0.068	111	19
121Sb	0.008	0.011	0.014	128	14	0.012	111	18
137Ba	0.001	8.6	9.8	114	3.9	9.4	110	3.7
202Hg	0.043	0.412	0.475	115	9.0	0.398	97	18
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.003	0.404	0.468	116	12	0.459	114	16
238U	0.001	0.05	0.060	120	9.2	0.051	102	9.4

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_SAND_INV_20210528	057	16 Jun 2021
	RG_T4_INV_20210527	058	
	RG_TN_INV_20210527	059	
	RG_ER-RBT-02-M_20210529	120	
	RG_SC-WCT-04-M	121	
02	RG_SC-PCC-01-O_20210527	060	16 Jun 2021
	RG_SC-PCC-01-M_20210527	061	
	RG_SC-PCC-02-O_20210527	062	
	RG_SC-PCC-02-M_20210527	063	
	RG_SC-PCC-03-O_20210528	064	
	RG_SC-PCC-03-M_20210528	065	
	RG_SC-PCC-04-O_20210528	066	
	RG_SC-PCC-04-M_20210528	067	
	RG_SC-PCC-05-O_20210528	068	
03	RG_SC-PCC-05-M_20210528	069	16 Jun 2021
	RG_SC-PCC-06-O_20210528	070	
	RG_SC-PCC-06-M_20210528	071	
	RG_SC-PCC-07-O_20210528	072	
	RG_SC-PCC-07-M_20210528	073	
	RG_SC-PCC-08-O_20210528	074	
	RG_SC-PCC-08-M_20210528	075	
	RG_SC-PCC-09-O_20210528	076	
	RG_SC-PCC-09-M_20210528	077	
04	RG_SC-PCC-10-O_20210528	078	16 Jun 2021
	RG_SC-PCC-10-M_20210528	079	
	RG_GC_PCC-01-O_20210525	080	
	RG_GC_PCC-01-M_20210525	081	
	RG_GC_PCC-02-O_20210525	082	
	RG_GC_PCC-02-M_20210525	083	
	RG_GC_PCC-03-O_20210525	084	
	RG_GC_PCC-03-M_20210525	085	
	RG_GC_PCC-04-O_20210525	086	
05	RG_GC_PCC-04-M_20210525	087	16 Jun 2021
	RG_GC_PCC-05-O_20210528	088	
	RG_GC_PCC-05-M_20210528	089	
	RG_GC_PCC-06-O_20210528	090	
	RG_GC_PCC-06-M_20210528	091	
	RG_GC_PCC-07-O_20210528	092	
	RG_GC_PCC-07-M_20210528	093	
	RG_GC_PCC-08-O_20210528	094	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
05	RG_GC_PCC-08-M_20210528	095	16 Jun 2021
06	RG_GC-PCC-09-O_20210528	096	16 Jun 2021
	RG_GC-PCC-09-M_20210528	097	
	RG_GC-PCC-10-O_20210528	098	
	RG_GC-PCC-10-M_20210528	099	
	RG_ER-PCC-01-O_20210528	100	
	RG_ER-PCC-01-M_20210528	101	
	RG_ER-PCC-02-O_20210528	102	
	RG_ER-PCC-02-M_20210528	103	
	RG_ER-PCC-03-O_20210528	104	
07	RG_ER-PCC-03-M_20210528	105	17 Jun 2021
	RG_ER-PCC-04-O_20210529	106	
	RG_ER-PCC-04-M_20210529	107	
	RG_ER-PCC-05-O_20210529	108	
	RG_ER-PCC-05-M_20210529	109	
	RG_ER-PCC-06-O_20210529	110	
	RG_ER-PCC-06-M_20210529	111	
	RG_ER-PCC-07-O_20210529	112	
	RG_ER-PCC-07-M_20210529	113	
08	RG_ER-PCC-08-O_20210529	114	22 Jun 2021
	RG_ER-PCC-08-M_20210529	115	
	RG_ER-PCC-09-O_20210529	116	
	RG_ER-PCC-09-M_20210529	117	
	RG_ER-PCC-10-O_20210529	118	
	RG_ER-PCC-10-M_20210529	119	

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing	Reporting (if different from Invoicing)

Project Number: 21-17 PO 748530

Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID		Sample Identification:	Sample Type: Species	Sample Type: Sample type
057	1	RG_SAND_INV_20210528 ✓	Benthics	Benthic tissue sample
058	2	RG_T4_INV_20210527 ✓	Benthics	Benthic tissue sample
059	3	RG_TN_INV_20210527 ✓	Benthics	Benthic tissue sample
060	4	RG_SC-PCC-01-O_20210527 ✓	Peamouth Chub	Ovary
061	5	RG_SC-PCC-01-M_20210527 ✓	Peamouth Chub	Muscle
062	6	RG_SC-PCC-02-O_20210527 ✓	Peamouth Chub	Ovary
063	7	RG_SC-PCC-02-M_20210527 ✓	Peamouth Chub	Muscle
064	8	RG_SC-PCC-03-O_20210528 ✓	Peamouth Chub	Ovary
065	9	RG_SC-PCC-03-M_20210528 ✓	Peamouth Chub	Muscle
066	10	RG_SC-PCC-04-O_20210528 ✓	Peamouth Chub	Ovary
067	11	RG_SC-PCC-04-M_20210528 ✓	Peamouth Chub	Muscle
068	12	RG_SC-PCC-05-O_20210528 ✓	Peamouth Chub	Ovary
069	13	RG_SC-PCC-05-M_20210528 ✓	Peamouth Chub	Muscle
070	14	RG_SC-PCC-06-O_20210528 ✓	Peamouth Chub	Ovary
071	15	RG_SC-PCC-06-M_20210528 ✓	Peamouth Chub	Muscle
072	16	RG_SC-PCC-07-O_20210528 ✓	Peamouth Chub	Ovary
073	17	RG_SC-PCC-07-M_20210528 ✓	Peamouth Chub	Muscle
074	18	RG_SC-PCC-08-O_20210528 ✓	Peamouth Chub	Ovary
075	19	RG_SC-PCC-08-M_20210528 ✓	Peamouth Chub	Muscle

Sample(s) Released By: Noel Soogrim	Sample(s) Received By: Genene LaBine
Signature:	Signature:
Date Sent: ~~EE~~ 9-JUN-21	Date Received: 10 JUN 2021 (Project # 2021-227)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	Chain of Custody (COC) for LA-ICP-MS Analysis

Invoicing	Reporting (if different from Invoicing)

Project Number: 21-17 PO 748530

Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:		Sample Identification:		Sample Type: Species	Sample Type: Sample type
076	20	RG_SC-PCC-09-O_20210528	✓	Peamouth Chub	Ovary
077	21	RG_SC-PCC-09-M_20210528	✓	Peamouth Chub	Muscle
078	22	RG_SC-PCC-10-O_20210528	✓	Peamouth Chub	Ovary
079	23	RG_SC-PCC-10-M_20210528	✓	Peamouth Chub	Muscle
080	24	RG_GC_PCC-01-O_20210525	*	Peamouth Chub	Ovary
081	25	RG_GC_PCC-01-M_20210525	**	Peamouth Chub	Muscle
082	26	RG_GC_PCC-02-O_20210525	✓	Peamouth Chub	Ovary
083	27	RG_GC_PCC-02-M_20210525	✓	Peamouth Chub	Muscle
084	28	RG_GC_PCC-03-O_20210525	✓	Peamouth Chub	Ovary
085	29	RG_GC_PCC-03-M_20210525	✓	Peamouth Chub	Muscle
086	30	RG_GC_PCC-04-O_20210525	✓	Peamouth Chub	Ovary
087	31	RG_GC_PCC-04-M_20210525	✓	Peamouth Chub	Muscle
088	32	RG_GC_PCC-05-O_20210528	✓	Peamouth Chub	Ovary
089	33	RG_GC_PCC-05-M_20210528	✓	Peamouth Chub	Muscle
090	34	RG_GC_PCC-06-O_20210528	✓	Peamouth Chub	Ovary
091	35	RG_GC_PCC-06-M_20210528	✓	Peamouth Chub	Muscle
092	36	RG_GC_PCC-07-O_20210528	✓	Peamouth Chub	Ovary
093	37	RG_GC_PCC-07-M_20210528	✓	Peamouth Chub	Muscle
094	38	RG_GC_PCC-08-O_20210528	✓	Peamouth Chub	Ovary
095	39	RG_GC_PCC-08-M_20210528	✓	Peamouth Chub	Muscle

Sample(s) Released By: Noel Soogrim	Sample(s) Received By: Gerlene LaBine
Signature:	Signature:
Date Sent: 9-JUN-21	Date Received: 10 JUN 2021 (Project # 2021-227)
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

* Sample container ID reads "RG-GB-PCC-01-O-20210525".
** Sample container ID reads "RGGB-PCC-01-M_20210525". GL 10JUN2021.
Client confirmed on 10 JUN 2021 that CoC is correct. DJS 10Jun2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17 PO 748530			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:		Sample Identification:		Sample Type: Species	Sample Type: Sample type
096	40	RG_GC-PCC-09-O_20210528	✓	Peamouth Chub	Ovary
097	41	RG_GC-PCC-09-M_20210528	✓	Peamouth Chub	Muscle
098	42	RG_GC-PCC-10-O_20210528	✓	Peamouth Chub	Ovary
099	43	RG_GC-PCC-10-M_20210528	✓	Peamouth Chub	Muscle
100	44	RG_ER-PCC-01-O_20210528	✓	Peamouth Chub	Ovary
101	45	RG_ER-PCC-01-M_20210528	✓	Peamouth Chub	Muscle
102	46	RG_ER-PCC-02-O_20210528	✓	Peamouth Chub	Ovary
103	47	RG_ER-PCC-02-M_20210528	✓	Peamouth Chub	Muscle
104	48	RG_ER-PCC-03-O_20210528	✓	Peamouth Chub	Ovary
105	49	RG_ER-PCC-03-M_20210528	✓	Peamouth Chub	Muscle
106	50	RG_ER-PCC-04-O_20210529	✓	Peamouth Chub	Ovary
107	51	RG_ER-PCC-04-M_20210529	✓	Peamouth Chub	Muscle
108	52	RG_ER-PCC-05-O_20210529	✓	Peamouth Chub	Ovary
109	53	RG_ER-PCC-05-M_20210529	✓	Peamouth Chub	Muscle
110	54	RG_ER-PCC-06-O_20210529	✓	Peamouth Chub	Ovary
111	55	RG_ER-PCC-06-M_20210529	✓	Peamouth Chub	Muscle
112	56	RG_ER-PCC-07-O_20210529	✓	Peamouth Chub	Ovary
113	57	RG_ER-PCC-07-M_20210529	✓	Peamouth Chub	Muscle
114	58	RG_ER-PCC-08-O_20210529	✓	Peamouth Chub	Ovary
115	59	RG_ER-PCC-08-M_20210529	✓	Peamouth Chub	Muscle

Sample(s) Released By:	NOEL SOOBRIM	Sample(s) Received By:	Corrine LaBine
Signature:		Signature:	
Date Sent:	9-JUN-21	Date Received:	10 Jun 2021 (Project # 2021-227).
Sample(s) Returned to Client By:		Shipping Conditions:	
		Shipping Container:	
Signature:		Date Sent:	

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17 PO 748530			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca	Email:	

Sample Analysis Requested

Trich Sample ID:		Sample Identification:		Sample Type: Species	Sample Type: Sample type
116	60	RG_ER-PCC-09-O_20210529	✓	Peamouth Chub	Ovary
117	61	RG_ER-PCC-09-M_20210529	✓	Peamouth Chub	Muscle
118	62	RG_ER-PCC-10-O_20210529	✓	Peamouth Chub	Ovary
119	63	RG_ER-PCC-10-M_20210529	✓	Peamouth Chub	Muscle
120	64	RG_ER-RBT-02-M_20210529	✓	Rainbow Trout	Muscle Plug
121	65	RG_SC-WCT-04-M	✓	Westslope Cutthroat Trout	Muscle Plug

Sample(s) Released By:	Noel Soggam	Sample(s) Received By:	Geneve LaBine
Signature:		Signature:	
Date Sent:	9-JUN-21	Date Received:	10 Jun 2021 (Project #: 2021-227).
Sample(s) Returned to Client By:		Shipping Conditions:	
		Shipping Container:	
Signature:		Date Sent:	

COM-011.01

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client: Heidi Currier
Aquatic Toxicologist
Minnow Environmental
Phone: 905-691-6183
Email: hcurrier@minnow.ca

Date Received:	29 Jun 2021
Date of Analysis:	30 Jun 2021
	01 Jul 2021
	06 Jul 2021
	08 Jul 2021
	09 Jul 2021
	10 Jul 2021
	15 Jul 2021
Final Report Date:	15 Jul 2021
Project No.:	2021-232
Method No.:	MET-002.05

Client Project: Teck Coal Limited Project 21-17 (Koocanusa)

Analytical Request: Fish Tissue and Zooplankton Microchemistry (total metals and moisture) - 140 samples.
See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in part per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
Client specific DQO for Selenium accuracy is 90 - 110% of the certified value; (average achieved 105%, range 92 - 110%).
* No sample provided for RG_SC-MW-01-M_20210625 as listed on the chain of custody.

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio — 15 Jul 2021 (Date)

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-01-O_20210622	RG_ER-PCC-02-O_20210622	RG_ER-PCC-03-O_20210622	RG_ER-PCC-04-O_20210622	RG_ER-PCC-05-O_20210623
		Lab ID	150	151	152	153	154
		Wet Weight (g)	9.4353	12.2445	5.8837	10.6639	1.0869
		Dry Weight (g)	3.7543	5.0099	2.2713	4.1255	0.2334
		Moisture (%)	60.2	59.1	61.4	61.3	78.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.019	0.015	0.054	0.015	0.027
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	0.124
23Na	2.2	7.3	1,731	1,214	1,859	1,224	5,317
24Mg	0.024	0.080	827	802	756	716	1,037
27Al	0.296	0.987	0.561	0.352	<0.296	0.383	1.3
31P	49	163	13,593	12,045	11,888	9,969	18,210
39K	15	50	10,279	8,160	8,239	6,009	27,127
44Ca	55	183	336	277	316	355	535
49Ti	0.420	1.4	1.1	1.3	1.1	0.850	2.1
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	0.126
52Cr	0.580	1.9	1.4	1.5	1.4	1.3	1.5
55Mn	0.022	0.073	5.2	2.2	4.2	4.4	2.6
57Fe	2.8	9.0	54	52	39	51	372
59Co	0.006	0.020	0.047	0.049	0.042	0.059	0.175
60Ni	0.041	0.137	0.043	0.043	<0.041	<0.041	0.820
63Cu	0.010	0.033	3.7	4.4	3.3	3.3	4.5
66Zn	0.743	2.5	67	75	47	56	276
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	15	8.5	9.3	11	29
88Sr	0.001	0.003	0.229	0.205	0.220	0.306	0.481
95Mo	0.001	0.003	0.090	0.090	0.064	0.064	0.128
107Ag	0.001	0.003	0.017	0.023	0.014	0.026	0.009
111Cd	0.045	0.150	0.072	0.229	0.374	0.145	0.096
118Sn	0.043	0.143	0.149	0.209	0.165	0.167	0.409
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	0.006
137Ba	0.001	0.003	5.3	2.3	2.4	5.4	9.0
202Hg	0.036	0.120	0.044	<0.036	0.089	<0.036	0.078
205Tl	0.001	0.003	0.005	0.008	0.003	0.007	0.021
208Pb	0.001	0.003	0.018	0.008	0.007	0.007	0.069
238U	0.001	0.003	0.003	0.003	0.002	0.001	0.001

Notes:

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g = grams

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-06-O_20210623	RG_ER-PCC-07-O_20210623	RG_ER-PCC-08-O_20210623	RG_ER-PCC-09-O_20210623	RG_ER-PCC-10-O_20210623
		Lab ID	155	156	157	158	159
		Wet Weight (g)	16.0764	12.3781	7.9382	5.4510	9.2997
		Dry Weight (g)	6.4947	4.9947	3.1531	2.1574	3.2596
		Moisture (%)	59.6	59.6	60.3	60.4	64.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.015	0.025	0.023	0.046	0.061
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	1,670	1,061	1,416	1,470	2,473
24Mg	0.024	0.080	752	735	718	722	1,049
27Al	0.296	0.987	0.346	0.525	0.331	<0.296	2.5
31P	49	163	14,788	13,238	12,880	10,474	14,474
39K	15	50	10,627	10,077	8,793	6,507	10,908
44Ca	55	183	279	275	311	258	466
49Ti	0.420	1.4	1.3	1.5	1.3	1.3	4.6
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.5	1.4	1.3	1.4	1.5
55Mn	0.022	0.073	3.5	4.5	4.3	3.6	5.7
57Fe	2.8	9.0	68	60	63	40	76
59Co	0.006	0.020	0.056	0.042	0.063	0.040	0.085
60Ni	0.041	0.137	<0.041	0.043	0.058	<0.041	0.085
63Cu	0.010	0.033	4.0	2.7	2.8	2.3	3.3
66Zn	0.743	2.5	58	58	56	44	75
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	9.2	13	14	12	12
88Sr	0.001	0.003	0.187	0.221	0.229	0.182	0.532
95Mo	0.001	0.003	0.077	0.077	0.090	0.064	0.113
107Ag	0.001	0.003	0.029	0.020	0.023	0.021	0.032
111Cd	0.045	0.150	<0.045	<0.045	0.259	<0.045	0.103
118Sn	0.043	0.143	0.356	0.296	0.111	0.254	0.142
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	1.3	2.1	4.1	1.7	4.0
202Hg	0.036	0.120	0.066	<0.036	<0.036	0.039	<0.036
205Tl	0.001	0.003	0.007	0.005	0.005	0.005	0.008
208Pb	0.001	0.003	0.005	0.007	0.007	0.005	0.033
238U	0.001	0.003	0.003	0.003	0.001	0.002	0.003

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-01-M_20210622	RG_ER-PCC-02-M_20210622	RG_ER-PCC-03-M_20210622	RG_ER-PCC-04-M_20210622	RG_ER-PCC-05-M_20210623
		Lab ID	160	161	162	163	164
		Wet Weight (g)	3.2293	2.1785	3.5660	3.9177	4.8595
		Dry Weight (g)	0.6814	0.4956	0.7397	0.8408	1.1154
		Moisture (%)	78.9	77.3	79.3	78.5	77.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.021	0.034	0.042	0.042	0.013
11B	0.108	0.360	0.119	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	1,256	1,500	1,394	1,816	723
24Mg	0.024	0.080	1,065	1,347	805	1,641	1,517
27Al	0.296	0.987	0.473	0.613	0.923	0.619	1.6
31P	49	163	9,486	10,632	9,634	16,818	8,123
39K	15	50	21,966	22,885	21,580	34,167	14,117
44Ca	55	183	788	917	700	952	1,132
49Ti	0.420	1.4	1.3	1.6	1.2	1.6	4.6
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.3	1.1	1.4	1.2
55Mn	0.022	0.073	0.365	0.480	0.406	0.291	0.492
57Fe	2.8	9.0	19	29	22	16	18
59Co	0.006	0.020	0.021	0.030	0.017	0.022	0.022
60Ni	0.041	0.137	0.085	0.136	0.068	0.051	0.085
63Cu	0.010	0.033	1.6	2.0	1.3	1.4	1.1
66Zn	0.743	2.5	25	38	25	25	20
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.9	2.4	2.2	4.2	5.2
88Sr	0.001	0.003	0.388	0.365	0.230	0.458	0.501
95Mo	0.001	0.003	<0.001	0.014	<0.001	<0.001	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	0.064	0.064	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.121	0.185	0.076	0.076	0.066
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	0.007
137Ba	0.001	0.003	3.5	2.8	1.9	2.2	1.6
202Hg	0.036	0.120	1.1	0.510	1.5	1.1	0.440
205Tl	0.001	0.003	0.012	0.026	0.007	0.017	0.004
208Pb	0.001	0.003	0.016	0.014	0.016	0.016	0.023
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-PCC-06-M_20210623	RG_ER-PCC-07-M_20210623	RG_ER-PCC-08-M_20210623	RG_ER-PCC-09-M_20210623	RG_ER-PCC-10-M_20210623
		Lab ID	165	166	167	168	169
		Wet Weight (g)	1.2155	4.0879	3.8370	1.4469	3.6016
		Dry Weight (g)	0.2425	0.9552	0.8988	0.3371	0.8107
		Moisture (%)	80.0	76.6	76.6	76.7	77.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.023	0.034	0.042	0.057	0.052
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	1,714	982	1,243	1,515	1,733
24Mg	0.024	0.080	1,157	1,068	1,024	1,608	992
27Al	0.296	0.987	1.5	1.3	1.2	1.2	3.6
31P	49	163	12,473	8,563	9,746	11,937	11,780
39K	15	50	28,582	18,067	22,672	21,328	24,609
44Ca	55	183	991	810	525	752	859
49Ti	0.420	1.4	2.4	2.4	3.1	2.5	11
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.2	1.0	1.2	1.2
55Mn	0.022	0.073	0.524	0.512	0.423	0.646	0.561
57Fe	2.8	9.0	24	16	24	33	28
59Co	0.006	0.020	0.019	0.017	0.019	0.023	0.019
60Ni	0.041	0.137	0.153	0.085	0.094	0.091	0.091
63Cu	0.010	0.033	1.0	1.3	1.3	2.0	1.5
66Zn	0.743	2.5	37	22	30	42	21
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.5	3.0	4.8	5.5	4.5
88Sr	0.001	0.003	0.473	0.281	0.220	0.272	0.300
95Mo	0.001	0.003	<0.001	0.014	0.014	<0.001	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	0.154	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.209	0.145	0.128	0.161	0.343
121Sb	0.005	0.017	<0.005	<0.005	0.007	0.005	0.005
137Ba	0.001	0.003	2.0	2.1	2.7	2.9	1.9
202Hg	0.036	0.120	1.5	0.436	0.412	0.867	0.730
205Tl	0.001	0.003	0.008	0.012	0.016	0.022	0.012
208Pb	0.001	0.003	0.016	0.012	0.012	0.010	0.024
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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Tissue Analysis Results

		Client ID	RG_ER-RSC-01-O_20210622	RG_ER-RSC-02-O_20210622	RG_ER-RSC-03-O_20210622	RG_ER-RSC-04-O_20210622	RG_ER-RSC-05-O_20210622
		Lab ID	170	171	172	173	174
		Wet Weight (g)	1.0426	0.7243	0.4990	0.2610	0.1508
		Dry Weight (g)	0.4322	0.2488	0.2028	0.1185	0.0707
		Moisture (%)	58.5	65.6	59.4	54.6	53.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.009	0.019	0.014	<0.008	0.009
11B	0.108	0.360	<0.108	0.182	0.145	<0.108	<0.108
23Na	2.2	7.3	1,645	2,147	1,392	1,077	1,086
24Mg	0.024	0.080	732	985	765	671	776
27Al	0.296	0.987	1.5	1.1	2.0	2.1	1.2
31P	49	163	14,978	12,598	14,152	13,088	13,617
39K	15	50	11,790	9,401	9,022	9,050	9,487
44Ca	55	183	587	763	559	381	401
49Ti	0.420	1.4	1.1	1.4	1.4	1.1	1.4
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.4	1.5	1.6	1.4	1.4
55Mn	0.022	0.073	4.3	6.0	4.6	4.9	4.8
57Fe	2.8	9.0	64	98	73	82	61
59Co	0.006	0.020	0.064	0.064	0.064	0.054	0.040
60Ni	0.041	0.137	0.114	0.095	0.341	0.151	0.076
63Cu	0.010	0.033	4.5	6.2	3.9	4.0	3.8
66Zn	0.743	2.5	84	112	91	86	84
75As	0.495	1.7	<0.495	0.520	0.593	0.600	<0.495
77Se	0.398	1.3	17	21	8.1	10	15
88Sr	0.001	0.003	0.486	0.551	0.540	0.282	0.304
95Mo	0.001	0.003	0.045	0.090	0.045	0.060	0.045
107Ag	0.001	0.003	0.027	0.024	0.014	0.024	0.014
111Cd	0.045	0.150	0.251	1.1	0.226	0.100	0.050
118Sn	0.043	0.143	0.293	0.280	0.291	0.385	0.105
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	1.1	1.9	1.4	2.2	1.8
202Hg	0.036	0.120	<0.036	0.054	0.044	<0.036	<0.036
205Tl	0.001	0.003	0.029	0.041	0.031	0.021	0.020
208Pb	0.001	0.003	0.015	0.027	0.008	0.008	0.025
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-RSC-06-O_20210622	RG_ER-RSC-07-O_20210622	RG_ER-RSC-08-O_20210622	RG_ER-RSC-09-O_20210622	RG_ER-RSC-10-O_20210622
		Lab ID	175	176	177	178	179
		Wet Weight (g)	1.5449	1.1726	0.2995	0.3755	0.2963
		Dry Weight (g)	0.6285	0.4798	0.1230	0.1581	0.1100
		Moisture (%)	59.3	59.1	58.9	57.9	62.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.009	0.009	0.009	0.009	0.020
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	0.203
23Na	2.2	7.3	1,059	1,109	1,373	1,141	3,097
24Mg	0.024	0.080	749	753	754	861	1,227
27Al	0.296	0.987	0.368	0.354	1.2	6.1	5.7
31P	49	163	12,252	12,313	13,570	13,278	23,081
39K	15	50	6,280	7,728	8,835	8,691	16,110
44Ca	55	183	508	402	549	727	995
49Ti	0.420	1.4	0.831	1.1	1.2	1.2	1.7
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.4	1.4	1.4	1.4	2.5
55Mn	0.022	0.073	5.2	5.7	6.9	5.3	8.4
57Fe	2.8	9.0	53	43	62	68	143
59Co	0.006	0.020	0.045	0.029	0.088	0.057	0.112
60Ni	0.041	0.137	<0.041	<0.041	0.047	0.246	0.758
63Cu	0.010	0.033	3.2	4.0	3.7	4.8	4.9
66Zn	0.743	2.5	74	67	103	107	207
75As	0.495	1.7	<0.495	<0.495	0.766	<0.495	0.965
77Se	0.398	1.3	11	19	7.7	9.9	11
88Sr	0.001	0.003	0.297	0.275	0.526	0.725	0.808
95Mo	0.001	0.003	0.060	0.045	0.030	0.090	0.128
107Ag	0.001	0.003	0.014	0.020	0.020	0.020	0.025
111Cd	0.045	0.150	0.067	<0.045	0.084	0.134	0.166
118Sn	0.043	0.143	0.113	0.108	0.565	0.361	0.365
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	0.012
137Ba	0.001	0.003	1.4	0.952	3.4	2.0	2.6
202Hg	0.036	0.120	<0.036	<0.036	<0.036	0.040	0.082
205Tl	0.001	0.003	0.018	0.020	0.025	0.020	0.036
208Pb	0.001	0.003	0.002	0.006	0.019	0.021	0.035
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	0.003

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Tissue Analysis Results

		Client ID	RG_ER-RSC-01-M_20210622	RG_ER-RSC-02-M_20210622	RG_ER-RSC-03-M_20210622	RG_ER-RSC-04-M_20210622	RG_ER-RSC-05-M_20210622
		Lab ID	180	181	182	183	184
		Wet Weight (g)	0.5133	0.8616	0.9532	0.9195	0.3545
		Dry Weight (g)	0.1315	0.2120	0.2332	0.2168	0.0857
		Moisture (%)	74.4	75.4	75.5	76.4	75.8
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.018	0.042	0.014	0.025	0.044
11B	0.108	0.360	0.281	0.391	0.289	0.281	0.406
23Na	2.2	7.3	1,547	1,868	1,323	1,448	1,947
24Mg	0.024	0.080	1,594	1,561	1,360	1,753	2,151
27Al	0.296	0.987	2.2	6.1	4.7	7.4	9.7
31P	49	163	13,906	15,703	13,260	18,123	18,845
39K	15	50	19,242	27,337	22,840	25,911	32,491
44Ca	55	183	1,631	1,372	1,334	1,373	1,647
49Ti	0.420	1.4	2.1	2.2	1.5	2.1	3.0
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	0.072
52Cr	0.580	1.9	1.7	2.0	1.6	2.2	2.4
55Mn	0.022	0.073	1.1	1.3	0.978	1.0	1.3
57Fe	2.8	9.0	20	29	22	25	37
59Co	0.006	0.020	0.036	0.053	0.020	0.039	0.067
60Ni	0.041	0.137	0.241	0.525	0.160	0.715	0.457
63Cu	0.010	0.033	1.1	2.3	1.4	1.6	1.8
66Zn	0.743	2.5	40	37	46	37	47
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	4.5	7.7	3.2	3.9	4.5
88Sr	0.001	0.003	1.4	0.658	0.540	0.664	0.898
95Mo	0.001	0.003	0.011	0.021	0.011	0.021	0.021
107Ag	0.001	0.003	0.005	0.005	<0.001	0.007	0.005
111Cd	0.045	0.150	0.066	0.066	0.066	0.066	0.116
118Sn	0.043	0.143	0.060	0.156	0.274	0.297	0.241
121Sb	0.005	0.017	0.020	0.048	0.007	0.030	0.036
137Ba	0.001	0.003	0.907	1.4	1.0	0.976	1.6
202Hg	0.036	0.120	0.723	0.647	0.465	0.447	0.667
205Tl	0.001	0.003	0.037	0.047	0.031	0.047	0.036
208Pb	0.001	0.003	0.046	0.257	0.035	0.117	0.265
238U	0.001	0.003	0.003	0.003	<0.001	0.003	0.003

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_ER-RSC-06-M_20210622	RG_ER-RSC-07-M_20210622	RG_ER-RSC-08-M_20210622	RG_ER-RSC-09-M_20210622	RG_ER-RSC-10-M_20210622
		Lab ID	185	186	187	188	189
		Wet Weight (g)	0.5148	0.4982	0.9274	0.7151	0.4524
		Dry Weight (g)	0.1191	0.1140	0.2117	0.1665	0.1088
		Moisture (%)	76.9	77.1	77.2	76.7	76.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.014	0.030	0.027	0.013	0.022
11B	0.108	0.360	0.141	0.438	0.250	0.110	0.360
23Na	2.2	7.3	1,224	2,437	1,802	1,162	1,558
24Mg	0.024	0.080	1,509	1,499	1,727	1,905	1,739
27Al	0.296	0.987	5.7	4.0	9.1	1.4	8.6
31P	49	163	13,915	17,253	17,547	16,056	16,445
39K	15	50	21,323	27,804	30,632	23,522	27,353
44Ca	55	183	1,300	1,526	1,315	1,748	1,407
49Ti	0.420	1.4	1.9	2.1	2.5	1.6	2.1
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.8	2.3	1.9	1.8	2.3
55Mn	0.022	0.073	1.2	1.2	1.2	1.2	1.2
57Fe	2.8	9.0	22	26	40	21	53
59Co	0.006	0.020	0.035	0.039	0.043	0.023	0.054
60Ni	0.041	0.137	0.481	0.948	0.292	0.210	0.736
63Cu	0.010	0.033	1.4	1.8	2.1	1.4	4.1
66Zn	0.743	2.5	22	41	62	40	69
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	3.2	8.3	3.4	1.8	1.8
88Sr	0.001	0.003	0.611	0.643	0.668	0.819	0.873
95Mo	0.001	0.003	0.011	0.032	0.021	0.011	0.023
107Ag	0.001	0.003	0.002	0.005	0.002	0.003	0.003
111Cd	0.045	0.150	0.066	0.365	0.050	0.050	0.066
118Sn	0.043	0.143	0.190	0.350	0.384	0.085	0.191
121Sb	0.005	0.017	0.014	0.023	0.018	0.009	0.025
137Ba	0.001	0.003	0.418	0.558	2.9	0.902	2.1
202Hg	0.036	0.120	0.737	0.679	0.459	0.663	0.615
205Tl	0.001	0.003	0.033	0.029	0.038	0.035	0.039
208Pb	0.001	0.003	0.056	0.142	0.150	0.013	0.258
238U	0.001	0.003	0.001	<0.001	0.002	0.001	0.002

Notes:

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g = grams

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-01-O_20210623	RG_SC-PCC-02-O_20210623	RG_SC-PCC-03-O_20210623	RG_SC-PCC-05-O_20210623	RG_SC-PCC-06-O_20210625
		Lab ID	190	191	192	193	194
		Wet Weight (g)	16.3943	16.1908	2.1001	4.3077	16.7073
		Dry Weight (g)	6.3401	5.7506	0.5028	1.1680	7.0039
		Moisture (%)	61.3	64.5	76.1	72.9	58.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.010	0.010	0.014	0.019	<0.008
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	998	1,917	2,321	7,710	851
24Mg	0.024	0.080	932	815	1,580	705	859
27Al	0.296	0.987	1.1	0.361	11	0.903	<0.296
31P	49	163	11,750	10,223	14,218	11,565	12,136
39K	15	50	7,337	6,641	13,823	8,254	6,516
44Ca	55	183	336	355	1,430	1,095	237
49Ti	0.420	1.4	1.1	0.941	4.7	1.3	0.941
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.2	1.1	1.1	1.4	1.2
55Mn	0.022	0.073	6.3	4.2	16	4.9	4.5
57Fe	2.8	9.0	67	42	204	136	48
59Co	0.006	0.020	0.058	0.035	0.113	0.109	0.047
60Ni	0.041	0.137	<0.041	<0.041	0.160	0.114	<0.041
63Cu	0.010	0.033	4.1	3.7	5.0	4.2	4.6
66Zn	0.743	2.5	66	72	226	123	70
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	7.6	5.4	20	6.8	6.0
88Sr	0.001	0.003	0.287	0.322	1.1	1.3	0.167
95Mo	0.001	0.003	0.066	0.066	0.206	0.033	0.066
107Ag	0.001	0.003	0.028	0.016	0.020	0.016	0.024
111Cd	0.045	0.150	0.872	0.395	0.115	0.049	0.296
118Sn	0.043	0.143	0.074	0.105	0.142	0.216	0.062
121Sb	0.005	0.017	<0.005	<0.005	0.005	0.011	<0.005
137Ba	0.001	0.003	4.0	2.5	7.7	7.5	1.2
202Hg	0.036	0.120	0.054	0.054	0.123	0.094	<0.036
205Tl	0.001	0.003	0.006	0.003	0.012	0.009	0.008
208Pb	0.001	0.003	0.010	0.002	0.033	0.020	0.002
238U	0.001	0.003	0.002	0.003	0.008	0.003	0.003

Notes:

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-07-O_20210625	RG_SC-PCC-08-O_20210625	RG_SC-PCC-09-O_20210625	RG_SC-PCC-10-O_20210625	RG_SC-PCC-11-O_20210625
		Lab ID	195	196	197	198	199
		Wet Weight (g)	14.0617	7.8812	19.5715	7.4889	12.3013
		Dry Weight (g)	5.4513	2.8343	7.6007	2.7865	4.9636
		Moisture (%)	61.2	64.0	61.2	62.8	59.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	0.048	0.008	0.008	<0.008
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	1,101	3,780	1,245	1,082	1,148
24Mg	0.024	0.080	888	551	974	984	844
27Al	0.296	0.987	0.394	0.722	0.322	0.735	0.574
31P	49	163	11,958	12,104	12,619	10,447	15,180
39K	15	50	8,921	2,831	8,254	5,299	9,209
44Ca	55	183	239	670	384	416	246
49Ti	0.420	1.4	1.1	1.3	1.0	2.6	1.3
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.2	1.3	1.4	1.5	1.4
55Mn	0.022	0.073	4.7	2.7	7.7	9.9	5.0
57Fe	2.8	9.0	59	101	49	89	58
59Co	0.006	0.020	0.039	0.066	0.061	0.055	0.064
60Ni	0.041	0.137	<0.041	0.068	0.082	<0.041	0.049
63Cu	0.010	0.033	3.3	3.5	3.0	4.0	3.2
66Zn	0.743	2.5	75	84	68	83	71
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	9.7	8.3	13	8.1	8.4
88Sr	0.001	0.003	0.204	0.682	0.315	0.277	0.188
95Mo	0.001	0.003	0.066	0.033	0.060	0.079	0.079
107Ag	0.001	0.003	0.016	0.020	0.018	0.021	0.021
111Cd	0.045	0.150	0.049	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.083	0.087	0.286	0.273	0.068
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	2.7	3.6	3.6	1.1	1.7
202Hg	0.036	0.120	<0.036	0.072	<0.036	0.051	<0.036
205Tl	0.001	0.003	0.004	0.003	0.004	0.004	0.006
208Pb	0.001	0.003	0.007	0.010	0.009	0.009	0.009
238U	0.001	0.003	0.003	0.003	0.006	0.003	0.002

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-01-M_20210623	RG_SC-PCC-02-M_20210623	RG_SC-PCC-03-M_20210623	RG_SC-PCC-05-M_20210623	RG_SC-PCC-06-M_20210625
		Lab ID	200	201	202	203	204
		Wet Weight (g)	2.3472	3.0729	2.0419	1.1532	1.9745
		Dry Weight (g)	0.4913	0.6179	0.4669	0.2905	0.4887
		Moisture (%)	79.1	79.9	77.1	74.8	75.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.016	0.012	0.016	<0.008	0.012
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	0.210
23Na	2.2	7.3	1,942	1,715	2,076	1,258	1,252
24Mg	0.024	0.080	1,111	1,259	1,372	1,269	1,427
27Al	0.296	0.987	2.5	0.690	3.9	0.981	4.5
31P	49	163	9,305	12,092	11,797	9,535	11,596
39K	15	50	20,757	27,861	21,760	17,782	23,872
44Ca	55	183	857	911	859	729	849
49Ti	0.420	1.4	3.4	2.1	4.1	1.8	9.2
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.3	1.5	1.3	1.3
55Mn	0.022	0.073	0.722	0.471	0.694	0.652	0.721
57Fe	2.8	9.0	40	21	38	34	20
59Co	0.006	0.020	0.043	0.017	0.040	0.032	0.023
60Ni	0.041	0.137	0.164	0.099	0.279	0.287	0.197
63Cu	0.010	0.033	1.9	0.963	1.7	2.3	1.5
66Zn	0.743	2.5	44	39	30	43	39
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.0	1.7	2.0	1.8	1.8
88Sr	0.001	0.003	0.336	0.499	0.503	0.592	0.396
95Mo	0.001	0.003	0.013	<0.001	0.013	0.013	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	0.915	<0.045
118Sn	0.043	0.143	0.203	0.099	0.138	<0.043	0.099
121Sb	0.005	0.017	<0.005	<0.005	<0.005	0.008	0.008
137Ba	0.001	0.003	4.9	2.0	3.3	5.2	1.3
202Hg	0.036	0.120	1.0	1.4	0.900	0.871	0.605
205Tl	0.001	0.003	0.015	0.005	0.008	0.011	0.017
208Pb	0.001	0.003	0.029	0.014	0.027	0.014	0.048
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-PCC-07-M_20210625	RG_SC-PCC-08-M_20210625	RG_SC-PCC-09-M_20210625	RG_SC-PCC-10-M_20210625	RG_SC-PCC-11-M_20210625
		Lab ID	205	206	207	208	209
		Wet Weight (g)	3.4462	2.6677	3.5977	2.9531	2.8921
		Dry Weight (g)	0.7553	0.6107	0.8183	0.6562	0.6517
		Moisture (%)	78.1	77.1	77.3	77.8	77.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.008	0.016	0.016	0.012	0.012
11B	0.108	0.360	<0.108	0.225	<0.108	0.291	0.319
23Na	2.2	7.3	1,108	1,509	1,232	1,242	1,410
24Mg	0.024	0.080	1,200	1,327	1,343	1,433	1,515
27Al	0.296	0.987	0.361	0.845	0.634	6.2	0.885
31P	49	163	10,936	11,914	12,210	10,767	12,400
39K	15	50	23,141	27,598	27,133	19,839	26,064
44Ca	55	183	1,060	911	1,072	1,071	1,044
49Ti	0.420	1.4	1.5	1.3	1.4	10	1.3
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.3	1.4	1.4	1.3
55Mn	0.022	0.073	0.328	0.433	0.324	0.801	0.545
57Fe	2.8	9.0	11	10	13	21	11
59Co	0.006	0.020	0.014	0.013	0.013	0.023	0.013
60Ni	0.041	0.137	<0.041	0.114	0.114	0.180	0.095
63Cu	0.010	0.033	0.792	0.788	0.955	1.3	1.0
66Zn	0.743	2.5	14	17	18	45	21
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.0	3.5	3.5	1.8	2.2
88Sr	0.001	0.003	0.580	0.435	0.519	0.469	0.487
95Mo	0.001	0.003	<0.001	<0.001	<0.001	0.015	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	<0.043	0.066	0.073	0.109	0.091
121Sb	0.005	0.017	<0.005	0.009	<0.005	<0.005	0.014
137Ba	0.001	0.003	0.556	0.587	0.734	3.1	0.422
202Hg	0.036	0.120	0.668	1.2	1.1	1.1	0.755
205Tl	0.001	0.003	0.005	0.003	0.006	0.006	0.007
208Pb	0.001	0.003	0.007	0.032	0.009	0.033	0.044
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-RSC-01-O_20210625	RG_SC-RSC-02-O_20210625	RG_SC-RSC-03-O_20210625	RG_SC-RSC-04-O_20210625	RG_SC-RSC-05-O_20210625
		Lab ID	210	211	212	213	214
		Wet Weight (g)	0.8067	1.8501	0.7503	1.9045	1.8442
		Dry Weight (g)	0.3589	0.7578	0.3061	0.7786	0.7290
		Moisture (%)	55.5	59.0	59.2	59.1	60.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.009	0.009	<0.008	<0.008	0.009
11B	0.108	0.360	<0.108	<0.108	0.110	<0.108	<0.108
23Na	2.2	7.3	1,554	1,948	1,432	1,572	1,914
24Mg	0.024	0.080	1,085	909	1,146	1,052	931
27Al	0.296	0.987	0.539	0.824	0.330	0.448	0.590
31P	49	163	17,275	17,389	17,949	15,712	19,642
39K	15	50	10,037	10,797	9,966	8,993	12,319
44Ca	55	183	557	617	583	640	498
49Ti	0.420	1.4	1.2	1.7	1.7	1.0	1.4
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.7	1.9	1.8	1.8	1.7
55Mn	0.022	0.073	3.8	8.2	11	8.3	5.9
57Fe	2.8	9.0	91	71	68	61	66
59Co	0.006	0.020	0.080	0.087	0.072	0.066	0.077
60Ni	0.041	0.137	0.048	0.178	0.073	0.048	<0.041
63Cu	0.010	0.033	5.3	3.5	4.3	4.6	4.9
66Zn	0.743	2.5	102	93	131	98	116
75As	0.495	1.7	<0.495	0.617	0.505	0.662	0.662
77Se	0.398	1.3	13	7.1	17	8.7	9.4
88Sr	0.001	0.003	0.373	0.382	0.384	0.446	0.420
95Mo	0.001	0.003	0.103	0.092	0.057	0.069	0.080
107Ag	0.001	0.003	0.022	0.022	0.019	0.019	0.013
111Cd	0.045	0.150	0.347	0.066	0.132	0.066	0.083
118Sn	0.043	0.143	0.400	0.306	0.301	0.407	0.356
121Sb	0.005	0.017	<0.005	0.007	0.009	<0.005	<0.005
137Ba	0.001	0.003	0.804	1.8	1.2	1.2	1.2
202Hg	0.036	0.120	0.041	0.055	0.041	0.055	0.037
205Tl	0.001	0.003	0.013	0.027	0.019	0.022	0.023
208Pb	0.001	0.003	0.010	0.008	0.021	0.007	0.007
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-RSC-06-O_20210625	RG_SC-RSC-07-O_20210625	RG_SC-RSC-08-O_20210625	RG_SC-RSC-09-O_20210625	RG_SC-RSC-10-O_20210625
		Lab ID	215	216	217	218	219
		Wet Weight (g)	1.2597	1.3993	1.1313	0.6855	0.8685
		Dry Weight (g)	0.5029	0.5403	0.4276	0.2811	0.3346
		Moisture (%)	60.1	61.4	62.2	59.0	61.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	0.013	0.008	0.012	<0.008
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	937	2,455	1,270	1,325	1,595
24Mg	0.024	0.080	1,002	859	903	727	861
27Al	0.296	0.987	0.499	0.443	<0.296	0.462	0.548
31P	49	163	12,501	16,430	12,177	13,234	13,989
39K	15	50	7,291	10,807	9,679	10,192	10,559
44Ca	55	183	481	492	547	419	503
49Ti	0.420	1.4	0.874	1.0	1.3	1.3	1.0
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.6	1.7	1.5	1.3	1.6
55Mn	0.022	0.073	8.6	6.5	4.9	4.0	7.3
57Fe	2.8	9.0	50	54	71	49	45
59Co	0.006	0.020	0.060	0.069	0.059	0.052	0.051
60Ni	0.041	0.137	<0.041	<0.041	<0.041	<0.041	0.057
63Cu	0.010	0.033	4.7	4.5	6.9	3.6	5.1
66Zn	0.743	2.5	108	103	105	86	90
75As	0.495	1.7	<0.495	0.640	<0.495	<0.495	<0.495
77Se	0.398	1.3	14	8.7	12	7.5	8.0
88Sr	0.001	0.003	0.308	0.337	0.277	0.347	0.266
95Mo	0.001	0.003	0.069	0.046	0.104	0.045	0.045
107Ag	0.001	0.003	0.019	0.016	0.022	0.009	0.016
111Cd	0.045	0.150	0.066	<0.045	0.099	1.3	<0.045
118Sn	0.043	0.143	0.082	0.170	0.073	0.505	0.212
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	0.683	1.3	0.587	1.5	0.881
202Hg	0.036	0.120	<0.036	0.037	<0.036	0.046	<0.036
205Tl	0.001	0.003	0.009	0.029	0.009	0.016	0.014
208Pb	0.001	0.003	0.005	0.008	0.002	0.004	0.004
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-RSC-01-M_20210625	RG_SC-RSC-02-M_20210625	RG_SC-RSC-03-M_20210625	RG_SC-RSC-04-M_20210625	RG_SC-RSC-05-M_20210625
		Lab ID	220	221	222	223	224
		Wet Weight (g)	0.8348	0.5847	0.7467	0.3507	0.7983
		Dry Weight (g)	0.2376	0.1784	0.2139	0.1049	0.2278
		Moisture (%)	71.5	69.5	71.4	70.1	71.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	0.012	0.010	0.008	0.008
11B	0.108	0.360	<0.108	0.332	0.435	<0.108	0.394
23Na	2.2	7.3	1,456	1,498	1,740	1,338	1,351
24Mg	0.024	0.080	1,062	1,585	1,158	1,325	1,222
27Al	0.296	0.987	<0.296	2.1	1.6	0.316	1.5
31P	49	163	13,457	13,005	11,550	12,356	10,993
39K	15	50	31,564	26,389	25,954	26,600	22,132
44Ca	55	183	1,103	1,054	1,141	1,123	1,213
49Ti	0.420	1.4	1.5	3.5	1.8	1.3	4.0
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.5	1.4	1.2	1.3
55Mn	0.022	0.073	0.493	0.938	0.565	0.498	0.538
57Fe	2.8	9.0	13	32	21	15	21
59Co	0.006	0.020	0.010	0.022	0.015	0.007	0.018
60Ni	0.041	0.137	0.057	0.208	0.125	0.125	0.104
63Cu	0.010	0.033	0.993	2.7	1.8	1.1	1.6
66Zn	0.743	2.5	34	55	51	28	38
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.8	2.1	3.0	1.6	1.2
88Sr	0.001	0.003	0.304	0.589	0.443	0.545	0.591
95Mo	0.001	0.003	<0.001	0.016	<0.001	<0.001	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	0.057	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.054	0.170	0.086	0.074	0.191
121Sb	0.005	0.017	<0.005	0.005	0.011	<0.005	0.005
137Ba	0.001	0.003	0.440	4.9	1.1	0.474	0.632
202Hg	0.036	0.120	0.460	0.833	0.425	0.950	0.439
205Tl	0.001	0.003	0.011	0.023	0.016	0.016	0.014
208Pb	0.001	0.003	0.004	0.019	0.024	0.002	0.015
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC-RSC-06-M_20210625	RG_SC-RSC-07-M_20210625	RG_SC-RSC-08-M_20210625	RG_SC-RSC-09-M_20210625	RG_SC-RSC-10-M_20210625
		Lab ID	225	226	227	228	229
		Wet Weight (g)	0.5758	0.5957	0.2481	0.3564	0.7245
		Dry Weight (g)	0.1578	0.1670	0.0751	0.1161	0.1995
		Moisture (%)	72.6	72.0	69.7	67.4	72.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	0.008	0.012	0.012	0.008
11B	0.108	0.360	<0.108	0.415	0.228	0.352	0.601
23Na	2.2	7.3	1,298	1,311	2,189	1,544	1,385
24Mg	0.024	0.080	1,054	1,379	1,334	1,161	1,159
27Al	0.296	0.987	<0.296	1.5	2.1	2.8	0.527
31P	49	163	11,787	11,471	12,452	9,920	10,825
39K	15	50	26,092	23,959	25,396	21,909	22,934
44Ca	55	183	1,065	1,087	1,411	1,101	1,042
49Ti	0.420	1.4	1.3	1.5	1.4	5.5	1.3
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.3	1.4	1.6	1.3	1.2
55Mn	0.022	0.073	0.479	0.536	0.745	0.708	0.510
57Fe	2.8	9.0	14	22	34	28	17
59Co	0.006	0.020	0.013	0.018	0.026	0.018	0.015
60Ni	0.041	0.137	0.042	0.166	0.291	0.208	0.125
63Cu	0.010	0.033	1.2	1.8	2.8	1.6	1.7
66Zn	0.743	2.5	36	47	92	39	40
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.5	2.9	2.4	2.7	4.5
88Sr	0.001	0.003	0.349	0.575	0.989	0.427	0.413
95Mo	0.001	0.003	<0.001	<0.001	0.016	0.016	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	0.048	<0.045	0.048	<0.045	<0.045
118Sn	0.043	0.143	0.056	0.234	0.065	0.450	0.130
121Sb	0.005	0.017	<0.005	0.005	0.005	0.005	0.005
137Ba	0.001	0.003	0.434	1.6	1.9	1.2	1.2
202Hg	0.036	0.120	0.480	0.576	0.405	0.357	0.473
205Tl	0.001	0.003	0.008	0.019	0.013	0.012	0.012
208Pb	0.001	0.003	0.002	0.022	0.022	0.022	0.012
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-01-O_20210623	RG_GC-PCC-02-O_20210624	RG_GC-PCC-03-O_20210624	RG_GC-PCC-01-M_20210623	RG_GC-PCC-02-M_20210624
		Lab ID	230	231	232	233	234
		Wet Weight (g)	7.2643	0.8958	1.2136	0.7466	2.5852
		Dry Weight (g)	3.0424	0.2278	0.3263	0.1997	0.6074
		Moisture (%)	58.1	74.6	73.1	73.3	76.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	0.018	0.013	0.016	0.013
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	0.240
23Na	2.2	7.3	1,381	5,521	3,676	1,735	1,566
24Mg	0.024	0.080	970	1,177	866	1,524	1,423
27Al	0.296	0.987	0.395	1.6	1.3	0.939	3.6
31P	49	163	13,725	20,094	12,806	14,218	12,808
39K	15	50	8,369	27,876	16,769	26,801	23,725
44Ca	55	183	316	834	530	845	1,037
49Ti	0.420	1.4	1.3	2.3	1.1	1.8	6.7
51V	0.070	0.233	<0.070	0.122	0.085	<0.070	<0.070
52Cr	0.580	1.9	1.4	1.4	1.0	1.3	1.3
55Mn	0.022	0.073	5.1	4.8	6.7	0.671	0.712
57Fe	2.8	9.0	52	342	161	28	39
59Co	0.006	0.020	0.072	0.151	0.113	0.036	0.030
60Ni	0.041	0.137	<0.041	0.442	0.134	0.125	0.154
63Cu	0.010	0.033	3.9	4.9	3.6	2.1	1.6
66Zn	0.743	2.5	77	404	237	59	51
75As	0.495	1.7	<0.495	0.548	<0.495	<0.495	<0.495
77Se	0.398	1.3	15	14	15	3.4	1.9
88Sr	0.001	0.003	0.275	0.789	0.367	0.332	0.558
95Mo	0.001	0.003	0.059	0.178	0.118	<0.001	0.015
107Ag	0.001	0.003	0.040	0.014	0.010	<0.001	<0.001
111Cd	0.045	0.150	<0.045	0.185	0.139	<0.045	<0.045
118Sn	0.043	0.143	0.049	0.521	0.066	0.221	0.221
121Sb	0.005	0.017	<0.005	<0.005	0.007	<0.005	<0.005
137Ba	0.001	0.003	2.7	15	15	4.6	3.5
202Hg	0.036	0.120	<0.036	0.190	0.066	0.634	1.1
205Tl	0.001	0.003	0.011	0.062	0.030	0.041	0.017
208Pb	0.001	0.003	0.007	0.021	0.034	0.009	0.027
238U	0.001	0.003	<0.001	0.003	0.002	<0.001	<0.001

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-PCC-03-M_20210624	RG_T4_ZOOT-01_20210624	RG_T4_ZOOT-02_20210624	RG_T4_ZOOT-03_20210624	RG_T4_ZOOT-04_20210624
		Lab ID	235	236	237	238	239
		Wet Weight (g)	4.4099	0.9934	0.8882	1.0215	0.9334
		Dry Weight (g)	1.0683	0.0668	0.0550	0.0581	0.0589
		Moisture (%)	75.8	93.3	93.8	94.3	93.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.009	0.658	0.793	0.662	0.972
11B	0.108	0.360	0.148	1.1	1.3	1.1	1.5
23Na	2.2	7.3	830	4,712	5,165	4,596	4,565
24Mg	0.024	0.080	1,287	1,930	1,883	2,008	2,126
27Al	0.296	0.987	1.5	1,205	1,608	1,396	2,037
31P	49	163	10,324	20,527	16,999	17,243	19,101
39K	15	50	15,846	12,068	13,643	12,076	11,743
44Ca	55	183	961	43,205	40,966	47,894	50,382
49Ti	0.420	1.4	1.3	70	81	74	93
51V	0.070	0.233	<0.070	0.869	1.4	1.1	1.9
52Cr	0.580	1.9	1.3	3.4	15	6.0	20
55Mn	0.022	0.073	0.456	68	50	59	55
57Fe	2.8	9.0	37	655	878	740	1,314
59Co	0.006	0.020	0.033	1.0	1.5	0.972	1.4
60Ni	0.041	0.137	0.134	5.0	20	8.0	21
63Cu	0.010	0.033	1.7	10	9.4	9.1	9.5
66Zn	0.743	2.5	23	135	72	79	71
75As	0.495	1.7	<0.495	4.1	4.2	4.0	4.0
77Se	0.398	1.3	3.3	2.9	2.7	2.6	2.7
88Sr	0.001	0.003	0.556	85	80	96	93
95Mo	0.001	0.003	<0.001	0.355	0.377	0.385	0.395
107Ag	0.001	0.003	0.007	0.029	0.036	0.032	0.030
111Cd	0.045	0.150	<0.045	1.1	0.944	0.902	0.851
118Sn	0.043	0.143	0.067	3.1	1.6	1.4	1.6
121Sb	0.005	0.017	<0.005	0.175	0.055	0.425	0.275
137Ba	0.001	0.003	2.9	122	116	137	141
202Hg	0.036	0.120	0.279	0.076	0.048	0.067	0.082
205Tl	0.001	0.003	0.008	0.050	0.060	0.063	0.052
208Pb	0.001	0.003	0.016	1.6	0.934	1.0	0.966
238U	0.001	0.003	<0.001	0.066	0.053	0.069	0.067

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_T4_ZOOT-05_20210624	RG_TN_ZOOT-01_20210624	RG_TN_ZOOT-02_20210624	RG_TN_ZOOT-03_20210624	RG_TN_ZOOT-04_20210624
		Lab ID	240	241	242	244	245
		Wet Weight (g)	1.1057	1.0800	0.8915	1.1261	1.0725
		Dry Weight (g)	0.0651	0.0960	0.0721	0.0912	0.0708
		Moisture (%)	94.1	91.1	91.9	91.9	93.4
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.521	0.445	0.474	0.488	0.654
11B	0.108	0.360	0.847	0.478	0.510	1.1	2.0
23Na	2.2	7.3	4,473	3,320	3,418	4,109	2,916
24Mg	0.024	0.080	1,860	1,326	1,495	1,516	1,647
27Al	0.296	0.987	1,018	651	826	788	1,557
31P	49	163	15,708	12,449	13,650	13,828	12,808
39K	15	50	12,343	11,700	11,558	12,562	8,504
44Ca	55	183	35,034	14,480	19,687	17,730	24,337
49Ti	0.420	1.4	44	25	53	48	108
51V	0.070	0.233	0.891	0.488	0.706	0.666	1.1
52Cr	0.580	1.9	8.3	4.0	7.5	5.6	7.0
55Mn	0.022	0.073	52	29	48	35	31
57Fe	2.8	9.0	538	336	467	468	657
59Co	0.006	0.020	1.1	0.546	0.752	0.739	0.793
60Ni	0.041	0.137	8.5	3.2	6.8	5.1	7.1
63Cu	0.010	0.033	9.7	7.7	8.2	9.5	7.7
66Zn	0.743	2.5	63	50	59	59	51
75As	0.495	1.7	4.5	3.4	3.3	3.9	3.1
77Se	0.398	1.3	2.7	2.1	2.2	2.8	1.8
88Sr	0.001	0.003	75	33	44	40	57
95Mo	0.001	0.003	0.380	0.269	0.332	0.348	0.364
107Ag	0.001	0.003	0.034	0.023	0.026	0.034	0.019
111Cd	0.045	0.150	0.768	0.394	0.436	0.519	0.415
118Sn	0.043	0.143	1.2	1.3	1.2	1.2	4.2
121Sb	0.005	0.017	0.242	0.044	0.044	0.094	0.099
137Ba	0.001	0.003	100	47	64	58	73
202Hg	0.036	0.120	0.055	<0.036	<0.036	0.044	<0.036
205Tl	0.001	0.003	0.047	0.043	0.034	0.043	0.038
208Pb	0.001	0.003	0.607	0.327	0.470	0.461	1.1
238U	0.001	0.003	0.045	0.027	0.033	0.038	0.065

Notes:

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Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_TN_ZOOT-05_20210624	RG_GC-RB-01-M_20210622	RG_GC-RB-02-M_20210622	RG_GC-RB-03-M_20210623	RG_GC-RSC-01-O_20210622
		Lab ID	246	247	248	249	250
		Wet Weight (g)	1.0244	0.0538	0.0574	0.0470	0.5725
		Dry Weight (g)	0.0537	0.0145	0.0143	0.0130	0.2215
		Moisture (%)	94.8	73.0	75.1	72.3	61.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.758	0.055	0.064	0.018	0.009
11B	0.108	0.360	1.0	100	2.0	<0.108	<0.108
23Na	2.2	7.3	4,317	1,062	2,965	1,107	1,336
24Mg	0.024	0.080	1,927	1,245	1,542	1,550	683
27Al	0.296	0.987	1,459	6.6	13	0.404	3.3
31P	49	163	16,562	10,729	13,329	13,501	10,922
39K	15	50	11,600	18,938	26,620	25,354	8,410
44Ca	55	183	33,770	530	701	592	402
49Ti	0.420	1.4	84	1.1	2.7	1.3	0.828
51V	0.070	0.233	1.2	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	9.9	1.3	2.2	1.3	1.5
55Mn	0.022	0.073	44	1.1	1.8	0.278	4.0
57Fe	2.8	9.0	762	19	51	16	48
59Co	0.006	0.020	0.937	0.029	0.055	0.027	0.047
60Ni	0.041	0.137	9.1	0.310	2.7	0.207	0.386
63Cu	0.010	0.033	8.8	1.1	5.9	1.2	3.2
66Zn	0.743	2.5	64	12	32	25	90
75As	0.495	1.7	3.6	<0.495	<0.495	<0.495	0.497
77Se	0.398	1.3	2.4	1.1	2.2	2.5	6.8
88Sr	0.001	0.003	71	0.484	0.769	0.218	0.270
95Mo	0.001	0.003	0.348	0.016	0.033	<0.001	0.032
107Ag	0.001	0.003	0.026	<0.001	<0.001	<0.001	0.011
111Cd	0.045	0.150	0.602	<0.045	<0.045	<0.045	0.062
118Sn	0.043	0.143	1.6	0.463	0.098	0.083	0.327
121Sb	0.005	0.017	0.143	0.033	0.029	<0.005	0.005
137Ba	0.001	0.003	95	0.708	1.8	0.037	2.4
202Hg	0.036	0.120	0.044	0.227	0.256	0.353	<0.036
205Tl	0.001	0.003	0.046	0.020	0.023	0.025	0.012
208Pb	0.001	0.003	0.676	0.059	0.606	0.002	0.005
238U	0.001	0.003	0.047	0.003	0.003	<0.001	<0.001

Notes:

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% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-RSC-02-O_20210622	RG_GC-RSC-03-O_20210622	RG_GC-RSC-04-O_20210622	RG_GC-RSC-05-O_20210622	RG_GC-RSC-06-O_20210622
		Lab ID	251	252	253	254	255
		Wet Weight (g)	0.5069	0.6039	0.9560	0.2685	0.2956
		Dry Weight (g)	0.1631	0.1947	0.3118	0.0907	0.0861
		Moisture (%)	67.8	67.8	67.4	66.2	70.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.028	0.024	0.019	0.010	0.027
11B	0.108	0.360	0.130	<0.108	0.111	0.111	0.288
23Na	2.2	7.3	2,877	3,544	3,710	2,153	2,981
24Mg	0.024	0.080	1,060	986	1,001	1,099	1,170
27Al	0.296	0.987	4.4	1.1	1.0	1.2	3.1
31P	49	163	11,678	13,987	12,612	12,994	14,175
39K	15	50	11,503	15,531	14,879	14,181	18,245
44Ca	55	183	1,000	939	833	840	1,137
49Ti	0.420	1.4	0.828	1.5	1.7	1.3	1.7
51V	0.070	0.233	0.075	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.6	1.5	1.4	1.8	1.6
55Mn	0.022	0.073	9.0	7.8	10	12	12
57Fe	2.8	9.0	95	138	78	160	119
59Co	0.006	0.020	0.074	0.089	0.081	0.092	0.100
60Ni	0.041	0.137	0.417	0.112	0.090	0.359	0.157
63Cu	0.010	0.033	4.1	4.0	4.9	4.4	5.0
66Zn	0.743	2.5	132	121	123	270	286
75As	0.495	1.7	0.677	<0.495	0.508	0.734	0.574
77Se	0.398	1.3	13	6.5	15	26	16
88Sr	0.001	0.003	0.530	0.569	0.422	0.471	0.694
95Mo	0.001	0.003	0.079	0.104	0.086	0.086	0.086
107Ag	0.001	0.003	0.008	0.013	0.021	0.021	0.013
111Cd	0.045	0.150	0.062	<0.045	0.083	0.145	0.166
118Sn	0.043	0.143	0.346	0.203	0.157	0.184	0.218
121Sb	0.005	0.017	0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	1.7	1.4	3.3	6.8	5.0
202Hg	0.036	0.120	0.049	0.081	0.041	0.049	0.073
205Tl	0.001	0.003	0.026	0.020	0.027	0.031	0.045
208Pb	0.001	0.003	0.037	0.010	0.012	0.005	0.054
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-RSC-07-O_20210622	RG_GC-RSC-08-O_20210622	RG_GC-RSC-09-O_20210622	RG_GC-RSC-10-O_20210622	RG_GC-RSC-01-M_20210622
		Lab ID	256	257	258	259	260
		Wet Weight (g)	0.4940	0.6530	0.6754	0.3113	0.7563
		Dry Weight (g)	0.1556	0.2243	0.2686	0.1254	0.1886
		Moisture (%)	68.5	65.7	60.2	59.7	75.1
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.010	0.034	0.010	0.010	0.014
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	2,010	3,221	1,257	1,464	874
24Mg	0.024	0.080	1,137	1,015	859	1,071	1,282
27Al	0.296	0.987	0.643	1.4	<0.296	0.824	0.610
31P	49	163	12,451	14,160	11,675	15,222	9,948
39K	15	50	11,142	14,497	9,329	13,349	21,418
44Ca	55	183	1,006	785	390	530	1,204
49Ti	0.420	1.4	1.0	1.3	1.3	1.7	1.7
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.4	1.5	1.4	1.6	1.5
55Mn	0.022	0.073	9.8	7.6	4.8	7.5	0.404
57Fe	2.8	9.0	98	70	55	77	8.8
59Co	0.006	0.020	0.083	0.092	0.058	0.077	0.015
60Ni	0.041	0.137	0.067	0.067	<0.041	0.090	0.112
63Cu	0.010	0.033	3.2	4.9	4.1	5.2	1.1
66Zn	0.743	2.5	187	143	104	127	22
75As	0.495	1.7	<0.495	0.621	0.602	0.545	<0.495
77Se	0.398	1.3	19	13	12	16	3.1
88Sr	0.001	0.003	0.412	0.447	0.351	0.317	0.487
95Mo	0.001	0.003	0.104	0.104	0.035	0.052	<0.001
107Ag	0.001	0.003	0.008	0.021	0.017	0.027	<0.001
111Cd	0.045	0.150	0.062	0.124	0.062	0.104	<0.045
118Sn	0.043	0.143	0.175	0.258	0.098	0.571	<0.043
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	3.0	4.6	1.4	1.5	0.257
202Hg	0.036	0.120	0.057	0.053	<0.036	<0.036	0.727
205Tl	0.001	0.003	0.028	0.039	0.022	0.025	0.012
208Pb	0.001	0.003	0.002	0.027	0.002	0.005	0.010
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-RSC-02-M_20210622	RG_GC-RSC-03-M_20210622	RG_GC-RSC-04-M_20210622	RG_GC-RSC-05-M_20210622	RG_GC-RSC-06-M_20210622
		Lab ID	261	262	263	264	265
		Wet Weight (g)	1.2374	0.4994	1.0384	0.7619	0.8371
		Dry Weight (g)	0.3021	0.1183	0.2437	0.1871	0.2073
		Moisture (%)	75.6	76.3	76.5	75.4	75.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.022	<0.008	0.016	<0.008	0.027
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	0.119
23Na	2.2	7.3	1,404	1,033	964	692	1,554
24Mg	0.024	0.080	1,400	1,027	1,376	1,257	1,358
27Al	0.296	0.987	3.3	0.400	2.2	0.556	3.6
31P	49	163	10,443	10,373	9,748	11,596	9,863
39K	15	50	22,030	23,374	19,494	24,773	19,629
44Ca	55	183	1,184	1,174	1,138	1,005	1,498
49Ti	0.420	1.4	1.9	0.950	1.3	0.950	1.6
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.4	1.3	1.3	1.2	1.3
55Mn	0.022	0.073	0.746	0.369	0.568	0.408	0.672
57Fe	2.8	9.0	24	9.2	21	10	33
59Co	0.006	0.020	0.026	0.010	0.020	0.008	0.032
60Ni	0.041	0.137	0.254	0.048	0.193	0.073	0.218
63Cu	0.010	0.033	1.8	1.1	1.5	1.4	2.7
66Zn	0.743	2.5	46	17	35	34	66
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	3.4	2.3	2.4	3.5	2.6
88Sr	0.001	0.003	0.596	0.417	0.508	0.340	0.913
95Mo	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.068	0.115	0.086	0.115	0.115
121Sb	0.005	0.017	0.011	<0.005	0.005	<0.005	0.005
137Ba	0.001	0.003	1.3	0.259	1.7	0.496	1.9
202Hg	0.036	0.120	0.694	0.794	0.794	0.375	0.759
205Tl	0.001	0.003	0.029	0.012	0.015	0.018	0.022
208Pb	0.001	0.003	0.106	0.008	0.071	0.005	0.041
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-RSC-07-M_20210622	RG_GC-RSC-08-M_20210622	RG_GC-RSC-09-M_20210622	RG_GC-RSC-10-M_20210622	RG_GC-RB-04-M_20210623
		Lab ID	266	267	268	269	270
		Wet Weight (g)	0.7434	0.3912	0.6793	0.4873	0.1673
		Dry Weight (g)	0.1812	0.0932	0.1577	0.1094	0.0336
		Moisture (%)	75.6	76.2	76.8	77.5	79.9
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.011	0.022	0.014	0.011	0.014
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	955	2,031	910	1,031	1,156
24Mg	0.024	0.080	902	1,213	1,039	1,257	1,298
27Al	0.296	0.987	1.4	1.1	0.330	0.320	0.539
31P	49	163	8,520	12,213	9,431	10,129	12,303
39K	15	50	21,564	25,103	20,970	20,863	23,330
44Ca	55	183	1,055	1,095	996	1,025	591
49Ti	0.420	1.4	1.6	1.3	1.1	1.1	2.1
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.2	1.3	1.2	1.1	1.3
55Mn	0.022	0.073	0.421	0.744	0.458	0.440	0.348
57Fe	2.8	9.0	14	30	13	13	17
59Co	0.006	0.020	0.008	0.028	0.012	0.014	0.045
60Ni	0.041	0.137	0.073	0.145	0.097	0.090	0.248
63Cu	0.010	0.033	1.1	2.5	1.2	1.6	0.843
66Zn	0.743	2.5	30	51	28	38	19
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.0	3.7	2.9	2.7	4.9
88Sr	0.001	0.003	0.354	0.468	0.378	0.342	0.177
95Mo	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.093	0.108	0.086	0.091	0.160
121Sb	0.005	0.017	0.005	0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	0.216	7.0	0.561	1.1	0.075
202Hg	0.036	0.120	0.454	0.589	0.475	0.362	0.601
205Tl	0.001	0.003	0.010	0.035	0.017	0.022	0.035
208Pb	0.001	0.003	0.010	0.026	0.003	0.002	0.026
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-KO-01-M_20210623	RG_GC-KO-02-M_20210624	RG_GC-KO-03-M_20210625	RG_GC-KO-04-M_20210625	RG_GC-KO-05-M_20210625
		Lab ID	271	272	273	274	275
		Wet Weight (g)	0.0501	0.0644	0.0450	0.0633	0.0642
		Dry Weight (g)	0.0137	0.0132	0.0067	0.0168	0.0163
		Moisture (%)	72.7	79.5	85.1	73.5	74.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.014	0.014	0.018	0.014	0.014
11B	0.108	0.360	1.1	11	0.116	0.116	<0.108
23Na	2.2	7.3	919	949	965	993	1,013
24Mg	0.024	0.080	1,305	1,251	1,201	1,266	1,207
27Al	0.296	0.987	2.8	1.1	0.629	2.8	1.1
31P	49	163	11,733	11,349	11,715	12,138	12,917
39K	15	50	20,617	17,605	18,605	19,257	22,206
44Ca	55	183	359	922	1,287	1,259	684
49Ti	0.420	1.4	6.6	1.1	2.8	1.6	1.3
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.6	1.4	1.4	2.0	1.9
55Mn	0.022	0.073	0.424	0.346	0.177	0.466	0.379
57Fe	2.8	9.0	16	12	11	52	22
59Co	0.006	0.020	0.031	0.031	0.031	0.039	0.027
60Ni	0.041	0.137	0.548	0.372	0.362	2.5	0.890
63Cu	0.010	0.033	0.785	0.818	0.953	0.934	0.972
66Zn	0.743	2.5	20	49	59	94	85
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.0	1.9	2.0	1.8	2.0
88Sr	0.001	0.003	0.237	0.695	1.1	1.0	0.464
95Mo	0.001	0.003	<0.001	<0.001	<0.001	0.025	0.016
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.086	0.245	0.110	0.252	0.282
121Sb	0.005	0.017	<0.005	0.012	<0.005	<0.005	<0.005
137Ba	0.001	0.003	0.261	0.373	0.373	0.261	0.186
202Hg	0.036	0.120	0.338	0.238	0.346	0.418	0.288
205Tl	0.001	0.003	0.099	0.072	0.074	0.076	0.092
208Pb	0.001	0.003	0.038	0.024	0.012	0.006	0.011
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_GC-KO-06-M_20210625	RG_GC-KO-07-M_20210625	RG_ER-RB-03-M_20210623	RG_ER-MW-08-M_20210622	RG_GC-RB-05-M_20210625
		Lab ID	276	277	278	279	281
		Wet Weight (g)	0.0463	0.0414	0.0119	0.0277	0.0672
		Dry Weight (g)	0.0125	0.0109	0.0050	0.0061	0.0138
		Moisture (%)	73.0	73.7	58.0	78.0	79.5
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.021	0.018	0.016	0.029	0.009
11B	0.108	0.360	<0.108	0.196	0.483	0.928	<0.108
23Na	2.2	7.3	1,119	1,141	890	1,206	1,367
24Mg	0.024	0.080	1,248	1,277	1,330	320	1,081
27Al	0.296	0.987	2.7	1.8	4.9	31	<0.296
31P	49	163	11,728	12,363	13,445	10,310	12,342
39K	15	50	20,114	21,391	28,497	23,364	26,592
44Ca	55	183	1,252	1,310	434	668	748
49Ti	0.420	1.4	2.1	1.9	1.7	3.5	1.2
51V	0.070	0.233	<0.070	<0.070	<0.070	0.087	<0.070
52Cr	0.580	1.9	4.0	1.7	1.3	4.9	1.1
55Mn	0.022	0.073	0.818	0.303	2.6	1.9	0.260
57Fe	2.8	9.0	51	22	18	95	11
59Co	0.006	0.020	0.117	0.057	0.037	0.217	0.027
60Ni	0.041	0.137	4.0	0.796	0.318	5.8	0.174
63Cu	0.010	0.033	1.3	1.1	1.1	3.7	0.723
66Zn	0.743	2.5	84	29	11	43	12
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.1	1.9	2.9	6.8	1.2
88Sr	0.001	0.003	0.966	1.0	0.228	0.419	0.248
95Mo	0.001	0.003	0.016	0.012	0.012	0.024	0.012
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.356	0.098	<0.043	0.305	0.064
121Sb	0.005	0.017	<0.005	<0.005	0.007	0.010	<0.005
137Ba	0.001	0.003	0.373	0.513	0.898	1.2	0.032
202Hg	0.036	0.120	0.223	0.202	0.225	0.212	0.430
205Tl	0.001	0.003	0.078	0.054	0.026	0.050	0.022
208Pb	0.001	0.003	0.037	0.010	0.100	0.191	<0.001
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

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LOQ = limit of quantitation

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g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_RIVER_RSC-01-O_20210625	RG_RIVER_RSC-01-M_20210625	RG_RIVER_RSC-03-O_20210622	RG_RIVER_RSC-03-M_20210622	RG_RIVER_RSC-05-O_20210622
		Lab ID	282	283	284	285	286
		Wet Weight (g)	0.9245	0.5403	0.4771	0.8934	0.1112
		Dry Weight (g)	0.3594	0.1221	0.1410	0.1993	0.0419
		Moisture (%)	61.1	77.4	70.4	77.7	62.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	<0.008	<0.008	0.033	<0.008	0.016
11B	0.108	0.360	<0.108	<0.108	<0.108	<0.108	<0.108
23Na	2.2	7.3	971	1,078	3,312	1,068	1,391
24Mg	0.024	0.080	760	918	1,124	1,106	908
27Al	0.296	0.987	<0.296	<0.296	0.391	<0.296	1.7
31P	49	163	10,214	7,717	13,430	10,325	15,340
39K	15	50	6,835	17,661	12,612	21,950	11,740
44Ca	55	183	404	1,093	1,360	1,037	544
49Ti	0.420	1.4	0.866	1.3	1.2	1.3	1.7
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.1	1.0	1.2	1.2	1.3
55Mn	0.022	0.073	2.4	0.312	9.1	0.472	5.7
57Fe	2.8	9.0	36	9.8	92	10	88
59Co	0.006	0.020	0.040	0.010	0.092	0.015	0.042
60Ni	0.041	0.137	<0.041	0.058	0.065	0.145	0.101
63Cu	0.010	0.033	3.2	0.692	4.8	0.949	3.8
66Zn	0.743	2.5	73	12	144	25	107
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	9.0	2.5	5.8	2.0	16
88Sr	0.001	0.003	0.324	0.416	0.764	0.336	0.434
95Mo	0.001	0.003	0.048	<0.001	0.097	<0.001	0.060
107Ag	0.001	0.003	0.014	<0.001	0.014	<0.001	0.014
111Cd	0.045	0.150	<0.045	<0.045	<0.045	<0.045	0.088
118Sn	0.043	0.143	0.357	<0.043	0.100	<0.043	0.412
121Sb	0.005	0.017	<0.005	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	0.834	0.112	3.9	0.353	1.4
202Hg	0.036	0.120	<0.036	0.390	0.040	0.605	<0.036
205Tl	0.001	0.003	0.006	0.007	0.021	0.012	0.017
208Pb	0.001	0.003	0.004	0.002	0.008	0.006	0.039
238U	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_RIVER_RSC-05-M_20210622	RG_RIVER_PCC-09-O_20210623	RG_RIVER_PCC-09-M_20210623	RG_RIVER_PCC-10-O_20210625	RG_RIVER_PCC-10-M_20210625
		Lab ID	287	288	289	290	291
		Wet Weight (g)	0.3355	6.9505	2.8414	7.8920	1.6877
		Dry Weight (g)	0.0763	2.2927	0.6290	2.8951	0.3715
		Moisture (%)	77.3	67.0	77.9	63.3	78.0
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.008	0.027	0.022	0.085	0.048	<0.008	<0.008
11B	0.108	0.360	0.226	<0.108	<0.108	<0.108	0.114
23Na	2.2	7.3	1,056	3,553	1,423	1,704	1,413
24Mg	0.024	0.080	1,470	929	1,695	735	1,259
27Al	0.296	0.987	5.7	0.468	1.3	0.382	2.6
31P	49	163	10,840	16,580	12,240	11,373	10,215
39K	15	50	20,805	13,356	23,490	9,411	20,254
44Ca	55	183	1,108	351	1,273	319	761
49Ti	0.420	1.4	1.9	1.5	2.8	1.4	4.2
51V	0.070	0.233	<0.070	<0.070	<0.070	<0.070	<0.070
52Cr	0.580	1.9	1.1	1.2	1.2	1.1	1.1
55Mn	0.022	0.073	0.605	4.1	0.585	7.8	0.517
57Fe	2.8	9.0	24	53	20	49	23
59Co	0.006	0.020	0.027	0.052	0.020	0.040	0.022
60Ni	0.041	0.137	0.232	0.081	0.130	<0.041	0.147
63Cu	0.010	0.033	1.8	2.5	1.2	3.0	1.6
66Zn	0.743	2.5	47	92	29	72	45
75As	0.495	1.7	<0.495	<0.495	<0.495	<0.495	<0.495
77Se	0.398	1.3	2.8	15	4.5	7.1	1.4
88Sr	0.001	0.003	0.634	0.255	0.718	0.235	0.394
95Mo	0.001	0.003	0.012	0.077	<0.001	0.070	0.013
107Ag	0.001	0.003	<0.001	0.019	<0.001	0.019	<0.001
111Cd	0.045	0.150	<0.045	0.046	<0.045	<0.045	<0.045
118Sn	0.043	0.143	0.200	0.344	0.149	0.149	0.115
121Sb	0.005	0.017	0.007	<0.005	<0.005	<0.005	<0.005
137Ba	0.001	0.003	1.8	5.1	2.1	1.1	2.8
202Hg	0.036	0.120	0.404	<0.036	0.947	<0.036	1.1
205Tl	0.001	0.003	0.018	0.010	0.014	0.004	0.010
208Pb	0.001	0.003	0.055	0.008	0.025	0.004	0.024
238U	0.001	0.003	<0.001	0.002	<0.001	0.002	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_ER-PCC-01-O_20210622			RG_ER-PCC-10-O_20210623			RG_ER-RSC-01-O_20210622		
Lab ID		150			159			170		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.008	0.019	0.019	-	0.061	0.055	-	0.009	<0.008	-
11B	0.108	<0.108	<0.108	-	<0.108	<0.108	-	<0.108	0.127	-
23Na	2.2	1,731	1,749	1.0	2,473	2,034	20	1,645	1,615	1.8
24Mg	0.024	827	763	8.1	1,049	921	13	732	726	0.8
27Al	0.296	0.561	0.304	-	2.5	2.5	-	1.5	1.5	-
31P	49	13,593	14,253	4.7	14,474	12,796	12	14,978	15,597	4.0
39K	15	10,279	8,080	24	10,908	9,249	17	11,790	11,105	6.0
44Ca	55	336	313	-	466	513	-	587	556	5.4
49Ti	0.420	1.1	1.1	-	4.6	3.3	-	1.1	0.831	-
51V	0.070	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
52Cr	0.580	1.4	1.4	-	1.5	1.5	-	1.4	1.4	-
55Mn	0.022	5.2	4.9	5.9	5.7	4.6	21	4.3	4.4	2.3
57Fe	2.8	54	50	7.7	76	69	9.7	64	57	12
59Co	0.006	0.047	0.047	-	0.085	0.088	3.5	0.064	0.067	4.6
60Ni	0.041	0.043	<0.041	-	0.085	0.068	-	0.114	0.114	-
63Cu	0.010	3.7	3.4	8.5	3.3	3.2	3.1	4.5	4.7	4.3
66Zn	0.743	67	58	14	75	74	1.3	84	74	13
75As	0.495	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-
77Se	0.398	15	15	0.0	12	13	8.0	17	16	6.1
88Sr	0.001	0.229	0.200	14	0.532	0.637	18	0.486	0.465	4.4
95Mo	0.001	0.090	0.115	24	0.113	0.085	28	0.045	0.045	0.0
107Ag	0.001	0.017	0.019	11	0.032	0.028	13	0.027	0.027	0.0
111Cd	0.045	0.072	0.084	-	0.103	0.103	-	0.251	0.201	-
118Sn	0.043	0.149	0.187	-	0.142	0.183	-	0.293	0.385	-
121Sb	0.005	<0.005	<0.005	-	<0.005	0.007	-	<0.005	<0.005	-
137Ba	0.001	5.3	4.0	28	4.0	3.1	25	1.1	1.1	0.0
202Hg	0.036	0.044	0.055	-	<0.036	<0.036	-	<0.036	<0.036	-
205Tl	0.001	0.005	0.005	-	0.008	0.007	-	0.029	0.027	7.1
208Pb	0.001	0.018	0.010	-	0.033	0.030	9.5	0.015	0.013	14
238U	0.001	0.003	0.003	-	0.003	0.003	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_SC-PCC-01-O_20210623			RG_SC-PCC-08-M_20210625			RG_SC-RSC-02-M_20210625		
Lab ID		190			206			221		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.008	0.010	0.010	-	0.016	0.012	-	0.012	0.012	-
11B	0.108	<0.108	<0.108	-	0.225	0.188	-	0.332	0.311	-
23Na	2.2	998	1,173	16	1,509	1,517	0.5	1,498	1,418	5.5
24Mg	0.024	932	959	2.9	1,327	1,298	2.2	1,585	1,658	4.5
27Al	0.296	1.1	1.2	-	0.845	1.1	-	2.1	1.9	-
31P	49	11,750	12,965	9.8	11,914	13,685	14	13,005	10,533	21
39K	15	7,337	7,401	0.9	27,598	30,572	10	26,389	23,364	12
44Ca	55	336	328	-	911	1,035	13	1,054	1,116	5.7
49Ti	0.420	1.1	1.6	-	1.3	1.5	-	3.5	3.3	-
51V	0.070	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
52Cr	0.580	1.2	1.2	-	1.3	1.3	-	1.5	1.5	-
55Mn	0.022	6.3	6.9	9.1	0.433	0.391	10	0.938	0.838	11
57Fe	2.8	67	59	13	10	10	-	32	23	-
59Co	0.006	0.058	0.055	-	0.013	0.013	-	0.022	0.018	-
60Ni	0.041	<0.041	<0.041	-	0.114	0.076	-	0.208	0.187	-
63Cu	0.010	4.1	4.1	0.0	0.788	0.794	0.8	2.7	2.1	25
66Zn	0.743	66	67	1.5	17	17	0.0	55	47	16
75As	0.495	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-
77Se	0.398	7.6	6.7	13	3.5	3.5	-	2.1	2.2	-
88Sr	0.001	0.287	0.290	1.0	0.435	0.419	3.7	0.589	0.654	11
95Mo	0.001	0.066	0.074	11	<0.001	<0.001	-	0.016	<0.001	-
107Ag	0.001	0.028	0.028	0.0	<0.001	<0.001	-	<0.001	<0.001	-
111Cd	0.045	0.872	0.115	-	<0.045	<0.045	-	<0.045	<0.045	-
118Sn	0.043	0.074	0.148	-	0.066	<0.043	-	0.170	0.173	-
121Sb	0.005	<0.005	<0.005	-	0.009	0.009	-	0.005	<0.005	-
137Ba	0.001	4.0	3.3	19	0.587	0.514	13	4.9	4.0	20
202Hg	0.036	0.054	0.043	-	1.2	1.2	0.0	0.833	0.851	2.1
205Tl	0.001	0.006	0.004	-	0.003	0.003	-	0.023	0.021	9.1
208Pb	0.001	0.010	0.010	-	0.032	0.028	13	0.019	0.019	0.0
238U	0.001	0.002	0.002	-	<0.001	<0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_GC-PCC-01-O_20210623			RG_GC-RSC-01-O_20210622			RG_GC-RSC-04-O_20210622		
Lab ID		230			250			253		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.008	<0.008	0.009	-	0.009	<0.008	-	0.019	0.014	-
11B	0.108	<0.108	<0.108	-	<0.108	<0.108	-	0.111	<0.108	-
23Na	2.2	1,381	1,330	3.8	1,336	1,392	4.1	3,710	3,729	0.5
24Mg	0.024	970	995	2.5	683	707	3.5	1,001	1,046	4.4
27Al	0.296	0.395	0.299	-	3.3	2.5	-	1.0	0.675	-
31P	49	13,725	12,654	8.1	10,922	12,534	14	12,612	14,098	11
39K	15	8,369	8,132	2.9	8,410	8,904	5.7	14,879	13,057	13
44Ca	55	316	290	-	402	388	-	833	791	5.2
49Ti	0.420	1.3	1.3	-	0.828	0.966	-	1.7	1.3	-
51V	0.070	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
52Cr	0.580	1.4	1.6	-	1.5	2.0	-	1.4	1.5	-
55Mn	0.022	5.1	4.7	8.2	4.0	4.2	4.9	10	9.1	9.4
57Fe	2.8	52	58	11	48	51	6.1	78	94	19
59Co	0.006	0.072	0.072	0.0	0.047	0.050	-	0.081	0.085	4.8
60Ni	0.041	<0.041	<0.041	-	0.386	0.366	-	0.090	0.090	-
63Cu	0.010	3.9	4.5	14	3.2	3.4	6.1	4.9	5.8	17
66Zn	0.743	77	80	3.8	90	93	3.3	123	139	12
75As	0.495	<0.495	<0.495	-	0.497	<0.495	-	0.508	0.498	-
77Se	0.398	15	15	0.0	6.8	6.8	0.0	15	14	6.9
88Sr	0.001	0.275	0.248	10	0.270	0.279	3.3	0.422	0.428	1.4
95Mo	0.001	0.059	0.074	23	0.032	0.032	0.0	0.086	0.069	22
107Ag	0.001	0.040	0.036	11	0.011	0.011	0.0	0.021	0.021	0.0
111Cd	0.045	<0.045	<0.045	-	0.062	<0.045	-	0.083	0.083	-
118Sn	0.043	0.049	0.159	-	0.327	0.386	-	0.157	0.215	-
121Sb	0.005	<0.005	<0.005	-	0.005	<0.005	-	<0.005	<0.005	-
137Ba	0.001	2.7	2.4	12	2.4	2.5	4.1	3.3	3.4	3.0
202Hg	0.036	<0.036	<0.036	-	<0.036	<0.036	-	0.041	0.057	-
205Tl	0.001	0.011	0.011	0.0	0.012	0.012	0.0	0.027	0.022	20
208Pb	0.001	0.007	0.007	-	0.005	0.005	-	0.012	0.012	0.0
238U	0.001	<0.001	<0.001	-	<0.001	<0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_GC-RSC-04-M_20210622			RG_GC-RSC-10-M_20210622			RG_RIVER_PCC-09-O_20210623		
Lab ID		263			269			288		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.008	0.016	0.016	-	0.011	<0.008	-	0.085	0.076	-
11B	0.108	<0.108	<0.108	-	<0.108	<0.108	-	<0.108	<0.108	-
23Na	2.2	964	1,210	23	1,031	1,054	2.2	3,553	3,251	8.9
24Mg	0.024	1,376	1,030	29	1,257	1,301	3.4	929	721	25
27Al	0.296	2.2	2.7	-	0.320	0.333	-	0.468	<0.296	-
31P	49	9,748	10,588	8.3	10,129	11,275	11	16,580	14,107	16
39K	15	19,494	24,054	21	20,863	22,613	8.1	13,356	10,918	20
44Ca	55	1,138	1,023	11	1,025	1,060	3.4	351	272	-
49Ti	0.420	1.3	1.3	-	1.1	0.918	-	1.5	1.1	-
51V	0.070	<0.070	<0.070	-	<0.070	<0.070	-	<0.070	<0.070	-
52Cr	0.580	1.3	1.2	-	1.1	1.1	-	1.2	1.2	-
55Mn	0.022	0.568	0.480	17	0.440	0.483	9.3	4.1	3.6	13
57Fe	2.8	21	19	-	13	14	-	53	43	21
59Co	0.006	0.020	0.012	-	0.014	0.014	-	0.052	0.043	-
60Ni	0.041	0.193	0.169	-	0.090	0.106	-	0.081	0.049	-
63Cu	0.010	1.5	1.5	0.0	1.6	1.6	0.0	2.5	2.6	3.9
66Zn	0.743	35	32	9.0	38	36	5.4	92	73	23
75As	0.495	<0.495	<0.495	-	<0.495	<0.495	-	<0.495	<0.495	-
77Se	0.398	2.4	2.6	-	2.7	3.1	-	15	13	14
88Sr	0.001	0.508	0.404	23	0.342	0.375	9.2	0.255	0.223	13
95Mo	0.001	<0.001	<0.001	-	<0.001	<0.001	-	0.077	0.058	28
107Ag	0.001	<0.001	<0.001	-	<0.001	<0.001	-	0.019	0.019	0.0
111Cd	0.045	<0.045	<0.045	-	<0.045	<0.045	-	0.046	0.046	-
118Sn	0.043	0.086	0.143	-	0.091	0.101	-	0.344	0.157	-
121Sb	0.005	0.005	0.005	-	<0.005	<0.005	-	<0.005	<0.005	-
137Ba	0.001	1.7	1.4	19	1.1	1.0	9.5	5.1	3.7	32
202Hg	0.036	0.794	0.689	14	0.362	0.336	-	<0.036	<0.036	-
205Tl	0.001	0.015	0.013	14	0.022	0.024	8.7	0.010	0.008	-
208Pb	0.001	0.071	0.064	10	0.002	0.002	-	0.008	0.004	-
238U	0.001	<0.001	<0.001	-	<0.001	<0.001	-	0.002	0.002	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_RIVER_PCC-10-O_20210625			RG_RIVER_PCC-10-M_20210625		
Lab ID		290			291		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.008	<0.008	<0.008	-	<0.008	<0.008	-
11B	0.108	<0.108	<0.108	-	0.114	0.114	-
23Na	2.2	1,704	1,653	3.0	1,413	1,457	3.1
24Mg	0.024	735	755	2.7	1,259	1,216	3.5
27Al	0.296	0.382	0.370	-	2.6	1.2	-
31P	49	11,373	12,549	9.8	10,215	10,482	2.6
39K	15	9,411	8,127	15	20,254	19,631	3.1
44Ca	55	319	327	-	761	730	4.2
49Ti	0.420	1.4	1.6	-	4.2	4.1	-
51V	0.070	<0.070	<0.070	-	<0.070	<0.070	-
52Cr	0.580	1.1	1.1	-	1.1	1.2	-
55Mn	0.022	7.8	7.9	1.3	0.517	0.512	1.0
57Fe	2.8	49	50	2.0	23	21	-
59Co	0.006	0.040	0.037	-	0.022	0.023	-
60Ni	0.041	<0.041	<0.041	-	0.147	0.114	-
63Cu	0.010	3.0	3.3	9.5	1.6	1.7	6.1
66Zn	0.743	72	74	2.7	45	44	2.2
75As	0.495	<0.495	<0.495	-	<0.495	<0.495	-
77Se	0.398	7.1	7.4	4.1	1.4	1.7	-
88Sr	0.001	0.235	0.232	1.3	0.394	0.352	11
95Mo	0.001	0.070	0.090	25	0.013	0.013	0.0
107Ag	0.001	0.019	0.019	0.0	<0.001	<0.001	-
111Cd	0.045	<0.045	<0.045	-	<0.045	<0.045	-
118Sn	0.043	0.149	0.205	-	0.115	0.080	-
121Sb	0.005	<0.005	<0.005	-	<0.005	<0.005	-
137Ba	0.001	1.1	1.1	0.0	2.8	2.5	11
202Hg	0.036	<0.036	0.039	-	1.1	1.1	0.0
205Tl	0.001	0.004	0.003	-	0.010	0.009	-
208Pb	0.001	0.004	0.007	-	0.024	0.017	34
238U	0.001	0.002	0.002	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	01			02	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.3	105	8.2	1.3	109	5.0
11B	0.108	4.5	4.8	107	2.1	5.5	123	2.3
23Na	2.2	14,000	14,943	107	7.9	15,643	112	2.2
24Mg	0.024	910	949	104	7.4	1,015	112	2.2
27Al	0.296	197.2	216	110	7.0	223	113	6.6
31P	49	8,000	8,348	104	6.4	8,787	110	4.8
39K	15	15,500	16,911	109	9.8	17,175	111	4.4
44Ca	55	2,360	2,509	106	5.8	2,592	110	1.8
49Ti	0.420	12.24	14	111	13	15	126	17
51V	0.070	1.57	1.7	111	16	1.6	102	12
52Cr	0.580	1.87	2.0	105	7.5	2.1	111	6.3
55Mn	0.022	3.17	3.4	107	6.3	3.6	114	3.6
57Fe	2.8	343	373	109	6.1	386	112	3.8
59Co	0.006	0.25	0.281	112	6.3	0.292	117	5.7
60Ni	0.041	1.34	1.5	112	8.6	1.5	114	4.0
63Cu	0.010	15.7	17	111	4.2	18	115	3.9
66Zn	0.743	51.6	59	114	3.0	57	110	4.2
75As	0.495	6.87	7.1	103	5.5	7.5	109	2.7
77Se	0.398	3.45	3.6	104	5.6	3.6	104	1.2
88Sr	0.001	10.1	11	108	6.1	11	112	2.5
95Mo	0.001	0.29	0.296	102	3.2	0.320	110	5.0
107Ag	0.001	0.0252	0.028	112	9.0	0.028	110	9.5
111Cd	0.045	0.299	0.340	114	1.2	0.335	112	6.9
118Sn	0.043	0.061	0.065	107	11	0.065	107	17
121Sb	0.005	0.011	0.013	116	12	0.013	119	12
137Ba	0.001	8.6	9.1	106	1.6	10	117	2.4
202Hg	0.036	0.412	0.416	101	7.4	0.460	112	4.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.481	119	18	0.437	108	18
238U	0.001	0.05	0.056	113	17	0.052	105	11

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	03			04	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.4	115	6.0	1.3	111	3.2
11B	0.108	4.5	5.1	114	2.4	4.8	107	2.6
23Na	2.2	14,000	15,150	108	3.8	15,044	108	2.6
24Mg	0.024	910	999	110	2.3	976	107	4.3
27Al	0.296	197.2	230	117	3.9	215	109	2.7
31P	49	8,000	8,447	106	1.9	8,529	107	2.4
39K	15	15,500	15,890	102	2.5	16,519	107	2.5
44Ca	55	2,360	2,513	106	1.8	2,495	106	3.1
49Ti	0.420	12.24	15	125	11	13	103	8.0
51V	0.070	1.57	1.6	104	8.5	1.7	111	7.4
52Cr	0.580	1.87	2.0	107	3.2	2.1	113	3.1
55Mn	0.022	3.17	3.5	110	4.3	3.3	104	3.8
57Fe	2.8	343	383	112	3.1	368	107	4.6
59Co	0.006	0.25	0.274	110	1.2	0.266	106	3.7
60Ni	0.041	1.34	1.5	110	3.9	1.5	112	6.2
63Cu	0.010	15.7	18	112	4.1	17	109	0.8
66Zn	0.743	51.6	56	108	2.1	57	111	3.5
75As	0.495	6.87	7.3	106	2.5	7.4	107	1.5
77Se	0.398	3.45	3.8	110	3.0	3.8	109	4.7
88Sr	0.001	10.1	11	109	2.7	11	105	2.5
95Mo	0.001	0.29	0.303	104	6.2	0.306	106	4.2
107Ag	0.001	0.0252	0.028	112	3.8	0.027	108	8.8
111Cd	0.045	0.299	0.317	106	5.1	0.325	109	5.7
118Sn	0.043	0.061	0.066	108	11	0.068	112	11
121Sb	0.005	0.011	0.011	100	0.0	0.012	107	14
137Ba	0.001	8.6	9.6	112	2.0	9.1	106	2.8
202Hg	0.036	0.412	0.434	105	3.3	0.448	109	4.2
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.401	99	15	0.420	104	6.9
238U	0.001	0.05	0.048	97	8.8	0.051	102	5.4

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	05			06	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.2	99	11	1.3	111	6.0
11B	0.108	4.5	4.6	101	1.9	4.5	100	2.4
23Na	2.2	14,000	15,412	110	5.6	15,262	109	2.4
24Mg	0.024	910	1,020	112	2.6	1,019	112	4.0
27Al	0.296	197.2	215	109	2.5	216	109	4.6
31P	49	8,000	8,605	108	1.5	8,553	107	2.5
39K	15	15,500	16,840	109	7.0	17,311	112	3.5
44Ca	55	2,360	2,500	106	4.0	2,533	107	3.2
49Ti	0.420	12.24	13	106	7.7	12	102	7.1
51V	0.070	1.57	1.6	101	8.1	1.7	109	5.9
52Cr	0.580	1.87	2.0	107	5.6	2.0	107	4.1
55Mn	0.022	3.17	3.3	104	2.3	3.6	112	2.7
57Fe	2.8	343	368	107	2.6	371	108	2.1
59Co	0.006	0.25	0.275	110	3.1	0.277	111	3.2
60Ni	0.041	1.34	1.5	109	3.4	1.5	112	3.2
63Cu	0.010	15.7	17	111	6.8	17	108	2.2
66Zn	0.743	51.6	56	108	2.5	57	110	3.2
75As	0.495	6.87	7.6	111	3.5	7.6	110	2.3
77Se	0.398	3.45	3.8	109	3.6	3.7	108	1.9
88Sr	0.001	10.1	11	111	8.0	11	110	2.7
95Mo	0.001	0.29	0.354	122	6.5	0.311	107	6.0
107Ag	0.001	0.0252	0.031	124	5.3	0.028	109	8.2
111Cd	0.045	0.299	0.333	111	4.0	0.339	113	3.8
118Sn	0.043	0.061	0.063	102	7.4	0.073	120	18
121Sb	0.005	0.011	0.013	120	11	0.012	105	13
137Ba	0.001	8.6	9.2	107	2.1	9.0	105	6.5
202Hg	0.036	0.412	0.510	124	5.3	0.478	116	2.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.468	116	6.1	0.450	111	5.4
238U	0.001	0.05	0.056	112	4.4	0.055	111	8.3

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	07			08	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.2	100	6.5	1.3	110	6.1
11B	0.108	4.5	4.9	108	1.4	4.8	108	2.4
23Na	2.2	14,000	14,656	105	7.3	15,654	112	5.4
24Mg	0.024	910	964	106	8.7	1,003	110	6.5
27Al	0.296	197.2	221	112	10	207	105	6.6
31P	49	8,000	8,254	103	8.6	8,989	112	4.5
39K	15	15,500	16,049	104	8.9	17,873	115	4.1
44Ca	55	2,360	2,439	103	6.9	2,540	108	4.3
49Ti	0.420	12.24	13	109	12	13	104	11
51V	0.070	1.57	1.7	109	18	1.8	112	9.5
52Cr	0.580	1.87	2.0	108	7.5	2.2	118	1.4
55Mn	0.022	3.17	3.3	104	9.2	3.5	111	3.6
57Fe	2.8	343	361	105	8.4	388	113	1.8
59Co	0.006	0.25	0.269	108	10	0.304	122	3.7
60Ni	0.041	1.34	1.4	107	7.2	1.6	118	5.1
63Cu	0.010	15.7	16	104	11	18	113	3.8
66Zn	0.743	51.6	55	106	5.9	59	115	3.2
75As	0.495	6.87	6.9	101	7.5	7.6	111	4.6
77Se	0.398	3.45	3.4	99	5.9	3.7	108	2.5
88Sr	0.001	10.1	10	100	10	11	111	2.9
95Mo	0.001	0.29	0.302	104	5.7	0.335	115	9.4
107Ag	0.001	0.0252	0.026	105	11	0.028	110	5.1
111Cd	0.045	0.299	0.321	107	7.0	0.334	112	9.8
118Sn	0.043	0.061	0.065	107	11	0.071	116	6.9
121Sb	0.005	0.011	0.012	109	0.0	0.013	117	16
137Ba	0.001	8.6	9.1	106	1.4	9.3	108	1.6
202Hg	0.036	0.412	0.418	101	11	0.473	115	11
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.479	119	20	0.458	113	7.0
238U	0.001	0.05	0.053	105	15	0.057	114	8.3

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	09			10	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.2	101	5.5	1.3	110	4.5
11B	0.108	4.5	5.0	110	1.8	5.1	114	1.8
23Na	2.2	14,000	15,081	108	2.2	15,658	112	3.5
24Mg	0.024	910	997	110	3.1	1,003	110	5.9
27Al	0.296	197.2	203	103	4.9	211	107	6.9
31P	49	8,000	8,749	109	3.3	8,951	112	3.7
39K	15	15,500	17,104	110	2.1	17,681	114	1.3
44Ca	55	2,360	2,569	109	1.9	2,635	112	1.6
49Ti	0.420	12.24	12	98	8.4	12	97	7.8
51V	0.070	1.57	1.7	108	6.3	1.7	105	5.7
52Cr	0.580	1.87	1.9	104	2.7	2.2	116	3.7
55Mn	0.022	3.17	3.5	111	5.1	3.5	110	5.4
57Fe	2.8	343	369	108	3.8	389	113	4.0
59Co	0.006	0.25	0.266	106	2.9	0.292	117	3.1
60Ni	0.041	1.34	1.5	109	4.1	1.6	119	2.9
63Cu	0.010	15.7	17	111	5.6	19	118	4.3
66Zn	0.743	51.6	56	108	1.3	59	115	2.3
75As	0.495	6.87	7.3	106	2.5	7.6	111	1.7
77Se	0.398	3.45	3.7	108	1.5	3.8	110	3.1
88Sr	0.001	10.1	11	107	3.8	11	109	1.3
95Mo	0.001	0.29	0.307	106	9.2	0.324	112	6.1
107Ag	0.001	0.0252	0.028	111	12	0.031	123	10
111Cd	0.045	0.299	0.350	117	5.5	0.337	113	4.7
118Sn	0.043	0.061	0.058	94	11	0.066	109	11
121Sb	0.005	0.011	0.013	120	**23**	0.013	114	**23**
137Ba	0.001	8.6	9.3	108	3.3	9.4	109	3.3
202Hg	0.036	0.412	0.461	112	5.7	0.438	106	4.6
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.432	107	19	0.406	100	10
238U	0.001	0.05	0.051	101	5.7	0.052	104	8.4

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	11			12	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.3	106	4.5	1.2	98	4.6
11B	0.108	4.5	4.6	103	1.0	4.8	107	2.1
23Na	2.2	14,000	15,921	114	3.4	14,259	102	3.6
24Mg	0.024	910	1,003	110	3.1	1,019	112	5.1
27Al	0.296	197.2	201	102	6.5	206	104	5.8
31P	49	8,000	8,440	106	4.1	8,533	107	4.1
39K	15	15,500	16,982	110	3.2	16,400	106	3.5
44Ca	55	2,360	2,441	103	2.9	2,551	108	2.9
49Ti	0.420	12.24	12	96	5.0	12	96	5.0
51V	0.070	1.57	1.7	111	8.0	1.7	110	5.7
52Cr	0.580	1.87	2.2	120	14	1.9	101	3.5
55Mn	0.022	3.17	3.5	110	3.1	3.6	114	3.7
57Fe	2.8	343	369	108	2.4	367	107	3.5
59Co	0.006	0.25	0.265	106	4.2	0.284	114	2.5
60Ni	0.041	1.34	1.4	105	2.0	1.5	109	4.5
63Cu	0.010	15.7	17	105	3.2	17	108	3.7
66Zn	0.743	51.6	54	104	2.7	54	105	3.2
75As	0.495	6.87	7.2	104	2.6	7.2	105	2.5
77Se	0.398	3.45	3.7	106	4.8	3.6	103	2.6
88Sr	0.001	10.1	11	107	3.2	11	110	3.3
95Mo	0.001	0.29	0.310	107	5.8	0.318	110	7.8
107Ag	0.001	0.0252	0.026	105	10	0.027	106	7.4
111Cd	0.045	0.299	0.318	106	7.2	0.305	102	4.0
118Sn	0.043	0.061	0.075	123	18	0.064	105	13
121Sb	0.005	0.011	0.012	110	20	0.012	112	0.0
137Ba	0.001	8.6	8.4	98	2.7	9.1	106	0.7
202Hg	0.036	0.412	0.422	102	5.7	0.442	107	3.4
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.477	118	13	0.423	105	12
238U	0.001	0.05	0.054	108	8.6	0.054	108	9.5

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	13			14		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.1	89	7.8	1.4	112	6.4
11B	0.108	4.5	4.7	105	2.0	4.8	107	1.2
23Na	2.2	14,000	13,285	95	12	15,435	110	4.7
24Mg	0.024	910	853	94	8.7	1,014	111	3.5
27Al	0.296	197.2	202	102	3.8	204	103	6.0
31P	49	8,000	7,185	90	9.2	8,591	107	2.1
39K	15	15,500	14,748	95	11	16,552	107	2.1
44Ca	55	2,360	2,175	92	9.5	2,502	106	2.1
49Ti	0.420	12.24	12	100	6.8	12	95	11
51V	0.070	1.57	1.5	93	14	1.5	95	9.7
52Cr	0.580	1.87	1.9	101	9.8	1.9	100	3.5
55Mn	0.022	3.17	3.0	96	9.5	3.2	102	3.2
57Fe	2.8	343	320	93	8.0	360	105	2.5
59Co	0.006	0.25	0.260	104	6.6	0.273	109	2.1
60Ni	0.041	1.34	1.3	98	7.6	1.5	111	5.3
63Cu	0.010	15.7	15	97	8.3	17	110	4.4
66Zn	0.743	51.6	49	96	3.9	56	108	1.5
75As	0.495	6.87	6.2	90	9.6	7.2	104	1.8
77Se	0.398	3.45	3.2	92	6.7	3.6	105	3.8
88Sr	0.001	10.1	9.8	97	9.3	10	104	4.2
95Mo	0.001	0.29	0.255	88	13	0.311	107	5.0
107Ag	0.001	0.0252	0.026	103	15	0.027	106	0.0
111Cd	0.045	0.299	0.301	101	13	0.364	122	4.1
118Sn	0.043	0.061	0.053	87	9.5	0.065	107	20
121Sb	0.005	0.011	0.013	118	**21**	0.012	110	20
137Ba	0.001	8.6	9.2	107	1.4	8.7	101	3.8
202Hg	0.036	0.412	0.405	98	14	0.446	108	3.8
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.419	104	15	0.378	94	12
238U	0.001	0.05	0.046	92	13	0.052	103	11

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	15			16	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.2	102	6.8	1.3	110	13
11B	0.108	4.5	4.9	108	2.6	4.7	105	2.0
23Na	2.2	14,000	14,719	105	3.4	15,735	112	7.0
24Mg	0.024	910	1,005	110	1.9	997	110	9.6
27Al	0.296	197.2	227	115	7.3	198	101	6.9
31P	49	8,000	8,382	105	1.6	8,691	109	6.0
39K	15	15,500	16,839	109	3.8	17,228	111	6.2
44Ca	55	2,360	2,500	106	1.5	2,611	111	8.6
49Ti	0.420	12.24	13	106	13	12	100	12
51V	0.070	1.57	1.8	114	5.2	1.6	102	10
52Cr	0.580	1.87	2.0	109	1.7	2.1	113	5.6
55Mn	0.022	3.17	3.4	109	6.2	3.5	111	9.3
57Fe	2.8	343	387	113	3.5	383	112	7.6
59Co	0.006	0.25	0.293	117	5.6	0.288	115	5.7
60Ni	0.041	1.34	1.5	110	1.7	1.5	114	6.8
63Cu	0.010	15.7	18	115	3.7	19	118	7.1
66Zn	0.743	51.6	57	111	1.2	57	110	5.1
75As	0.495	6.87	7.1	104	2.1	7.1	104	6.6
77Se	0.398	3.45	3.6	106	1.2	3.5	100	6.4
88Sr	0.001	10.1	11	105	1.6	11	112	7.6
95Mo	0.001	0.29	0.307	106	5.1	0.314	108	9.8
107Ag	0.001	0.0252	0.030	117	4.9	0.029	115	11
111Cd	0.045	0.299	0.334	112	8.8	0.355	119	9.7
118Sn	0.043	0.061	0.058	95	9.1	0.074	122	13
121Sb	0.005	0.011	0.013	120	**26**	0.010	94	12
137Ba	0.001	8.6	8.7	101	3.8	8.9	103	2.0
202Hg	0.036	0.412	0.396	96	7.7	0.416	101	10
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.001	0.404	0.432	107	16	0.411	102	14
238U	0.001	0.05	0.049	98	5.5	0.054	109	13

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Bold indicates DQO exceedance but result is accepted as it does not impact the reportable results

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

Sample Group ID			17		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.008	1.21	1.2	97	9.8
11B	0.108	4.5	4.7	104	2.4
23Na	2.2	14,000	15,166	108	10
24Mg	0.024	910	937	103	11
27Al	0.296	197.2	215	109	6.0
31P	49	8,000	8,436	105	8.6
39K	15	15,500	16,971	110	9.6
44Ca	55	2,360	2,471	105	7.2
49Ti	0.420	12.24	12	101	9.1
51V	0.070	1.57	1.8	114	8.0
52Cr	0.580	1.87	2.0	106	7.7
55Mn	0.022	3.17	3.4	106	7.5
57Fe	2.8	343	371	108	5.6
59Co	0.006	0.25	0.273	109	8.2
60Ni	0.041	1.34	1.5	110	5.6
63Cu	0.010	15.7	18	112	5.7
66Zn	0.743	51.6	55	106	5.1
75As	0.495	6.87	7.1	103	6.6
77Se	0.398	3.45	3.5	100	5.6
88Sr	0.001	10.1	11	109	9.7
95Mo	0.001	0.29	0.304	105	11
107Ag	0.001	0.0252	0.027	108	5.3
111Cd	0.045	0.299	0.365	122	4.0
118Sn	0.043	0.061	0.059	97	5.3
121Sb	0.005	0.011	0.014	127	12
137Ba	0.001	8.6	8.9	104	3.2
202Hg	0.036	0.412	0.424	103	7.0
205Tl	0.001	0.0013	-	-	-
208Pb	0.001	0.404	0.431	107	6.2
238U	0.001	0.05	0.054	109	6.9

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_ER-PCC-01-O_20210622	150	01 Jul 2021
	RG_ER-PCC-02-O_20210622	151	
	RG_ER-PCC-03-O_20210622	152	
	RG_ER-PCC-04-O_20210622	153	
	RG_ER-PCC-05-O_20210623	154	
	RG_ER-PCC-06-O_20210623	155	
	RG_ER-PCC-07-O_20210623	156	
	RG_ER-PCC-08-O_20210623	157	
	RG_ER-PCC-09-O_20210623	158	
02	RG_ER-PCC-10-O_20210623	159	01 Jul 2021
	RG_ER-PCC-01-M_20210622	160	
	RG_ER-PCC-02-M_20210622	161	
	RG_ER-PCC-03-M_20210622	162	
	RG_ER-PCC-04-M_20210622	163	
	RG_ER-PCC-05-M_20210623	164	
	RG_ER-PCC-06-M_20210623	165	
	RG_ER-PCC-07-M_20210623	166	
	RG_ER-PCC-08-M_20210623	167	
03	RG_ER-PCC-09-M_20210623	168	09 Jul 2021
	RG_ER-PCC-10-M_20210623	169	
	RG_SC-PCC-01-O_20210623	190	
	RG_SC-PCC-02-O_20210623	191	
	RG_SC-PCC-03-O_20210623	192	
	RG_SC-PCC-05-O_20210623	193	
	RG_SC-PCC-06-O_20210625	194	
	RG_SC-PCC-07-O_20210625	195	
	RG_SC-PCC-08-O_20210625	196	
04	RG_ER-RSC-01-O_20210622	170	01 Jul 2021
	RG_ER-RSC-02-O_20210622	171	
	RG_ER-RSC-03-O_20210622	172	
	RG_ER-RSC-04-O_20210622	173	
	RG_ER-RSC-05-O_20210622	174	
	RG_ER-RSC-06-O_20210622	175	
	RG_ER-RSC-07-O_20210622	176	
	RG_ER-RSC-08-O_20210622	177	
	RG_ER-RSC-09-O_20210622	178	
05	RG_ER-RSC-10-O_20210622	179	30 Jun 2021
	RG_ER-RSC-01-M_20210622	180	
	RG_ER-RSC-02-M_20210622	181	
	RG_ER-RSC-03-M_20210622	182	

Sample Group ID	Client ID	Lab ID	Date of Analysis
05	RG_ER-RSC-04-M_20210622	183	30 Jun 2021
	RG_ER-RSC-05-M_20210622	184	
	RG_ER-RSC-06-M_20210622	185	
	RG_ER-RSC-07-M_20210622	186	
	RG_ER-RSC-08-M_20210622	187	
06	RG_ER-RSC-09-M_20210622	188	30 Jun 2021
	RG_ER-RSC-10-M_20210622	189	
	RG_SC-RSC-01-O_20210625	210	
	RG_SC-RSC-02-O_20210625	211	
	RG_SC-RSC-03-O_20210625	212	
	RG_SC-RSC-04-O_20210625	213	
	RG_SC-RSC-05-O_20210625	214	
	RG_SC-RSC-06-O_20210625	215	
	RG_SC-RSC-07-O_20210625	216	
07	RG_SC-PCC-09-O_20210625	197	10 Jul 2021
	RG_SC-PCC-10-O_20210625	198	
	RG_SC-PCC-11-O_20210625	199	
	RG_SC-PCC-01-M_20210623	200	
	RG_SC-PCC-02-M_20210623	201	
	RG_SC-PCC-03-M_20210623	202	
	RG_SC-PCC-05-M_20210623	203	
	RG_SC-PCC-06-M_20210625	204	
	RG_SC-PCC-07-M_20210625	205	
08	RG_SC-PCC-08-M_20210625	206	09 Jul 2021
	RG_SC-PCC-09-M_20210625	207	
	RG_SC-PCC-10-M_20210625	208	
	RG_SC-PCC-11-M_20210625	209	
	RG_SC-RSC-08-O_20210625	217	
	RG_SC-RSC-09-O_20210625	218	
	RG_SC-RSC-10-O_20210625	219	
	RG_SC-RSC-01-M_20210625	220	
09	RG_SC-RSC-02-M_20210625	221	09 Jul 2021
	RG_SC-RSC-03-M_20210625	222	
	RG_SC-RSC-04-M_20210625	223	
	RG_SC-RSC-05-M_20210625	224	
	RG_SC-RSC-06-M_20210625	225	
	RG_SC-RSC-07-M_20210625	226	
	RG_SC-RSC-08-M_20210625	227	
	RG_SC-RSC-09-M_20210625	228	
	RG_SC-RSC-10-M_20210625	229	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
10	RG_GC-PCC-01-O_20210623	230	10 Jul 2021
	RG_GC-PCC-02-O_20210624	231	
	RG_GC-PCC-01-M_20210623	233	
	RG_GC-PCC-02-M_20210624	234	
	RG_GC-PCC-03-M_20210624	235	
	RG_T4_ZOOT-01_20210624	236	
	RG_T4_ZOOT-02_20210624	237	
	RG_T4_ZOOT-03_20210624	238	
11	RG_T4_ZOOT-04_20210624	239	06 Jul 2021
	RG_T4_ZOOT-05_20210624	240	
	RG_TN_ZOOT-01_20210624	241	
	RG_TN_ZOOT-02_20210624	242	
	RG_TN_ZOOT-03_20210624	244	
	RG_TN_ZOOT-04_20210624	245	
	RG_TN_ZOOT-05_20210624	246	
	RG_GC-RSC-01-O_20210622	250	
	RG_GC-RSC-02-O_20210622	251	
12	RG_GC-RB-01-M_20210622	247	01 Jul 2021
	RG_GC-RB-02-M_20210622	248	
	RG_GC-RB-03-M_20210623	249	
	RG_GC-RB-04-M_20210623	270	
	RG_GC-KO-01-M_20210623	271	
	RG_GC-KO-02-M_20210624	272	
	RG_GC-KO-03-M_20210625	273	
	RG_GC-KO-04-M_20210625	274	
	RG_GC-KO-05-M_20210625	275	
	RG_GC-KO-06-M_20210625	276	
13	RG_GC-RSC-03-O_20210622	252	08 Jul 2021
	RG_GC-RSC-04-O_20210622	253	
	RG_GC-RSC-05-O_20210622	254	
	RG_GC-RSC-06-O_20210622	255	
	RG_GC-RSC-07-O_20210622	256	
	RG_GC-RSC-08-O_20210622	257	
	RG_GC-RSC-09-O_20210622	258	
	RG_GC-RSC-10-O_20210622	259	
	RG_GC-RSC-01-M_20210622	260	
14	RG_GC-RSC-02-M_20210622	261	08 Jul 2021
	RG_GC-RSC-03-M_20210622	262	
	RG_GC-RSC-04-M_20210622	263	
	RG_GC-RSC-05-M_20210622	264	

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
14	RG_GC-RSC-06-M_20210622	265	08 Jul 2021
	RG_GC-RSC-07-M_20210622	266	
	RG_GC-RSC-08-M_20210622	267	
	RG_GC-RSC-09-M_20210622	268	
15	RG_GC-RSC-10-M_20210622	269	09 Jul 2021
	RG_RIVER_PCC-09-O_20210623	288	
	RG_RIVER_PCC-09-M_20210623	289	
	RG_RIVER_PCC-10-O_20210625	290	
	RG_RIVER_PCC-10-M_20210625	291	
16	RG_GC-KO-07-M_20210625	277	09 Jul 2021
	RG_ER-RB-03-M_20210623	278	
	RG_ER-MW-08-M_20210622	279	
	RG_GC-RB-05-M_20210625	281	
	RG_RIVER_RSC-01-O_20210625	282	
	RG_RIVER_RSC-01-M_20210625	283	
	RG_RIVER_RSC-03-O_20210622	284	
	RG_RIVER_RSC-03-M_20210622	285	
	RG_RIVER_RSC-05-O_20210622	286	
	RG_RIVER_RSC-05-M_20210622	287	
17	RG_GC-PCC-03-O_20210624	232	15 Jul 2021

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

TrichID		Sample Identification:	Sample Type: Species	Sample type
150	✓1	RG_ER-PCC-01-O_20210622	Peamouth Chub	Ovary
151	✓2	RG_ER-PCC-02-O_20210622	Peamouth Chub	Ovary
152	✓3	RG_ER-PCC-03-O_20210622	Peamouth Chub	Ovary
153	✓4	RG_ER-PCC-04-O_20210622	Peamouth Chub	Ovary
154	✓5	RG_ER-PCC-05-O_20210623	Peamouth Chub	Ovary
155	✓6	RG_ER-PCC-06-O_20210623	Peamouth Chub	Ovary
156	✓7	RG_ER-PCC-07-O_20210623	Peamouth Chub	Ovary
157	✓8	RG_ER-PCC-08-O_20210623	Peamouth Chub	Ovary
158	✓9	RG_ER-PCC-09-O_20210623	Peamouth Chub	Ovary
159	✓10	RG_ER-PCC-10-O_20210623	Peamouth Chub	Ovary
160	✓11	RG_ER-PCC-01-M_20210622	Peamouth Chub	Muscle
161	✓12	RG_ER-PCC-02-M_20210622	Peamouth Chub	Muscle
162	✓13	RG_ER-PCC-03-M_20210622	Peamouth Chub	Muscle
163	✓14	RG_ER-PCC-04-M_20210622	Peamouth Chub	Muscle
164	✓15	RG_ER-PCC-05-M_20210623	Peamouth Chub	Muscle
165	✓16	RG_ER-PCC-06-M_20210623	Peamouth Chub	Muscle
166	✓17	RG_ER-PCC-07-M_20210623	Peamouth Chub	Muscle
167	✓18	RG_ER-PCC-08-M_20210623	Peamouth Chub	Muscle
168	✓19	RG_ER-PCC-09-M_20210623	Peamouth Chub	Muscle
169	✓20	RG_ER-PCC-10-M_20210623	Peamouth Chub	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Elliot Howell
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 Sept 2021 (P.O.# 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

TRICH ID		**Sample Identification:**	**Sample Type:** Species	Sample type
170	✓1	RG_ER-RSC-01-O_20210622	Redside Shiner	Ovary
171	✓2	RG_ER-RSC-02-O_20210622	Redside Shiner	Ovary
172	✓3	RG_ER-RSC-03-O_20210622	Redside Shiner	Ovary
173	✓4	RG_ER-RSC-04-O_20210622	Redside Shiner	Ovary
174	✓5	RG_ER-RSC-05-O_20210622	Redside Shiner	Ovary
175	✓6	RG_ER-RSC-06-O_20210622	Redside Shiner	Ovary
176	✓7	RG_ER-RSC-07-O_20210622	Redside Shiner	Ovary
177	✓8	RG_ER-RSC-08-O_20210622	Redside Shiner	Ovary
178	✓9	RG_ER-RSC-09-O_20210622	Redside Shiner	Ovary
179	✓10	RG_ER-RSC-10-O_20210622	Redside Shiner	Ovary
180	✓11	RG_ER-RSC-01-M_20210622	Redside Shiner	Muscle
181	✓12	RG_ER-RSC-02-M_20210622	Redside Shiner	Muscle
182	✓13	RG_ER-RSC-03-M_20210622	Redside Shiner	Muscle
183	✓14	RG_ER-RSC-04-M_20210622	Redside Shiner	Muscle
184	✓15	RG_ER-RSC-05-M_20210622	Redside Shiner	Muscle
185	✓16	RG_ER-RSC-06-M_20210622	Redside Shiner	Muscle
186	✓17	RG_ER-RSC-07-M_20210622	Redside Shiner	Muscle
187	✓18	RG_ER-RSC-08-M_20210622	Redside Shiner	Muscle
188	✓19	RG_ER-RSC-09-M_20210622	Redside Shiner	Muscle
189	✓20	RG_ER-RSC-10-M_20210622	Redside Shiner	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Alex Wade
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 Jun 2021 (Proj # 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

TRICH ID		**Sample Identification:**	**Sample Type:** Species	Sample type
190	1	RG_SC-PCC-01-O_20210623	Peamouth Chub	Ovary
191	2	RG_SC-PCC-02-O_20210623	Peamouth Chub	Ovary
192	3	RG_SC-PCC-03-O_20210623	Peamouth Chub	Ovary
193	4	RG_SC-PCC-05-O_20210623	Peamouth Chub	Ovary
194	5	RG_SC-PCC-06-O_20210625	Peamouth Chub	Ovary
195	6	RG_SC-PCC-07-O_20210625	Peamouth Chub	Ovary
196	7	RG_SC-PCC-08-O_20210625	Peamouth Chub	Ovary
197	8	RG_SC-PCC-09-O_20210625	Peamouth Chub	Ovary
198	9	RG_SC-PCC-10-O_20210625	Peamouth Chub	Ovary
199	10	RG_SC-PCC-11-O_20210625	Peamouth Chub	Ovary
200	11	RG_SC-PCC-01-M_20210623	Peamouth Chub	Muscle
201	12	RG_SC-PCC-02-M_20210623	Peamouth Chub	Muscle
202	13	RG_SC-PCC-03-M_20210623	Peamouth Chub	Muscle
203	14	RG_SC-PCC-05-M_20210623	Peamouth Chub	Muscle
204	15	RG_SC-PCC-06-M_20210625	Peamouth Chub	Muscle
205	16	RG_SC-PCC-07-M_20210625	Peamouth Chub	Muscle
206	17	RG_SC-PCC-08-M_20210625	Peamouth Chub	Muscle
207	18	RG_SC-PCC-09-M_20210625	Peamouth Chub	Muscle
208	19	RG_SC-PCC-10-M_20210625	Peamouth Chub	Muscle
209	20	RG_SC-PCC-11-M_20210625	Peamouth Chub	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Alex Wade
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 Jun 2021 (Proj # 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

TrichID		**Sample Identification:**	**Sample Type:** Species	Sample type
Z10	√1	RG_SC-RSC-01-O_20210625	Redside Shiner	Ovary
Z11	√2	RG_SC-RSC-02-O_20210625	Redside Shiner	Ovary
Z12	√3	RG_SC-RSC-03-O_20210625	Redside Shiner	Ovary
Z13	√4	RG_SC-RSC-04-O_20210625	Redside Shiner	Ovary
Z14	√5	RG_SC-RSC-05-O_20210625	Redside Shiner	Ovary
Z15	√6	RG_SC-RSC-06-O_20210625	Redside Shiner	Ovary
Z16	√7	RG_SC-RSC-07-O_20210625	Redside Shiner	Ovary
Z17	√8	RG_SC-RSC-08-O_20210625	Redside Shiner	Ovary
Z18	√9	RG_SC-RSC-09-O_20210625	Redside Shiner	Ovary
Z19	√10	RG_SC-RSC-10-O_20210625	Redside Shiner	Ovary
Z20	√11	RG_SC-RSC-01-M_20210625	Redside Shiner	Muscle
Z21	√12	RG_SC-RSC-02-M_20210625	Redside Shiner	Muscle
Z22	√13	RG_SC-RSC-03-M_20210625	Redside Shiner	Muscle
Z23	√14	RG_SC-RSC-04-M_20210625	Redside Shiner	Muscle
Z24	√15	RG_SC-RSC-05-M_20210625	Redside Shiner	Muscle
Z25	√16	RG_SC-RSC-06-M_20210625	Redside Shiner	Muscle
Z26	√17	RG_SC-RSC-07-M_20210625	Redside Shiner	Muscle
Z27	√18	RG_SC-RSC-08-M_20210625	Redside Shiner	Muscle
Z28	√19	RG_SC-RSC-09-M_20210625	Redside Shiner	Muscle
Z29	√20	RG_SC-RSC-10-M_20210625	Redside Shiner	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Elliot Howell
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 Jun 2021 (Proj #2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

Trich ID		Sample Identification:	Sample Type: Species	Sample type
230	✓1	RG_GC-PCC-01-O_20210623	Peamouth Chub	Ovary
231	2	RG_GC-PCC-02-O_20210624	Peamouth Chub	Ovary
232	✓3	RG_GC-PCC-03-O_20210624	Peamouth Chub	Ovary
233	✓4	RG_GC-PCC-01-M_20210623	Peamouth Chub	Muscle
234	5	RG_GC-PCC-02-M_20210624	Peamouth Chub	Muscle
235	✓6	RG_GC-PCC-03-M_20210624	Peamouth Chub	Muscle
236	7	RG_T4_ZOOT-01_20210624 *	Zooplankton	DS-1
237	8	RG_T4_ZOOT-02_20210624 *	Zooplankton	DS-2
238	9	RG_T4_ZOOT-03_20210624 *	Zooplankton	DS-3
239	10	RG_T4_ZOOT-04_20210624 *	Zooplankton	DS-4
240	11	RG_T4_ZOOT-05_20210624 *	Zooplankton	DS-5
241	12	RG_TN_ZOOT-01_20210624 *	Zooplankton	US-1
242	13	RG_TN_ZOOT-02_20210624 *	Zooplankton	US-2
244	14	RG_TN_ZOOT-03_20210624 *	Zooplankton	US-3
245	15	RG_TN_ZOOT-04_20210624 *	Zooplankton	US-4
246	16	RG_TN_ZOOT-05_20210624 *	Zooplankton	US-5
247	✓17	RG_GC-RB-01-M_20210622	Rainbow Trout	Muscle
248	✓18	RG_GC-RB-02-M_20210622	Rainbow Trout	Muscle
249	19	RG_GC-RB-03-M_20210623	Rainbow Trout	Muscle
270	✓20	RG_GC-RB-04-M_20210623	Rainbow Trout	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Elliot Howell
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 June 2021 (proj # 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

* Sample container ID listed under Sample Type Column

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

TRICH ID		**Sample Identification:**	**Sample Type:** Species	Sample type
250	1	RG_GC-RSC-01-O_20210622	Redside Shiner	Ovary
251	2	RG_GC-RSC-02-O_20210622	Redside Shiner	Ovary
252	3	RG_GC-RSC-03-O_20210622	Redside Shiner	Ovary
253	4	RG_GC-RSC-04-O_20210622	Redside Shiner	Ovary
254	5	RG_GC-RSC-05-O_20210622	Redside Shiner	Ovary
255	6	RG_GC-RSC-06-O_20210622	Redside Shiner	Ovary
256	7	RG_GC-RSC-07-O_20210622	Redside Shiner	Ovary
257	8	RG_GC-RSC-08-O_20210622	Redside Shiner	Ovary
258	9	RG_GC-RSC-09-O_20210622	Redside Shiner	Ovary
259	10	RG_GC-RSC-10-O_20210622	Redside Shiner	Ovary
260	11	RG_GC-RSC-01-M_20210622	Redside Shiner	Muscle
261	12	RG_GC-RSC-02-M_20210622	Redside Shiner	Muscle
262	13	RG_GC-RSC-03-M_20210622	Redside Shiner	Muscle
263	14	RG_GC-RSC-04-M_20210622	Redside Shiner	Muscle
264	15	RG_GC-RSC-05-M_20210622	Redside Shiner	Muscle
265	16	RG_GC-RSC-06-M_20210622	Redside Shiner	Muscle
266	17	RG_GC-RSC-07-M_20210622	Redside Shiner	Muscle
267	18	RG_GC-RSC-08-M_20210622	Redside Shiner	Muscle
268	19	RG_GC-RSC-09-M_20210622	Redside Shiner	Muscle
269	20	RG_GC-RSC-10-M_20210622	Redside Shiner	Muscle

Sample(s) Released By:	**Sample(s) Received By:** Alex Wade
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 28 Jun 2021 (Proj # 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084	**Chain of Custody (COC) for LA-ICP-MS Analysis**

Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

Trich ID		Sample Identification:	Sample Type: Species	Sample type
Z71	1	RG_GC-KO-01-M_20210623	Kokanee	Muscle
Z72	2	RG_GC-KO-02-M_20210624	Kokanee	Muscle
Z73	3	RG_GC-KO-03-M_20210625	Kokanee	Muscle
Z74	4	RG_GC-KO-04-M_20210625	Kokanee	Muscle
Z75	5	RG_GC-KO-05-M_20210625	Kokanee	Muscle
Z76	6	RG_GC-KO-06-M_20210625	Kokanee	Muscle
Z77	7	RG_GC-KO-07-M_20210625	Kokanee	Muscle
Z78	8	RG_ER-RB-03-M_20210623	Rainbow Trout	Muscle
Z79	9	RG_ER-MW-08-M_20210622 *	Mountain Whitefish	Muscle
Z80	10	RG_SC-MW-01-M_20210625 **	Mountain Whitefish	Muscle
Z81	11	RG_GC-RB-05-M_20210625	Rainbow Trout	Muscle
Z82	12	RG_RIVER_RSC-01-O_20210625	Redside Shiner	Ovary
Z83	13	RG_RIVER_RSC-01-M_20210625	Redside Shiner	Muscle
Z84	14	RG_RIVER_RSC-03-O_20210622	Redside Shiner	Ovary
Z85	15	RG_RIVER_RSC-03-M_20210622	Redside Shiner	Muscle
Z86	16	RG_RIVER_RSC-05-O_20210622	Redside Shiner	Ovary
Z87	17	RG_RIVER_RSC-05-M_20210622	Redside Shiner	Muscle
Z88	18	RG_RIVER_PCC-09-O_20210623	Peamouth Chub	Ovary
Z89	19	RG_RIVER_PCC-09-M_20210623	Peamouth Chub	Muscle
Z90	20	RG_RIVER_PCC-10-O_20210625	Peamouth Chub	Ovary

Sample(s) Released By:	**Sample(s) Received By:** Elliot Howell
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 29 Jun 2021 (Proj #2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

* Label reads RG_ER-MWF-08-M-20210622

** No sample

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		**Chain of Custody (COC) for LA-ICP-MS Analysis**	
Invoicing		**Reporting** (if different from Invoicing)	
Project Number: 21-17			
Company Name:	Minnow Environmental	Company Name:	
Contact Name:	Heidi Currier	Contact Name:	
Address:	2 Lamb Street	Address:	
City, Province:	Georgetown, ON	City, Province:	
Postal Code:	L7G 2G7	Postal Code:	
Phone:	905-691-6183	Phone:	
Email:	hcurrier@minnow.ca; lbowron@minnow.ca	Email:	

Sample Analysis Requested

Trich ID	Sample Identification:	Sample Type: Species	Sample type
291 ✓ 1	RG_RIVER_PCC-10-M_20210625	Peamouth Chub	Muscle
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			

Sample(s) Released By:	**Sample(s) Received By:** Elliot Haywell
Signature:	**Signature:**
Date Sent: 26-Jun-21	**Date Received:** 29 Jun 2021 (Proj # 2021-232)
Sample(s) Returned to Client By:	**Shipping Conditions:**
	Shipping Container:
Signature:	**Date Sent:**

TrichAnalytics Inc.

Tissue Microchemistry Analysis Report

Client: Heidi Currier
Aquatic Toxicologist
Minnow Environmental
Phone: 905-691-6183
Email: hcurrier@minnow.ca

Date Received:	03 Sep 2021
Date of Analysis:	15 Sep 2021
Final Report Date:	16 Sep 2021
Project No.:	2021-248
Method No.:	MET-002.05

Client Project: Teck Coal/Minnow Environmental Project 21-17

Analytical Request: Benthic, Zooplankton, and Fish Tissue Microchemistry (total metals and moisture) – 26 samples. See chain of custody form provided for sample identification numbers.

Notes:

Analytical results are expressed in parts per million (ppm) dry weight (equivalent to mg/kg).
Samples quantified using DORM-4, NIST-1566b, and NIST-2976 certified reference standards.
Aluminum concentrations above 1,000 ppm are outside linear range of the calibration curve.
Client specific DQO for Selenium accuracy is 90 - 110% of the certified value; (range 103 - 109%, average result 106%).
RPD values calculated according to the British Columbia Environmental Laboratory Manual (2020) criteria.

This report provides the analytical results only for tissue samples noted above as received from the Client.

Reviewed and Approved by Jennie Christensen, PhD, RPBio — 16 Sep 2021 Date

TrichAnalytics Inc.
207-1753 Sean Heights
Saanichton, BC V8M 0B3
www.trichanalytics.com

CALA Testing Accreditation No. A4196

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_T4_INV_2021-08-24	RG_TN_INV_2021-08-26	RG_SAND_INV_2021-08-25	RG_T4-1_ZOOT_2021-08-25	RG_T4-2_ZOOT_2021-08-25
		Lab ID	007	008	009	010	011
		Wet Weight (g)	0.2224	0.1072	0.3792	0.8334	1.0624
		Dry Weight (g)	0.0450	0.0247	0.0580	0.0258	0.0187
		Moisture (%)	79.8	77.0	84.7	96.9	98.2
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.006	0.020	7.7	11	4.0	0.753	2.1
11B	0.113	0.377	9.8	11	4.1	1.5	3.7
23Na	0.781	2.6	6,413	7,589	3,605	486	1,144
24Mg	0.030	0.100	3,980	6,054	2,453	1,608	3,408
27Al	0.064	0.213	14,785	26,109	9,067	1,524	4,045
31P	32	107	12,679	11,102	11,526	5,945	9,391
39K	3.0	10	13,648	15,552	9,706	1,700	3,725
44Ca	31	103	18,925	29,439	10,980	14,220	29,959
49Ti	0.610	2.0	986	1,698	533	107	313
51V	0.077	0.257	20	25	7.9	1.9	3.5
52Cr	1.9	6.3	150	283	75	83	92
55Mn	0.011	0.037	249	230	93	34	69
57Fe	1.3	4.3	14,485	17,533	6,664	1,598	2,815
59Co	0.006	0.020	11	15	5.4	2.2	1.4
60Ni	0.070	0.233	249	380	105	89	94
63Cu	0.016	0.053	49	26	20	5.8	11
66Zn	0.371	1.2	138	75	72	44	76
75As	0.506	1.7	12	11	18	1.6	2.7
77Se	0.209	0.697	10	3.9	7.0	1.6	2.6
88Sr	0.001	0.003	50	83	32	40	84
95Mo	0.013	0.043	0.896	0.938	1.2	0.174	0.957
107Ag	0.001	0.003	0.311	0.082	0.092	0.017	0.029
111Cd	0.036	0.120	3.8	0.448	0.213	0.297	0.446
118Sn	0.030	0.100	1.4	1.7	1.3	2.3	5.2
121Sb	0.008	0.027	0.256	0.235	0.225	0.052	0.169
137Ba	0.001	0.003	722	542	421	86	217
202Hg	0.025	0.083	0.204	0.110	0.250	0.037	0.059
205Tl	0.001	0.003	0.333	0.232	0.099	0.011	0.030
208Pb	0.002	0.007	8.0	12	12	0.516	1.4
238U	0.001	0.003	0.375	0.437	0.208	0.200	0.452

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

			RG_T4-3_ZOOT_2021-08-25	RG_T4-4_ZOOT_2021-08-25	RG_T4-5_ZOOT_2021-08-25	RG_RIVER_ZOOT_2021-08-24	RG_TN-1_ZOOT_2021-08-24
		Client ID					
		Lab ID	012	013	014	015	016
		Wet Weight (g)	0.9677	1.0673	1.2033	1.1599	0.9599
		Dry Weight (g)	0.0251	0.0288	0.0263	0.0146	0.0032
		Moisture (%)	97.4	97.3	97.8	98.7	99.7
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.006	0.020	2.0	2.1	13	1.3	1.1
11B	0.113	0.377	3.4	3.3	17	2.5	1.9
23Na	0.781	2.6	761	849	790	1,059	978
24Mg	0.030	0.100	3,345	3,133	6,392	3,349	1,372
27Al	0.064	0.213	3,953	4,212	23,215	2,177	1,399
31P	32	107	11,586	10,378	9,825	9,737	1,429
39K	3.0	10	2,895	3,302	6,519	3,185	1,266
44Ca	31	103	30,386	28,626	52,048	28,650	10,247
49Ti	0.610	2.0	327	351	2,282	139	102
51V	0.077	0.257	4.0	4.4	21	1.9	1.9
52Cr	1.9	6.3	37	127	177	67	53
55Mn	0.011	0.037	77	74	397	43	29
57Fe	1.3	4.3	2,193	3,426	12,070	1,686	1,419
59Co	0.006	0.020	1.4	3.6	7.5	1.1	1.6
60Ni	0.070	0.233	39	154	184	79	60
63Cu	0.016	0.053	10	9.6	15	8.4	2.7
66Zn	0.371	1.2	90	83	105	67	46
75As	0.506	1.7	2.9	2.8	5.4	2.2	0.592
77Se	0.209	0.697	2.5	2.7	2.9	2.6	0.430
88Sr	0.001	0.003	85	79	132	84	34
95Mo	0.013	0.043	0.348	0.326	0.609	0.674	0.174
107Ag	0.001	0.003	0.029	0.029	0.073	0.023	0.012
111Cd	0.036	0.120	0.435	0.446	0.446	0.573	0.085
118Sn	0.030	0.100	2.9	4.0	4.3	6.5	5.1
121Sb	0.008	0.027	0.193	0.152	0.593	0.088	0.148
137Ba	0.001	0.003	239	205	583	148	68
202Hg	0.025	0.083	0.074	0.067	0.089	0.082	<0.025
205Tl	0.001	0.003	0.032	0.031	0.143	0.022	0.016
208Pb	0.002	0.007	1.5	1.5	7.5	0.747	2.6
238U	0.001	0.003	0.466	0.450	0.818	0.380	0.124

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

			RG_TN-2_ZOOT_2021-08-24	RG_TN-3_ZOOT_2021-08-24	RG_TN-4_ZOOT_2021-08-24	RG_TN-5_ZOOT_2021-08-24	RG_GC_KO-01_M_2021-08-24
		Client ID					
		Lab ID	017	018	019	020	021
		Wet Weight (g)	1.2401	0.9108	1.0497	1.1216	0.0477
		Dry Weight (g)	0.0228	0.0177	0.0201	0.0157	0.0140
		Moisture (%)	98.2	98.1	98.1	98.6	70.6
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.006	0.020	1.0	1.1	1.0	1.3	0.048
11B	0.113	0.377	2.2	3.1	1.7	2.6	0.396
23Na	0.781	2.6	1,149	1,080	1,112	825	1,205
24Mg	0.030	0.100	3,818	2,594	2,710	3,474	1,878
27Al	0.064	0.213	1,446	1,666	1,705	2,184	18
31P	32	107	11,116	7,866	9,222	10,939	16,047
39K	3.0	10	3,287	3,598	3,930	2,593	33,205
44Ca	31	103	28,095	19,671	22,519	33,423	1,066
49Ti	0.610	2.0	115	163	109	153	2.3
51V	0.077	0.257	1.8	2.0	1.7	2.3	0.148
52Cr	1.9	6.3	49	55	87	61	7.5
55Mn	0.011	0.037	33	33	41	43	1.7
57Fe	1.3	4.3	1,244	1,381	1,785	1,626	118
59Co	0.006	0.020	1.4	1.6	0.976	1.8	0.227
60Ni	0.070	0.233	52	59	92	60	9.4
63Cu	0.016	0.053	9.4	6.1	8.3	6.9	1.6
66Zn	0.371	1.2	92	68	70	76	18
75As	0.506	1.7	2.4	2.0	2.2	2.1	<0.506
77Se	0.209	0.697	3.2	2.2	2.7	2.4	2.6
88Sr	0.001	0.003	85	64	70	98	0.780
95Mo	0.013	0.043	0.435	0.305	0.740	0.370	0.063
107Ag	0.001	0.003	0.029	0.020	0.029	0.023	0.005
111Cd	0.036	0.120	0.488	0.340	0.340	0.403	0.062
118Sn	0.030	0.100	4.5	17	3.7	5.2	0.126
121Sb	0.008	0.027	0.140	0.268	0.071	0.078	0.065
137Ba	0.001	0.003	144	108	119	173	0.778
202Hg	0.025	0.083	0.082	0.045	0.082	0.074	0.376
205Tl	0.001	0.003	0.019	0.018	0.019	0.019	0.061
208Pb	0.002	0.007	1.3	1.9	0.719	0.860	0.057
238U	0.001	0.003	0.427	0.325	0.282	0.450	0.002

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

		Client ID	RG_SC_KO-01_M_2021-08-24	RG_SC_KO-02_M_2021-08-26	RG_SC_KO-03_M_2021-08-26	RG_SC_KO-04_M_2021-08-26	RG_SC_KO-05_M_2021-08-26
		Lab ID	022	023	024	025	026
		Wet Weight (g)	0.0432	0.0556	0.0624	0.0279	0.0184
		Dry Weight (g)	0.0130	0.0156	0.0177	0.0077	0.0051
		Moisture (%)	69.9	71.9	71.6	72.4	72.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.006	0.020	0.021	0.037	0.024	0.048	0.011
11B	0.113	0.377	0.479	<0.113	<0.113	0.192	<0.113
23Na	0.781	2.6	1,010	1,550	1,218	1,650	1,225
24Mg	0.030	0.100	1,654	1,790	1,606	1,247	1,125
27Al	0.064	0.213	2.0	1.7	31	5.2	7.1
31P	32	107	14,740	13,328	12,953	10,188	11,896
39K	3.0	10	31,170	24,607	24,347	23,305	21,444
44Ca	31	103	438	641	994	438	1,348
49Ti	0.610	2.0	2.0	1.5	2.0	2.3	1.8
51V	0.077	0.257	<0.077	<0.077	0.305	0.162	0.097
52Cr	1.9	6.3	2.2	4.3	38	5.1	7.8
55Mn	0.011	0.037	0.427	0.730	5.8	1.8	1.7
57Fe	1.3	4.3	27	47	462	97	110
59Co	0.006	0.020	0.058	0.091	0.368	0.180	0.207
60Ni	0.070	0.233	0.852	2.7	45	3.9	7.3
63Cu	0.016	0.053	1.4	1.9	2.6	1.6	1.2
66Zn	0.371	1.2	20	61	45	59	96
75As	0.506	1.7	<0.506	<0.506	<0.506	<0.506	<0.506
77Se	0.209	0.697	2.5	2.2	2.2	1.7	2.0
88Sr	0.001	0.003	0.276	0.432	0.787	0.507	1.3
95Mo	0.013	0.043	0.021	0.021	0.294	0.063	0.021
107Ag	0.001	0.003	<0.001	<0.001	<0.001	0.005	<0.001
111Cd	0.036	0.120	<0.036	<0.036	<0.036	0.062	0.062
118Sn	0.030	0.100	0.130	0.851	0.388	0.421	0.612
121Sb	0.008	0.027	<0.008	<0.008	0.016	0.132	<0.008
137Ba	0.001	0.003	0.243	0.146	1.2	0.437	1.6
202Hg	0.025	0.083	0.325	0.352	0.287	0.242	0.311
205Tl	0.001	0.003	0.055	0.060	0.050	0.066	0.045
208Pb	0.002	0.007	0.012	0.011	0.017	0.110	0.095
238U	0.001	0.003	0.001	<0.001	0.003	0.017	0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

			RG_SC_KO-06_M_2021-08-24	RG_ER_KO-01_M_2021-08-24	RG_ER_KO-02_M_2021-08-24	RG_ER_KO-03_M_2021-08-24	RG_ER_KO_04_M_2021-08-27
		Client ID					
		Lab ID	027	028	029	030	031
		Wet Weight (g)	0.0400	0.0349	0.7175	0.0636	1.0170
		Dry Weight (g)	0.0118	0.0110	0.1738	0.0176	0.2917
		Moisture (%)	70.5	68.5	75.8	72.3	71.3
Parameter	DL (ppm)	LOQ (ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
7Li	0.006	0.020	0.032	0.026	0.058	0.042	0.038
11B	0.113	0.377	0.192	<0.113	0.280	1.3	<0.113
23Na	0.781	2.6	1,610	910	2,241	1,892	1,681
24Mg	0.030	0.100	1,422	1,731	1,373	1,518	952
27Al	0.064	0.213	2.6	7.5	2.7	6.3	1.9
31P	32	107	12,799	14,325	13,042	11,895	10,411
39K	3.0	10	27,274	28,441	20,688	22,898	18,936
44Ca	31	103	1,461	1,143	542	1,258	600
49Ti	0.610	2.0	1.3	1.3	0.644	2.0	0.859
51V	0.077	0.257	0.081	<0.077	<0.077	0.134	<0.077
52Cr	1.9	6.3	4.0	9.1	<1.900	7.6	1.9
55Mn	0.011	0.037	0.659	1.5	0.435	1.0	0.320
57Fe	1.3	4.3	62	117	37	97	32
59Co	0.006	0.020	0.138	0.099	0.045	0.184	0.045
60Ni	0.070	0.233	3.2	10	0.412	6.7	1.2
63Cu	0.016	0.053	1.3	1.9	1.9	1.7	2.5
66Zn	0.371	1.2	40	15	14	18	17
75As	0.506	1.7	<0.506	<0.506	<0.506	<0.506	<0.506
77Se	0.209	0.697	1.6	1.9	1.9	2.0	1.8
88Sr	0.001	0.003	0.997	0.849	0.334	0.536	0.465
95Mo	0.013	0.043	0.021	0.084	0.017	0.042	0.034
107Ag	0.001	0.003	<0.001	<0.001	<0.001	<0.001	<0.001
111Cd	0.036	0.120	0.041	0.041	0.064	0.062	0.960
118Sn	0.030	0.100	0.258	0.166	0.204	0.125	0.172
121Sb	0.008	0.027	<0.008	<0.008	<0.008	<0.008	<0.008
137Ba	0.001	0.003	0.389	0.437	0.230	0.340	0.164
202Hg	0.025	0.083	0.193	0.200	0.222	0.235	0.402
205Tl	0.001	0.003	0.043	0.048	0.058	0.042	0.069
208Pb	0.002	0.007	0.027	0.007	0.007	0.010	0.049
238U	0.001	0.003	0.001	0.001	<0.001	0.001	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue Analysis Results

Client ID	RG_ER_KO_05_M_2021-08-27
Lab ID	032
Wet Weight (g)	1.3336
Dry Weight (g)	0.3287
Moisture (%)	75.4

Parameter	DL (ppm)	LOQ (ppm)	(ppm)
7Li	0.006	0.020	0.065
11B	0.113	0.377	0.151
23Na	0.781	2.6	2,296
24Mg	0.030	0.100	1,514
27Al	0.064	0.213	5.3
31P	32	107	11,086
39K	3.0	10	19,602
44Ca	31	103	897
49Ti	0.610	2.0	1.7
51V	0.077	0.257	<0.077
52Cr	1.9	6.3	4.5
55Mn	0.011	0.037	0.673
57Fe	1.3	4.3	94
59Co	0.006	0.020	0.125
60Ni	0.070	0.233	2.8
63Cu	0.016	0.053	5.7
66Zn	0.371	1.2	27
75As	0.506	1.7	<0.506
77Se	0.209	0.697	2.5
88Sr	0.001	0.003	0.658
95Mo	0.013	0.043	0.043
107Ag	0.001	0.003	<0.001
111Cd	0.036	0.120	<0.036
118Sn	0.030	0.100	0.396
121Sb	0.008	0.027	<0.008
137Ba	0.001	0.003	0.377
202Hg	0.025	0.083	0.356
205Tl	0.001	0.003	0.055
208Pb	0.002	0.007	0.053
238U	0.001	0.003	<0.001

Notes:

ppm = parts per million

DL = detection limit

LOQ = limit of quantitation

< = less than detection limit

g = grams

% = percent

Teck Coal Limited

Tissue QA/QC Relative Percent Difference Results

Client ID		RG_T4_INV_2021-08-24			RG_ER_KO-02_M_2021-08-24			RG_ER_KO_05_M_2021-08-27		
Lab ID		007			029			032		
Parameter	DL (ppm)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)	Sample (ppm)	Sample Duplicate (ppm)	RPD (%)
7Li	0.006	7.7	8.6	11	0.058	0.058	-	0.065	0.071	8.8
11B	0.113	9.8	10	2.0	0.280	0.253	-	0.151	<0.113	-
23Na	0.781	6,413	5,829	9.5	2,241	2,570	14	2,296	2,377	3.5
24Mg	0.030	3,980	3,931	1.2	1,373	1,278	7.2	1,514	1,445	4.7
27Al	0.064	14,785	16,101	8.5	2.7	2.8	3.6	5.3	4.6	14
31P	32	12,679	10,980	14	13,042	13,241	1.5	11,086	11,717	5.5
39K	3.0	13,648	13,834	1.4	20,688	22,261	7.3	19,602	22,226	13
44Ca	31	18,925	15,851	18	542	517	4.7	897	860	4.2
49Ti	0.610	986	1,252	24	0.644	1.1	-	1.7	1.9	-
51V	0.077	20	21	4.9	<0.077	<0.077	-	<0.077	<0.077	-
52Cr	1.9	150	136	9.8	<1.900	<1.900	-	4.5	4.2	-
55Mn	0.011	249	208	18	0.435	0.446	2.5	0.673	0.696	3.4
57Fe	1.3	14,485	12,035	19	37	41	10	94	101	7.2
59Co	0.006	11	7.9	33	0.045	0.041	-	0.125	0.142	13
60Ni	0.070	249	184	30	0.412	0.694	-	2.8	3.1	10
63Cu	0.016	49	45	8.5	1.9	2.3	19	5.7	6.0	5.1
66Zn	0.371	138	105	27	14	15	6.9	27	26	3.8
75As	0.506	12	11	8.7	<0.506	<0.506	-	<0.506	0.568	-
77Se	0.209	10	9.6	4.1	1.9	1.9	-	2.5	2.5	0.0
88Sr	0.001	50	42	17	0.334	0.315	5.9	0.658	0.640	2.8
95Mo	0.013	0.896	0.836	6.9	0.017	0.034	-	0.043	0.022	-
107Ag	0.001	0.311	0.286	8.4	<0.001	<0.001	-	<0.001	<0.001	-
111Cd	0.036	3.8	3.3	14	0.064	0.075	-	<0.036	<0.036	-
118Sn	0.030	1.4	1.1	24	0.204	0.218	-	0.396	0.382	3.6
121Sb	0.008	0.256	0.237	7.7	<0.008	<0.008	-	<0.008	<0.008	-
137Ba	0.001	722	634	13	0.230	0.230	0.0	0.377	0.377	0.0
202Hg	0.025	0.204	0.171	-	0.222	0.259	-	0.356	0.356	0.0
205Tl	0.001	0.333	0.334	0.3	0.058	0.064	9.8	0.055	0.055	0.0
208Pb	0.002	8.0	7.4	7.8	0.007	0.009	-	0.053	0.051	3.8
238U	0.001	0.375	0.362	3.5	<0.001	<0.001	-	<0.001	<0.001	-

Notes:

ppm = parts per million

RPD = relative percent difference

DL = detection limit

< = less than detection limit

% = percent

Data Quality Objectives:

Laboratory Duplicates - RPD ≤40% for all elements, except Ca and Sr, which are ≤60%

Minimum DQOs apply to individual samples at concentrations above 10x DL

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

			Sample Group ID	01			02	
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.006	1.21	1.4	115	6.0	1.4	112	2.0
11B	0.113	4.5	5.2	115	3.3	5.2	114	2.9
23Na	0.781	14,000	16,337	117	5.9	14,961	107	1.4
24Mg	0.030	910	1,101	121	6.4	1,004	110	5.3
27Al	0.064	197.2	218	111	3.1	200	101	5.7
31P	32	8,000	9,377	117	5.3	8,336	104	3.3
39K	3.0	15,500	19,111	123	6.6	16,552	107	7.1
44Ca	31	2,360	2,660	113	2.4	2,630	111	4.9
49Ti	0.610	12.24	13	106	12	16	129	11
51V	0.077	1.57	2.0	129	4.5	1.6	102	9.6
52Cr	1.9	1.87	2.3	121	3.2	2.3	121	17
55Mn	0.011	3.17	3.8	119	4.4	3.3	105	4.6
57Fe	1.3	343	411	120	4.5	376	110	2.4
59Co	0.006	0.25	0.326	130	4.8	0.296	118	6.3
60Ni	0.070	1.34	1.7	125	4.5	1.5	109	7.7
63Cu	0.016	15.7	20	125	7.2	18	114	5.7
66Zn	0.371	51.6	60	116	3.4	57	110	3.3
75As	0.506	6.87	7.7	111	3.5	7.2	105	2.5
77Se	0.209	3.45	3.8	109	7.0	3.5	103	3.0
88Sr	0.001	10.1	11	114	4.3	11	109	3.5
95Mo	0.013	0.29	0.321	111	4.5	0.300	104	6.1
107Ag	0.001	0.0252	0.029	113	12	0.029	115	19
111Cd	0.036	0.299	0.357	119	9.5	0.359	120	7.1
118Sn	0.030	0.061	0.057	94	13	0.062	101	12
121Sb	0.008	0.011	0.014	125	18	0.013	117	16
137Ba	0.001	8.6	8.7	102	7.3	9.5	111	2.1
202Hg	0.025	0.412	0.448	109	6.3	0.446	108	3.1
205Tl	0.001	0.0013	-	-	-	-	-	-
208Pb	0.002	0.404	0.510	126	12	0.400	99	15
238U	0.001	0.05	0.061	121	2.3	0.054	108	4.0

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited

Tissue QA/QC Accuracy and Precision Results

Sample Group ID			03		
Parameter	DL (ppm)	Certified Conc. (ppm)	Mean Estimated Conc. (ppm)	Accuracy (%)	Precision RSD (%)
7Li	0.006	1.21	1.3	107	5.9
11B	0.113	4.5	4.9	109	3.0
23Na	0.781	14,000	15,414	110	2.2
24Mg	0.030	910	1,076	118	8.6
27Al	0.064	197.2	206	104	5.8
31P	32	8,000	8,926	112	2.7
39K	3.0	15,500	17,390	112	2.4
44Ca	31	2,360	2,540	108	2.5
49Ti	0.610	12.24	14	115	7.4
51V	0.077	1.57	1.6	104	8.2
52Cr	1.9	1.87	2.2	115	11
55Mn	0.011	3.17	3.6	113	3.0
57Fe	1.3	343	387	113	3.2
59Co	0.006	0.25	0.267	107	5.5
60Ni	0.070	1.34	1.5	113	3.6
63Cu	0.016	15.7	17	109	2.4
66Zn	0.371	51.6	57	110	1.8
75As	0.506	6.87	7.3	107	2.8
77Se	0.209	3.45	3.6	106	6.2
88Sr	0.001	10.1	11	112	1.9
95Mo	0.013	0.29	0.313	108	6.0
107Ag	0.001	0.0252	0.028	112	9.8
111Cd	0.036	0.299	0.327	109	8.8
118Sn	0.030	0.061	0.061	100	13
121Sb	0.008	0.011	0.012	110	15
137Ba	0.001	8.6	9.7	113	4.1
202Hg	0.025	0.412	0.422	102	4.2
205Tl	0.001	0.0013	-	-	-
208Pb	0.002	0.404	0.446	110	11
238U	0.001	0.05	0.051	102	5.3

Notes:

ppm = parts per million; % = percent; DL = detection limit; RSD = relative standard deviation

Data Quality Objectives:

Accuracy: DQO of 60 - 140% of the certified values for B, Ti, Ag, Sn, Sb, and Ba.

Accuracy: DQO of 90 - 110% of the certified values for Se.

Accuracy: DQO of 70 - 130% of the certified values for all other elements provided.

Precision: DQO of ≤20% for all elements.

DORM-4 used for all parameters except B, Ti, Sb, Ba, and Al where NIST-1566b was used.

Tl certified concentration from NIST-2976.

Accuracy and precision for Tl are not reported as the certified concentration is too close to the reportable detection limit.

Teck Coal Limited
Sample Group Information

Sample Group ID	Client ID	Lab ID	Date of Analysis
01	RG_T4_INV_2021-08-24	007	15 Sep 2021
	RG_TN_INV_2021-08-26	008	
	RG_SAND_INV_2021-08-25	009	
	RG_ER_KO-02_M_2021-08-24	029	
	RG_ER_KO_04_M_2021-08-27	031	
02	RG_T4-1_ZOOT_2021-08-25	010	15 Sep 2021
	RG_T4-2_ZOOT_2021-08-25	011	
	RG_T4-3_ZOOT_2021-08-25	012	
	RG_T4-4_ZOOT_2021-08-25	013	
	RG_T4-5_ZOOT_2021-08-25	014	
	RG_RIVER _ZOOT_2021-08-24	015	
	RG_TN-1 _ZOOT_2021-08-24	016	
	RG_TN-2_ZOOT_2021-08-24	017	
	RG_TN-3_ZOOT_2021-08-24	018	
	RG_TN-4_ZOOT_2021-08-24	019	
	RG_TN-5_ZOOT_2021-08-24	020	
	RG_ER_KO_05_M_2021-08-27	032	
03	RG_GC_KO-01_M_2021-08-24	021	15 Sep 2021
	RG_SC_KO-01_M_2021-08-24	022	
	RG_SC_KO-02_M_2021-08-26	023	
	RG_SC_KO-03_M_2021-08-26	024	
	RG_SC_KO-04_M_2021-08-26	025	
	RG_SC_KO-05_M_2021-08-26	026	
	RG_SC_KO-06_M_2021-08-24	027	
	RG_ER_KO-01_M_2021-08-24	028	
	RG_ER_KO-03_M_2021-08-24	030	

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17 (PO 750554)			
Company Name:	Teck	Company Name:	Minnow Environmental
Contact Name:	Allie Ferguson	Contact Name:	Heidi Currier
Address:	PO Box 1777	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250.425.8048	Phone:	
Email:	allie.ferguson@teck.com	Email:	hcurrier@minnow.ca

Sample Analysis Requested				
TrichID		Sample Identification:	Sample Type: Species	Sample type
007	1	RG_T4_INV_2021-08-24 ✓	Composite benthic invertebrate	Benthic invertebrate tissue
008	2	RG_TN_INV_2021-08-26 *	Composite benthic invertebrate	Benthic invertebrate tissue
009	3	RG_SAND_INV_2021-08-25 ✓	Composite benthic invertebrate	Benthic invertebrate tissue
010	4	RG_T4-1_ZOOT_2021-08-25 ✓	Composite zooplankton	Zooplankton tissue
011	5	RG_T4-2_ZOOT_2021-08-25 ✓	Composite zooplankton	Zooplankton tissue
012	6	RG_T4-3_ZOOT_2021-08-25 ✓	Composite zooplankton	Zooplankton tissue
013	7	RG_T4-4_ZOOT_2021-08-25 ✓	Composite zooplankton	Zooplankton tissue
014	8	RG_T4-5_ZOOT_2021-08-25 ✓	Composite zooplankton	Zooplankton tissue
015	9	RG_RIVER_ZOOT_2021-08-24 ✓	Composite zooplankton	Zooplankton tissue
016	10	RG_TN-1_ZOOT_2021-08-24 *	Composite zooplankton	Zooplankton tissue
017	11	RG_TN-2_ZOOT_2021-08-24 ✓	Composite zooplankton	Zooplankton tissue
018	12	RG_TN-3_ZOOT_2021-08-24 ✓	Composite zooplankton	Zooplankton tissue
019	13	RG_TN-4_ZOOT_2021-08-24 ✓	Composite zooplankton	Zooplankton tissue
020	14	RG_TN-5_ZOOT_2021-08-24 *	Composite zooplankton	Zooplankton tissue
021	15	RG_GC_KO-01_M_2021-08-24 *	Kokanee	Kokanee muscle tissue
022	16	RG_SC_KO-01_M_2021-08-24 ✓	Kokanee	Kokanee muscle tissue
023	17	RG_SC_KO-02_M_2021-08-26 ✓	Kokanee	Kokanee muscle tissue
024	18	RG_SC_KO-03_M_2021-08-26 *	Kokanee	Kokanee muscle tissue
025	19	RG_SC_KO-04_M_2021-08-26 ✓	Kokanee	Kokanee muscle tissue
026	20	RG_SC_KO-05_M_2021-08-26 ✓	Kokanee	Kokanee muscle tissue

Sample(s) Released By: Maddy Stokes		Sample(s) Received By:	Elliot Hood
Signature: MS		Signature:	Project # 2021-248
Date Sent:	3-Sep-21	Date Received:	03 Sep 2021
Sample(s) Returned to Client By:		Shipping Conditions:	
		Shipping Container:	
Signature:		Date Sent:	

* Sample ID differs from COC, confirmed correct ID with client

EPH 07 Sep 2021
client confirmed CoC is correct

TrichAnalytics Inc. 207-1753 Sean Heights, Saanichton, BC, V8M 0B3 Ph: (250) 532-1084		Chain of Custody (COC) for LA-ICP-MS Analysis	
Invoicing		Reporting (if different from Invoicing)	
Project Number: 21-17 (PO 750554)			
Company Name:	Teck	Company Name:	Minnow Environmental
Contact Name:	Allie Ferguson	Contact Name:	Heidi Currier
Address:	PO Box 1777	Address:	2 Lamb Street
City, Province:	Sparwood, BC	City, Province:	Georgetown, ON
Postal Code:	V0B 2G0	Postal Code:	L7G 2G7
Phone:	250.425.8048	Phone:	
Email:	allie.ferguson@teck.com	Email:	hcurrier@minnow.ca

Sample Analysis Requested

	Sample Identification:	Sample Type: Species	Sample type
027	1 RG_SC_KO-06_M_2021-08-24 ✓	Kokanee	Kokanee muscle tissue
028	2 RG_ER_KO-01_M_2021-08-24 ✓	Kokanee	Kokanee muscle tissue
029	3 RG_ER_KO-02_M_2021-08-24 ✓	Kokanee	Kokanee muscle tissue
030	4 RG_ER_KO-03_M_2021-08-24 ✓	Kokanee	Kokanee muscle tissue
031	5 RG_ER_KO_04_M_2021-08-27 ✓	Kokanee	Kokanee muscle tissue
032	6 RG_ER_KO_05_M_2021-08-27 ✓	Kokanee	Kokanee muscle tissue
	7		
	8		
	9		
	10		
	11		
	12		
	13		
	14		
	15		
	16		
	17		
	18		
	19		
	20		

Sample(s) Released By: Maddy Stokes	Sample(s) Received By: Elliot Howell
Signature: MS	Signature: Project 2021-248
Date Sent: 3-Sep-21	Date Received: 03 Sep 2021
Sample(s) Returned to Client By:	Shipping Conditions:
	Shipping Container:
Signature:	Date Sent:

✓ Sample ID differs from COC, confirmed correct ID with client

EPH 07 Sep 2021

COM-011.01

Client confirmed coc is correct

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_SC_RSC-01	RG_SC_RSC-01-OT_20210419	19-Apr-21	RSC	10.6	9.0	-	Otolith	Section	CK	3	F	CC	3	FG	**3**		0
RG_SC_RSC-02	RG_SC_RSC-02-OT_20210419	19-Apr-21	RSC	10.6	8.8	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-03	RG_SC_RSC-03-OT_20210419	19-Apr-21	RSC	11.2	11.7	-	Otolith	Section	CK	4	F				**4**		
RG_SC_RSC-04	RG_SC_RSC-04-OT_20210419	19-Apr-21	RSC	11.2	10.9	-	Otolith	Section	CK	4	F				**4**		
RG_SC_RSC-05	RG_SC_RSC-05-OT_20210419	19-Apr-21	RSC	11.4	11.4	-	Otolith	Section	CK	4	F	CC	4	F	**4**		0
RG_SC_RSC-06	RG_SC_RSC-06-OT_20210419	19-Apr-21	RSC	11.1	10.3	-	Otolith	Section	CK	2	F				**2**		
RG_SC_RSC-07	RG_SC_RSC-07-OT_20210419	19-Apr-21	RSC	11.5	11.6	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-08	RG_SC_RSC-08-OT_20210419	19-Apr-21	RSC	11.4	10.7	-	Otolith	Section	CK	2	F				**2**		
RG_SC_RSC-09	RG_SC_RSC-09-OT_20210419	19-Apr-21	RSC	10.1	7.7	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_SC_RSC-10	RG_SC_RSC-10-OT_20210419	19-Apr-21	RSC	10.1	7.7	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-11	RG_SC_RSC-11-OT_20210419	19-Apr-21	RSC	11.1	10.7	-	Otolith	Section	CK	4	FP				**4**		
RG_SC_RSC-12	RG_SC_RSC-12-OT_20210419	19-Apr-21	RSC	9.9	7.9	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-13	RG_SC_RSC-13-OT_20210420	20-Apr-21	RSC	12.5	16.6	-	Otolith	Section	CK	4	F	CC	4	F	**4**		0
RG_SC_RSC-14	RG_SC_RSC-14-OT_20210420	20-Apr-21	RSC	12.4	14.7	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-15	RG_SC_RSC-15-OT_20210420	20-Apr-21	RSC	12.1	15.5	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-16	RG_SC_RSC-16-OT_20210420	20-Apr-21	RSC	11.2	12.5	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-17	RG_SC_RSC-17-OT_20210420	20-Apr-21	RSC	12.8	20.0	-	Otolith	Section	CK	4	F	CC	4	F	**4**		0
RG_SC_RSC-18	RG_SC_RSC-18-OT_20210420	20-Apr-21	RSC	11.9	13.0	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-19	RG_SC_RSC-19-OT_20210420	20-Apr-21	RSC	12.2	16.0	-	Otolith	Section	CK	4	F				**4**		
RG_SC_RSC-20	RG_SC_RSC-20-OT_20210420	20-Apr-21	RSC	11.2	11.7	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-21	RG_SC_RSC-21-OT_20210420	20-Apr-21	RSC	11.8	13.5	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_SC_RSC-22	RG_SC_RSC-22-OT_20210420	20-Apr-21	RSC	10.8	10.9	-	Otolith	Section	CK	3	FP				**3**		
RG_SC_RSC-23	RG_SC_RSC-23-OT_20210420	20-Apr-21	RSC	11.9	15.5	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-24	RG_SC_RSC-24-OT_20210420	20-Apr-21	RSC	12.1	14.5	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-25	RG_SC_RSC-25-OT_20210420	20-Apr-21	RSC	11.8	11.8	-	Otolith	Section	CK	3	F	CC	3	FG	**3**		0
RG_SC_RSC-26	RG_SC_RSC-26-OT_20210420	20-Apr-21	RSC	10.7	9.5	-	Otolith	Section	CK	3	F				**3**		
RG_SC_RSC-27	RG_SC_RSC-27-OT_20210420	20-Apr-21	RSC	11.6	12.8	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-28	RG_SC_RSC-28-OT_20210420	20-Apr-21	RSC	11	10.6	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-29	RG_SC_RSC-29-OT_20210420	20-Apr-21	RSC	13.5	20.3	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-30	RG_SC_RSC-30-OT_20210420	20-Apr-21	RSC	11.5	12.3	-	Otolith	Section	JL	3	F	CC	3	FG	**3**		0
RG_SC_RSC-31	RG_SC_RSC-31-OT_20210420	20-Apr-21	RSC	10.5	10.5	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-32	RG_SC_RSC-32-OT_20210420	20-Apr-21	RSC	12.7	17.5	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-33	RG_SC_RSC-33-OT_20210420	20-Apr-21	RSC	10.8	10.6	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-34	RG_SC_RSC-34-OT_20210420	20-Apr-21	RSC	10.3	8.2	-	Otolith	Section	JL	2	FG	CC	2	F	**2**		0
RG_SC_RSC-35	RG_SC_RSC-35-OT_20210420	20-Apr-21	RSC	10.1	8.7	-	Otolith	Section	JL	2	F				**2**		
RG_SC_RSC-36	RG_SC_RSC-36-OT_20210420	20-Apr-21	RSC	12.6	14.8	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-37	RG_SC_RSC-37-OT_20210420	20-Apr-21	RSC	13.3	21.2	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-38	RG_SC_RSC-38-OT_20210420	20-Apr-21	RSC	11.1	11.7	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-39	RG_SC_RSC-39-OT_20210420	20-Apr-21	RSC	11.7	14.7	-	Otolith	Section	JL	3	F	CC	3	F	**3**		0
RG_SC_RSC-40	RG_SC_RSC-40-OT_20210420	20-Apr-21	RSC	12.0	13.3	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-41	RG_SC_RSC-41-OT_20210420	20-Apr-21	RSC	12.1	16.4	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-42	RG_SC_RSC-42-OT_20210420	20-Apr-21	RSC	11.3	12.4	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-43	RG_SC_RSC-43-OT_20210420	20-Apr-21	RSC	11.4	11.9	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-44	RG_SC_RSC-44-OT_20210420	20-Apr-21	RSC	11.7	12.6	-	Otolith	Section	JL	3	F	CC	3	FG	**3**		0
RG_SC_RSC-45	RG_SC_RSC-45-OT_20210420	20-Apr-21	RSC	11.4	11.7	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-46	RG_SC_RSC-46-OT_20210420	20-Apr-21	RSC	10.8	11.5	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-47	RG_SC_RSC-47-OT_20210420	20-Apr-21	RSC	11.3	11.4	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-48	RG_SC_RSC-48-OT_20210420	20-Apr-21	RSC	11.1	9.4	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-49	RG_SC_RSC-49-OT_20210420	20-Apr-21	RSC	11.6	10.9	-	Otolith	Section	JL	3	F	CC	3	FG	**3**		0
RG_SC_RSC-50	RG_SC_RSC-50-OT_20210420	20-Apr-21	RSC	11.6	13.6	-	Otolith	Section	JL	4	F				**4**		
RG_SC_RSC-51	RG_SC_RSC-51-OT_20210420	20-Apr-21	RSC	11.7	12.3	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-52	RG_SC_RSC-52-OT_20210420	20-Apr-21	RSC	10.4	9.4	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-53	RG_SC_RSC-53-OT_20210420	20-Apr-21	RSC	10.3	8.8	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-54	RG_SC_RSC-54-OT_20210420	20-Apr-21	RSC	11.0	9.5	-	Otolith	Section	JL	3	F	CC	3	FG	**3**		0

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_SC_RSC-55	RG_SC_RSC-55-OT_20210421	21-Apr-21	RSC	11.6	13.5	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-56	RG_SC_RSC-56-OT_20210421	21-Apr-21	RSC	11.9	14.6	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-57	RG_SC_RSC-57-OT_20210421	21-Apr-21	RSC	11.5	12.1	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-58	RG_SC_RSC-58-OT_20210421	21-Apr-21	RSC	12.1	14.0	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-59	RG_SC_RSC-59-OT_20210421	21-Apr-21	RSC	12.2	14.4	-	Otolith	Section	JL	4	F	CC	4	F	**4**		0
RG_SC_RSC-60	RG_SC_RSC-60-OT_20210421	21-Apr-21	RSC	11.2	11.6	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-61	RG_SC_RSC-61-OT_20210421	21-Apr-21	RSC	10.0	9.0	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-62	RG_SC_RSC-62-OT_20210421	21-Apr-21	RSC	11.0	10.0	-	Otolith	Section	JL	3	FP				**3**		
RG_SC_RSC-63	RG_SC_RSC-63-OT_20210421	21-Apr-21	RSC	12.2	15.2	-	Otolith	Section	JL	4	FG				**4**		
RG_SC_RSC-64	RG_SC_RSC-64-OT_20210421	21-Apr-21	RSC	12.5	15.6	-	Otolith	Section	JL	4	F	CC	4	F	**4**		0
RG_SC_RSC-65	RG_SC_RSC-65-OT_20210421	21-Apr-21	RSC	10.9	10.5	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-66	RG_SC_RSC-66-OT_20210421	21-Apr-21	RSC	12.0	13.6	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-67	RG_SC_RSC-67-OT_20210421	21-Apr-21	RSC	11.4	12.6	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-68	RG_SC_RSC-68-OT_20210421	21-Apr-21	RSC	11.3	11.0	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-69	RG_SC_RSC-69-OT_20210421	21-Apr-21	RSC	10.6	11.4	-	Otolith	Section	JL	3	F	CC	3	F	**3**		0
RG_SC_RSC-70	RG_SC_RSC-70-OT_20210422	22-Apr-21	RSC	10.5	9.7	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-71	RG_SC_RSC-71-OT_20210422	22-Apr-21	RSC	11.1	11.1	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-72	RG_SC_RSC-72-OT_20210422	22-Apr-21	RSC	12.1	13.2	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-73	RG_SC_RSC-73-OT_20210422	22-Apr-21	RSC	11.4	10.7	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-74	RG_SC_RSC-74-OT_20210422	22-Apr-21	RSC	10.5	9.1	-	Otolith	Section	JL	2	F	CC	2	F	**2**		0
RG_SC_RSC-75	RG_SC_RSC-75-OT_20210422	22-Apr-21	RSC	10.7	10.8	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-76	RG_SC_RSC-76-OT_20210422	22-Apr-21	RSC	12.0	13.0	-	Otolith	Section	JL	3	FG				**3**		
RG_SC_RSC-77	RG_SC_RSC-77-OT_20210422	22-Apr-21	RSC	11.1	9.6	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-78	RG_SC_RSC-78-OT_20210422	22-Apr-21	RSC	11.6	12.5	-	Otolith	Section	JL	3	F				**3**		
RG_SC_RSC-79	RG_SC_RSC-79-OT_20210422	22-Apr-21	RSC	11.2	10.4	-	Otolith	Section	JL	3	F	CC	3	F	**3**		0
RG_SC_RSC-80	RG_SC_RSC-80-OT_20210422	22-Apr-21	RSC	11.6	13.5	-	Otolith	Section	JL	3	F				**3**		
RG_SC_PCC-01	RG_SC_PCC-01-OT_20210419	19-Apr-21	PCC	24.6	10.3	-	Otolith	Section	NC	7	F	CC	7	F	**7**		0
RG_SC_PCC-02	RG_SC_PCC-02-OT_20210419	19-Apr-21	PCC	24.8	11.3	-	Otolith	Section	NC	7	FP				**7**		
RG_SC_PCC-03	RG_SC_PCC-03-OT_20210419	19-Apr-21	PCC	19.2	6.0	-	Otolith	Section	NC	5	F				**5**		
RG_SC_PCC-04	RG_SC_PCC-04-OT_20210419	19-Apr-21	PCC	26.2	13.4	-	Otolith	Section	NC	8	F				**8**		
RG_SC_PCC-05	RG_SC_PCC-05-OT_20210419	19-Apr-21	PCC	21.1	6.8	-	Otolith	Section	NC	5	F	CC	5	F	**5**		0
RG_SC_PCC-06	RG_SC_PCC-06-OT_20210419	19-Apr-21	PCC	24.2	10.8	-	Otolith	Section	NC	6	F				**6**		
RG_SC_PCC-07	RG_SC_PCC-07-OT_20210419	19-Apr-21	PCC	20.2	4.0	-	Scales	Whole	NC	6	F	CC	6	F	**6**	No otolith in envelope	0
RG_SC_PCC-08	RG_SC_PCC-08-OT_20210419	19-Apr-21	PCC	23.0	11.0	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-09	RG_SC_PCC-09-OT_20210419	19-Apr-21	PCC	19.6	5.5	-	Otolith	Section	NC	4	F	CC	4	F	**4**		0
RG_SC_PCC-10	RG_SC_PCC-10-OT_20210419	19-Apr-21	PCC	18.1	4.8	-	Scales	Whole	NC	5	FP				**5**	No otolith in envelope	
RG_SC_PCC-11	RG_SC_PCC-11-OT_20210419	19-Apr-21	PCC	21.1	5.8	-	Otolith	Section	NC	4	F				**4**		
RG_SC_PCC-12	RG_SC_PCC-12-OT_20210419	19-Apr-21	PCC	18.4	4.5	-	Otolith	Section	NC	4	F				**4**		
RG_SC_PCC-13	RG_SC_PCC-13-OT_20210419	19-Apr-21	PCC	19.1	4.9	-	Otolith	Section	NC	6	FP	CC	5	FP	**6**		1
RG_SC_PCC-14	RG_SC_PCC-14-OT_20210419	19-Apr-21	PCC	18.5	4.1	-	Otolith	Section	NC	5	F				**6**		
RG_SC_PCC-15	RG_SC_PCC-15-OT_20210420	20-Apr-21	PCC	23.9	10.7	-	Otolith	Section	NC	6	F				**6**		
RG_SC_PCC-16	RG_SC_PCC-16-OT_20210420	20-Apr-21	PCC	25.8	13.5	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-17	RG_SC_PCC-17-OT_20210420	20-Apr-21	PCC	30.1	23.0	-	Otolith	Section	NC	9	F	CC	9	FP	**9**		0
RG_SC_PCC-18	RG_SC_PCC-18-OT_20210420	20-Apr-21	PCC	28.9	16.0	-	Otolith	Section	NC	8	FP				**8**		
RG_SC_PCC-19	RG_SC_PCC-19-OT_20210420	20-Apr-21	PCC	23.3	10.8	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-20	RG_SC_PCC-20-OT_20210420	20-Apr-21	PCC	28.8	18.5	-	Otolith	Section	NC	9	F				**9**		
RG_SC_PCC-21	RG_SC_PCC-21-OT_20210420	20-Apr-21	PCC	23.8	9.8	-	Otolith	Section	NC	6	F	CC	6	F	**6**		0
RG_SC_PCC-22	RG_SC_PCC-22-OT_20210420	20-Apr-21	PCC	24.1	11.7	-	Otolith	Section	NC	8	FG				**8**		
RG_SC_PCC-23	RG_SC_PCC-23-OT_20210420	20-Apr-21	PCC	24.4	10.8	-	Otolith	Section	NC	8	F				**8**		
RG_SC_PCC-24	RG_SC_PCC-24-OT_20210421	21-Apr-21	PCC	24.1	11.0	-	Otolith	Section	NC	5	F				**5**		
RG_SC_PCC-25	RG_SC_PCC-25-OT_20210421	21-Apr-21	PCC	25.0	11.8	-	Otolith	Section	NC	6	F	CC	6	F	**6**		0
RG_SC_PCC-26	RG_SC_PCC-26-OT_20210421	21-Apr-21	PCC	27.3	17.7	-	Otolith	Section	NC	8	F				**8**		
RG_SC_PCC-27	RG_SC_PCC-27-OT_20210421	21-Apr-21	PCC	24.0	10.9	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-28	RG_SC_PCC-28-OT_20210421	21-Apr-21	PCC	23.8	11.6	-	Otolith	Section	NC	7	FG				**7**		

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_SC_PCC-29	RG_SC_PCC-29-OT_20210421	21-Apr-21	PCC	25.9	14.7	-	Otolith	Section	NC	8	F	CC	8	F	**8**		0
RG_SC_PCC-30	RG_SC_PCC-30-OT_20210421	21-Apr-21	PCC	24.9	11.6	-	Otolith	Section	NC	8	FG				**8**		
RG_SC_PCC-31	RG_SC_PCC-31-OT_20210421	21-Apr-21	PCC	23.2	9.4	-	Otolith	Section	NC	8	FG				**8**		
RG_SC_PCC-32	RG_SC_PCC-32-OT_20210421	21-Apr-21	PCC	29.2	20.5	-	Otolith	Section	NC	12	FG				**12**		
RG_SC_PCC-33	RG_SC_PCC-33-OT_20210421	21-Apr-21	PCC	21.2	7.2	-	Otolith	Section	NC	7	F	CC	7	F	**7**		0
RG_SC_PCC-34	RG_SC_PCC-34-OT_20210421	21-Apr-21	PCC	24.1	11.7	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-35	RG_SC_PCC-35-OT_20210421	21-Apr-21	PCC	25.0	11.7	-	Otolith	Section	NC	7	FG				**7**		
RG_SC_PCC-36	RG_SC_PCC-36-OT_20210421	21-Apr-21	PCC	25.2	13.6	-	Otolith	Section	NC	9	F				**9**		
RG_SC_PCC-37	RG_SC_PCC-37-OT_20210421	21-Apr-21	PCC	23.4	8.8	-	Otolith	Section	NC	7	FG	CC	7	F	**7**		0
RG_SC_PCC-38	RG_SC_PCC-38-OT_20210421	21-Apr-21	PCC	23.9	10.3	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-39	RG_SC_PCC-39-OT_20210421	21-Apr-21	PCC	24.1	10.0	-	Otolith	Section	NC	7	F				**7**		
RG_SC_PCC-40	RG_SC_PCC-40-OT_20210421	21-Apr-21	PCC	23.7	10.3	-	Otolith	Section	NC	7	F				**7**		
RG_ER_RSC-01	RG_ER_RSC-01-OT_20210420	20-Apr-21	RSC	10.2	7.6	-	Otolith	Section	CK	4	F	CC	4	F	**4**		0
RG_ER_RSC-02	RG_ER_RSC-02-OT_20210420	20-Apr-21	RSC	12.1	14.0	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-03	RG_ER_RSC-03-OT_20210420	20-Apr-21	RSC	12.3	13.3	-	Otolith	Section	CK	5	F				**5**		
RG_ER_RSC-04	RG_ER_RSC-04-OT_20210420	20-Apr-21	RSC	10.6	10.2	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-05	RG_ER_RSC-05-OT_20210420	20-Apr-21	RSC	10.0	7.3	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-06	RG_ER_RSC-06-OT_20210420	20-Apr-21	RSC	11.2	10.2	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-07	RG_ER_RSC-07-OT_20210420	20-Apr-21	RSC	11.0	10.5	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-08	RG_ER_RSC-08-OT_20210420	20-Apr-21	RSC	10.6	8.9	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-09	RG_ER_RSC-09-OT_20210420	20-Apr-21	RSC	10.1	6.6	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-10	RG_ER_RSC-10-OT_20210420	20-Apr-21	RSC	11.4	11.8	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-11	RG_ER_RSC-11-OT_20210420	20-Apr-21	RSC	9.2	6.6	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-12	RG_ER_RSC-12-OT_20210420	20-Apr-21	RSC	9.3	6.6	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-13	RG_ER_RSC-13-OT_20210420	20-Apr-21	RSC	9.8	8.1	-	Otolith	Section	CK	4	F	CC	4	F	**4**		0
RG_ER_RSC-14	RG_ER_RSC-14-OT_20210420	20-Apr-21	RSC	10.8	10.6	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-15	RG_ER_RSC-15-OT_20210420	20-Apr-21	RSC	9.5	7.6	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-16	RG_ER_RSC-16-OT_20210420	20-Apr-21	RSC	9.9	7.4	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-17	RG_ER_RSC-17-OT_20210420	20-Apr-21	RSC	9.4	6.5	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-18	RG_ER_RSC-18-OT_20210420	20-Apr-21	RSC	9.7	7.5	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-19	RG_ER_RSC-19-OT_20210420	20-Apr-21	RSC	9.4	6.5	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-20	RG_ER_RSC-20-OT_20210421	21-Apr-21	RSC	12.0	14.7	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-21	RG_ER_RSC-21-OT_20210421	21-Apr-21	RSC	12.0	15.8	-	Otolith	Section	CK	4	F	CC	4	FG	**4**		0
RG_ER_RSC-22	RG_ER_RSC-22-OT_20210421	21-Apr-21	RSC	13.9	17.4	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-23	RG_ER_RSC-23-OT_20210421	21-Apr-21	RSC	11.6	11.6	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-24	RG_ER_RSC-24-OT_20210421	21-Apr-21	RSC	11.1	10.2	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-25	RG_ER_RSC-25-OT_20210421	21-Apr-21	RSC	11.6	11.7	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-26	RG_ER_RSC-26-OT_20210421	21-Apr-21	RSC	11.3	11.7	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-27	RG_ER_RSC-27-OT_20210421	21-Apr-21	RSC	12.3	15.9	-	Otolith	Section	CK	4	FG				**4**		
RG_ER_RSC-28	RG_ER_RSC-28-OT_20210421	21-Apr-21	RSC	11.5	11.5	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-29	RG_ER_RSC-29-OT_20210421	21-Apr-21	RSC	11.0	12.2	-	Otolith	Section	CK	3	FG	CC	3	F	**3**		0
RG_ER_RSC-30	RG_ER_RSC-30-OT_20210421	21-Apr-21	RSC	12.1	15.1	-	Otolith	Section	CK	4	FG				**4**		
RG_ER_RSC-31	RG_ER_RSC-31-OT_20210421	21-Apr-21	RSC	10.4	9.5	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-32	RG_ER_RSC-32-OT_20210421	21-Apr-21	RSC	11.6	13.7	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-33	RG_ER_RSC-33-OT_20210421	21-Apr-21	RSC	12.0	12.2	-	Otolith	Section	CK	3	F	CC	4	F	**3**		1
RG_ER_RSC-34	RG_ER_RSC-34-OT_20210421	21-Apr-21	RSC	10.1	8.7	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-35	RG_ER_RSC-35-OT_20210421	21-Apr-21	RSC	11.2	11.7	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-36	RG_ER_RSC-36-OT_20210421	21-Apr-21	RSC	12.0	15.2	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-37	RG_ER_RSC-37-OT_20210421	21-Apr-21	RSC	10.8	9.8	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-38	RG_ER_RSC-38-OT_20210421	21-Apr-21	RSC	12.1	12.7	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-39	RG_ER_RSC-39-OT_20210421	21-Apr-21	RSC	11.2	11.9	-	Otolith	Section	CK	4	FG				**4**		
RG_ER_RSC-40	RG_ER_RSC-40-OT_20210421	21-Apr-21	RSC	12.0	13.7	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-41	RG_ER_RSC-41-OT_20210421	21-Apr-21	RSC	10.8	10.4	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-42	RG_ER_RSC-42-OT_20210421	21-Apr-21	RSC	12.0	13.7	-	Otolith	Section	CK	3	FG				**3**		

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_ER_RSC-43	RG_ER_RSC-43-OT_20210421	21-Apr-21	RSC	11.2	11.1	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-44	RG_ER_RSC-44-OT_20210421	21-Apr-21	RSC	10.2	8.4	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-45	RG_ER_RSC-45-OT_20210421	21-Apr-21	RSC	11.2	11.4	-	Otolith	Section	CK	4	FG	CC	4	FG	**4**		0
RG_ER_RSC-46	RG_ER_RSC-46-OT_20210421	21-Apr-21	RSC	10.7	9.5	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-47	RG_ER_RSC-47-OT_20210421	21-Apr-21	RSC	10.3	9.5	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-48	RG_ER_RSC-48-OT_20210421	21-Apr-21	RSC	10.2	8.0	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-49	RG_ER_RSC-49-OT_20210421	21-Apr-21	RSC	11.7	13.6	-	Otolith	Section	CK	3	FG	CC	3	FG	**3**		0
RG_ER_RSC-50	RG_ER_RSC-50-OT_20210421	21-Apr-21	RSC	10.8	9.0	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-51	RG_ER_RSC-51-OT_20210421	21-Apr-21	RSC	11.5	11.7	-	Otolith	Section	CK	4	F				**4**		
RG_ER_RSC-52	RG_ER_RSC-52-OT_20210421	21-Apr-21	RSC	11.9	10.4	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-53	RG_ER_RSC-53-OT_20210421	21-Apr-21	RSC	10.2	9.5	-	Otolith	Section	CK	3	FP	CC	3	F	**3**		0
RG_ER_RSC-54	RG_ER_RSC-54-OT_20210421	21-Apr-21	RSC	11.4	12.7	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-55	RG_ER_RSC-55-OT_20210421	21-Apr-21	RSC	11.0	11.9	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-56	RG_ER_RSC-56-OT_20210421	21-Apr-21	RSC	11.7	12.2	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-57	RG_ER_RSC-57-OT_20210421	21-Apr-21	RSC	12.0	14.4	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-58	RG_ER_RSC-58-OT_20210421	21-Apr-21	RSC	10.2	9.4	-	Otolith	Section	CK	3	FP				**3**		
RG_ER_RSC-59	RG_ER_RSC-59-OT_20210421	21-Apr-21	RSC	10.2	8.3	-	Otolith	Section	CK	2	F				**2**		
RG_ER_RSC-60	RG_ER_RSC-60-OT_20210421	21-Apr-21	RSC	11.7	12.8	-	Otolith	Section	CK	2	F				**2**		
RG_ER_RSC-61	RG_ER_RSC-61-OT_20210421	21-Apr-21	RSC	10.8	10.0	-	Otolith	Section	CK	3	F	CC	3	FG	**3**		0
RG_ER_RSC-62	RG_ER_RSC-62-OT_20210421	21-Apr-21	RSC	11.5	11.8	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-63	RG_ER_RSC-63-OT_20210421	21-Apr-21	RSC	10.1	7.6	-	Otolith	Section	CK	2	F				**2**		
RG_ER_RSC-64	RG_ER_RSC-64-OT_20210421	21-Apr-21	RSC	11.0	10.4	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-65	RG_ER_RSC-65-OT_20210421	21-Apr-21	RSC	11.2	11.9	-	Otolith	Section	CK	3	F	CC	3	FG	**3**		0
RG_ER_RSC-66	RG_ER_RSC-66-OT_20210421	21-Apr-21	RSC	11.2	9.3	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-67	RG_ER_RSC-67-OT_20210421	21-Apr-21	RSC	10.1	7.5	-	Otolith	Section	CK	2	F				**2**		
RG_ER_RSC-68	RG_ER_RSC-68-OT_20210421	21-Apr-21	RSC	10.8	9.2	-	Otolith	Section	CK	2	FP				**2**		
RG_ER_RSC-69	RG_ER_RSC-69-OT_20210421	21-Apr-21	RSC	11.3	10.3	-	Otolith	Section	CK	3	F	CC	3	F	**3**		0
RG_ER_RSC-70	RG_ER_RSC-70-OT_20210421	21-Apr-21	RSC	11.5	10.9	-	Otolith	Section	CK	3	F				**3**		
RG_ER_RSC-71	RG_ER_RSC-71-OT_20210421	21-Apr-21	RSC	11.1	10.5	-	Otolith	Section	CK	3	FG				**3**		
RG_ER_RSC-72	RG_ER_RSC-72-OT_20210425	25-Apr-21	RSC	12.4	16.8	-	Otolith	Section	JL	3	FG				**3**		
RG_ER_RSC-73	RG_ER_RSC-73-OT_20210425	25-Apr-21	RSC	11.5	11.6	-	Otolith	Section	JL	3	F	CC	3	F	**3**		0
RG_ER_RSC-74	RG_ER_RSC-74-OT_20210425	25-Apr-21	RSC	10.2	8.7	-	Otolith	Section	JL	2	F				**2**		
RG_ER_RSC-75	RG_ER_RSC-75-OT_20210425	25-Apr-21	RSC	10.1	9.3	-	Otolith	Section	JL	2	F				**2**		
RG_ER_RSC-76	RG_ER_RSC-76-OT_20210425	25-Apr-21	RSC	10.5	8.0	-	Otolith	Section	JL	2	F				**2**		
RG_ER_RSC-77	RG_ER_RSC-77-OT_20210426	26-Apr-21	RSC	11.9	14.0	-	Otolith	Section	JL	3	F	CC	3	FG	**3**		0
RG_ER_RSC-78	RG_ER_RSC-78-OT_20210426	26-Apr-21	RSC	12.5	16.6	-	Otolith	Section	JL	4	F				**4**		
RG_ER_RSC-79	RG_ER_RSC-79-OT_20210426	26-Apr-21	RSC	10.8	10.0	-	Otolith	Section	JL	3	F				**3**		
RG_ER_RSC-80	RG_ER_RSC-80-OT_20210426	26-Apr-21	RSC	10.7	10.2	-	Otolith	Section	JL	3	F				**3**		
RG_ER_RSC-81	RG_ER_RSC-81-OT_20210426	26-Apr-21	RSC	11.1	10.6	-	Otolith	Section	JL	3	F	CC			**3**		
RG_ER_PCC-01	RG_ER_PCC-01-OT_20210419	19-Apr-21	PCC	28.2	6.8	-	Otolith	Section	NC	9	F	CC	9	F	**9**		0
RG_ER_PCC-02	RG_ER_PCC-02-OT_20210419	19-Apr-21	PCC	24.5	11.0	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-03	RG_ER_PCC-03-OT_20210419	19-Apr-21	PCC	28.7	19.5	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-04	RG_ER_PCC-04-OT_20210419	19-Apr-21	PCC	24.0	11.8	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-05	RG_ER_PCC-05-OT_20210419	19-Apr-21	PCC	25.5	14.8	-	Otolith	Section	NC	9	F	CC	9	F	**9**		0
RG_ER_PCC-06	RG_ER_PCC-06-OT_20210419	19-Apr-21	PCC	27.3	15.0	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-07	RG_ER_PCC-07-OT_20210419	19-Apr-21	PCC	25.7	12.0	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-08	RG_ER_PCC-08-OT_20210419	19-Apr-21	PCC	25.6	13.0	-	Otolith	Section	NC	6	FP				**6**		
RG_ER_PCC-09	RG_ER_PCC-09-OT_20210419	19-Apr-21	PCC	22.8	8.5	-	Otolith	Section	NC	5	F	CC	5	FG	**5**		0
RG_ER_PCC-10	RG_ER_PCC-10-OT_20210419	19-Apr-21	PCC	26.7	13.5	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-11	RG_ER_PCC-11-OT_20210419	19-Apr-21	PCC	26.0	15.0	-	Otolith	Section	NC	7	FP				**7**		
RG_ER_PCC-12	RG_ER_PCC-12-OT_20210419	19-Apr-21	PCC	26.8	13.8	-	Otolith	Section	NC	7	FP				**7**		
RG_ER_PCC-13	RG_ER_PCC-13-OT_20210419	19-Apr-21	PCC	22.9	9.4	-	Otolith	Section	NC	7	F	CC	7	F	**7**		0
RG_ER_PCC-14	RG_ER_PCC-14-OT_20210419	19-Apr-21	PCC	23.1	9.0	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-15	RG_ER_PCC-15-OT_20210419	19-Apr-21	PCC	22.2	8.5	-	Otolith	Section	NC	5	FP				**5**		

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_ER_PCC-16	RG_ER_PCC-16-OT_20210419	19-Apr-21	PCC	24.3	9.4	-	Otolith	Section	NC	8	FG				**8**		
RG_ER_PCC-17	RG_ER_PCC-17-OT_20210421	21-Apr-21	PCC	25.7	13.8	-	Otolith	Section	NC	8	F	CC	8	F	**8**		0
RG_ER_PCC-18	RG_ER_PCC-18-OT_20210421	21-Apr-21	PCC	26.4	12.8	-	Otolith	Section	NC	13	FP				**13**		
RG_ER_PCC-19	RG_ER_PCC-19-OT_20210421	21-Apr-21	PCC	24.4	9.6	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-20	RG_ER_PCC-20-OT_20210421	21-Apr-21	PCC	24.1	9.0	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-21	RG_ER_PCC-21-OT_20210421	21-Apr-21	PCC	18.5	4.6	-	Otolith	Section	NC	5	F	CC	5	F	**5**		0
RG_ER_PCC-22	RG_ER_PCC-22-OT_20210423	23-Apr-21	PCC	25.3	11.6	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-23	RG_ER_PCC-23-OT_20210423	23-Apr-21	PCC	23.9	11.0	-	Otolith	Section	NC	8	FG				**8**		
RG_ER_PCC-24	RG_ER_PCC-24-OT_20210423	23-Apr-21	PCC	25.6	12.5	-	Otolith	Section	NC	8	FG				**8**		
RG_ER_PCC-25	RG_ER_PCC-25-OT_20210423	23-Apr-21	PCC	24.7	11.2	-	Otolith	Section	NC	5	F	CC	5	F	**5**		0
RG_ER_PCC-26	RG_ER_PCC-26-OT_20210425	25-Apr-21	PCC	23.3	11.0	-	Otolith	Section	NC	8	FG				**8**		
RG_ER_PCC-27	RG_ER_PCC-27-OT_20210425	25-Apr-21	PCC	24.9	8.4	-	Otolith	Section	NC	9	FP				**9**		
RG_ER_PCC-28	RG_ER_PCC-28-OT_20210425	25-Apr-21	PCC	23.8	10.8	-	Otolith	Section	NC	8	F				**8**		
RG_ER_PCC-29	RG_ER_PCC-29-OT_20210426	26-Apr-21	PCC	24.7	11.3	-	Otolith	Section	NC	8	F	CC	8	F	**8**		0
RG_ER_PCC-30	RG_ER_PCC-30-OT_20210426	26-Apr-21	PCC	23.8	11.5	-	Otolith	Section	NC	8	F				**8**		
RG_ER_PCC-31	RG_ER_PCC-31-OT_20210426	26-Apr-21	PCC	25.2	12.8	-	Otolith	Section	NC	6	F				**6**		
RG_ER_PCC-32	RG_ER_PCC-32-OT_20210426	26-Apr-21	PCC	23.9	10.0	-	Otolith	Section	NC	7	F				**7**		
RG_ER_PCC-33	RG_ER_PCC-33-OT_20210427	27-Apr-21	PCC	25.3	11.9	-	Otolith	Section	NC	7	F	CC	7	F	**7**		0
RG_ER_PCC-34	RG_ER_PCC-34-OT_20210427	27-Apr-21	PCC	23.7	9.8	-	Otolith	Section	NC	5	F				**5**		
RG_ER_PCC-35	RG_ER_PCC-35-OT_20210428	28-Apr-21	PCC	24.4	10.6	-	Otolith	Section	NC	9	FG	CC	9	FG	**9**		0
RG_GC_RSC-01	RG_GC_RSC-01-OT_20210420	20-Apr-21	RSC	13.9	26.8	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-02	RG_GC_RSC-02-OT_20210420	20-Apr-21	RSC	13.8	19.9	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-03	RG_GC_RSC-03-OT_20210422	22-Apr-21	RSC	11.0	11.5	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-04	RG_GC_RSC-04-OT_20210422	22-Apr-21	RSC	10.8	9.8	-	Otolith	Section	CC	2	F				**2**		
RG_GC_RSC-05	RG_GC_RSC-05-OT_20210422	22-Apr-21	RSC	10.5	8.7	-	Otolith	Section	CC	2	FG	JL	2	FG	**2**		0
RG_GC_RSC-06	RG_GC_RSC-06-OT_20210423	23-Apr-21	RSC	10.1	7.3	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-07	RG_GC_RSC-07-OT_20210423	23-Apr-21	RSC	12.5	14.9	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-08	RG_GC_RSC-08-OT_20210426	26-Apr-21	RSC	11.4	11.0	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-09	RG_GC_RSC-09-OT_20210426	26-Apr-21	RSC	11.2	12.5	-	Otolith	Section	CC	3	FG	JL	3	FG	**3**		0
RG_GC_RSC-10	RG_GC_RSC-10-OT_20210426	26-Apr-21	RSC	12.0	13.4	-	Otolith	Section	CC	4	FG				**4**		
RG_GC_RSC-11	RG_GC_RSC-11-OT_20210426	26-Apr-21	RSC	11.1	12.7	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-12	RG_GC_RSC-12-OT_20210426	26-Apr-21	RSC	11.2	14.0	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-13	RG_GC_RSC-13-OT_20210426	26-Apr-21	RSC	10.3	8.2	-	Otolith	Section	CC	3	F	JL	3	F	**3**		0
RG_GC_RSC-14	RG_GC_RSC-14-OT_20210426	26-Apr-21	RSC	10.7	8.6	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-15	RG_GC_RSC-15-OT_20210426	26-Apr-21	RSC	12.1	15.2	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-16	RG_GC_RSC-16-OT_20210426	26-Apr-21	RSC	12.3	17.7	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-17	RG_GC_RSC-17-OT_20210426	26-Apr-21	RSC	11.4	11.8	-	Otolith	Section	CC	3	FG	JL	3	FG	**3**		0
RG_GC_RSC-18	RG_GC_RSC-18-OT_20210426	26-Apr-21	RSC	11.7	13.6	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-19	RG_GC_RSC-19-OT_20210426	26-Apr-21	RSC	10.1	9.9	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-20	RG_GC_RSC-20-OT_20210427	27-Apr-21	RSC	10.3	8.2	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-21	RG_GC_RSC-21-OT_20210427	27-Apr-21	RSC	11.1	10.2	-	Otolith	Section	CC	4	F	JL	4	F	**4**		0
RG_GC_RSC-22	RG_GC_RSC-22-OT_20210427	27-Apr-21	RSC	11.6	10.9	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-23	RG_GC_RSC-23-OT_20210427	27-Apr-21	RSC	13.0	12.7	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-24	RG_GC_RSC-24-OT_20210427	27-Apr-21	RSC	11.5	13.5	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-25	RG_GC_RSC-25-OT_20210427	27-Apr-21	RSC	10.5	9.4	-	Otolith	Section	CC	3	FG	JL	3	FG	**3**		0
RG_GC_RSC-26	RG_GC_RSC-26-OT_20210427	27-Apr-21	RSC	11.8	11.3	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-27	RG_GC_RSC-27-OT_20210427	27-Apr-21	RSC	10.6	9.1	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-28	RG_GC_RSC-28-OT_20210427	27-Apr-21	RSC	10.7	6.8	-	Otolith	Section	CC	2	F				**2**		
RG_GC_RSC-29	RG_GC_RSC-29-OT_20210427	27-Apr-21	RSC	12.2	13.8	-	Otolith	Section	CC	3	F	JL	3	FG	**3**		0
RG_GC_RSC-30	RG_GC_RSC-30-OT_20210428	28-Apr-21	RSC	9.9	8.5	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-31	RG_GC_RSC-31-OT_20210428	28-Apr-21	RSC	11.0	9.4	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-32	RG_GC_RSC-32-OT_20210428	28-Apr-21	RSC	11.2	11.2	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-33	RG_GC_RSC-33-OT_20210428	28-Apr-21	RSC	10.3	8.6	-	Otolith	Section	CC	2	F	JL	2	F	**2**		0
RG_GC_RSC-34	RG_GC_RSC-34-OT_20210428	28-Apr-21	RSC	11.5	11.6	-	Otolith	Section	CC	3	FG				**3**		

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_GC_RSC-35	RG_GC_RSC-35-OT_20210428	28-Apr-21	RSC	11.2	10.5	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-36	RG_GC_RSC-36-OT_20210428	28-Apr-21	RSC	11.4	12.2	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-37	RG_GC_RSC-37-OT_20210428	28-Apr-21	RSC	11.4	10.8	-	Otolith	Section	CC	3	FG	JL	3	FG	**3**		0
RG_GC_RSC-38	RG_GC_RSC-38-OT_20210428	28-Apr-21	RSC	10.6	9.2	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-39	RG_GC_RSC-39-OT_20210428	28-Apr-21	RSC	10.3	8.1	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-40	RG_GC_RSC-40-OT_20210428	28-Apr-21	RSC	11.1	11.1	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-41	RG_GC_RSC-41-OT_20210428	28-Apr-21	RSC	12.3	14.1	-	Otolith	Section	CC	3	F	JL	3	F	**3**		0
RG_GC_RSC-42	RG_GC_RSC-42-OT_20210428	28-Apr-21	RSC	11.2	10.3	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-43	RG_GC_RSC-43-OT_20210428	28-Apr-21	RSC	12.3	14.5	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-44	RG_GC_RSC-44-OT_20210428	28-Apr-21	RSC	11.2	11.2	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-45	RG_GC_RSC-45-OT_20210428	28-Apr-21	RSC	11.1	10.6	-	Otolith	Section	CC	3	F	JL	3	F	**3**		0
RG_GC_RSC-46	RG_GC_RSC-46-OT_20210428	28-Apr-21	RSC	11.0	9.6	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-47	RG_GC_RSC-47-OT_20210428	28-Apr-21	RSC	9.6	7.9	-	Otolith	Section	CC	2	F				**2**		
RG_GC_RSC-48	RG_GC_RSC-48-OT_20210428	28-Apr-21	RSC	11.1	20.0	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-49	RG_GC_RSC-49-OT_20210428	28-Apr-21	RSC	11.2	12.4	-	Otolith	Section	CC	3	F	JL	3	F	**3**		0
RG_GC_RSC-50	RG_GC_RSC-50-OT_20210428	28-Apr-21	RSC	12.4	15.6	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-51	RG_GC_RSC-51-OT_20210428	28-Apr-21	RSC	10.3	8.5	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-52	RG_GC_RSC-52-OT_20210428	28-Apr-21	RSC	11.2	10.8	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-53	RG_GC_RSC-53-OT_20210428	28-Apr-21	RSC	11.5	12.4	-	Otolith	Section	CC	3	F	JL	3	FG	**3**		0
RG_GC_RSC-54	RG_GC_RSC-54-OT_20210428	28-Apr-21	RSC	9.7	8.9	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-55	RG_GC_RSC-55-OT_20210428	28-Apr-21	RSC	11.9	13.3	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-56	RG_GC_RSC-56-OT_20210428	28-Apr-21	RSC	9.5	7.7	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-57	RG_GC_RSC-57-OT_20210428	28-Apr-21	RSC	13.0	19.4	-	Otolith	Section	CC	4	F	JL	4	F	**4**		0
RG_GC_RSC-58	RG_GC_RSC-58-OT_20210428	28-Apr-21	RSC	10.6	10.9	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-59	RG_GC_RSC-59-OT_20210429	29-Apr-21	RSC	11.4	11.6	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-60	RG_GC_RSC-60-OT_20210429	29-Apr-21	RSC	12.2	15.1	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-61	RG_GC_RSC-61-OT_20210429	29-Apr-21	RSC	11.9	11.6	-	Otolith	Section	CC	3	F	JL	3	F	**3**		0
RG_GC_RSC-62	RG_GC_RSC-62-OT_20210429	29-Apr-21	RSC	12.1	16.6	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-63	RG_GC_RSC-63-OT_20210429	29-Apr-21	RSC	11.7	10.3	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-64	RG_GC_RSC-64-OT_20210429	29-Apr-21	RSC	10.9	9.4	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-65	RG_GC_RSC-65-OT_20210429	29-Apr-21	RSC	11.5	11.6	-	Otolith	Section	CC	3	F	JL	3	FG	**3**		0
RG_GC_RSC-66	RG_GC_RSC-66-OT_20210429	29-Apr-21	RSC	10.7	9.2	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-67	RG_GC_RSC-67-OT_20210429	29-Apr-21	RSC	11.0	11.1	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-68	RG_GC_RSC-68-OT_20210429	29-Apr-21	RSC	12.0	15.0	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-69	RG_GC_RSC-69-OT_20210429	29-Apr-21	RSC	11.4	11.3	-	Otolith	Section	CC	4	FG	JL	4	F	**4**		0
RG_GC_RSC-70	RG_GC_RSC-70-OT_20210429	29-Apr-21	RSC	12.6	15.7	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-71	RG_GC_RSC-71-OT_20210429	29-Apr-21	RSC	10.7	8.8	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-72	RG_GC_RSC-72-OT_20210429	29-Apr-21	RSC	10.8	10.2	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-73	RG_GC_RSC-73-OT_20210429	29-Apr-21	RSC	11.2	10.8	-	Otolith	Section	CC	4	F	JL	4	F	**4**		0
RG_GC_RSC-74	RG_GC_RSC-74-OT_20210429	29-Apr-21	RSC	11.0	9.4	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_RSC-75	RG_GC_RSC-75-OT_20210429	29-Apr-21	RSC	12.2	14.4	-	Otolith	Section	CC	4	F				**4**		
RG_GC_RSC-76	RG_GC_RSC-76-OT_20210429	29-Apr-21	RSC	11.0	10.1	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-77	RG_GC_RSC-77-OT_20210429	29-Apr-21	RSC	12.6	11.2	-	Otolith	Section	CC	4	F	JL	4	F	**4**		0
RG_GC_RSC-78	RG_GC_RSC-78-OT_20210429	29-Apr-21	RSC	11.1	10.0	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-79	RG_GC_RSC-79-OT_20210429	29-Apr-21	RSC	10.8	8.4	-	Otolith	Section	CC	3	F				**3**		
RG_GC_RSC-80	RG_GC_RSC-80-OT_20210429	29-Apr-21	RSC	10.7	9.5	-	Otolith	Section	CC	3	FG				**3**		
RG_GC_PCC-01	RG_GC_PCC-01-OT_20210420	20-Apr-21	PCC	19.3	4.8	-	Otolith	Section	NC	3	FP	CC	3	F	**3**		0
RG_GC_PCC-02	RG_GC_PCC-02-OT_20210420	20-Apr-21	PCC	15.6	2.4	-	Scales	Whole	NC	4	F				**4**	No otolith in envelope	
RG_GC_PCC-03	RG_GC_PCC-03-OT_20210420	20-Apr-21	PCC	18.2	4.5	-	Otolith	Section	NC	5	F				**5**		
RG_GC_PCC-04	RG_GC_PCC-04-OT_20210420	20-Apr-21	PCC	17.7	4.7	-	Otolith	Section	NC	5	F				**5**		
RG_GC_PCC-05	RG_GC_PCC-05-OT_20210420	20-Apr-21	PCC	26.8	13.4	-	Otolith	Section	NC	7	F	CC	7	F	**7**		0
RG_GC_PCC-06	RG_GC_PCC-06-OT_20210420	20-Apr-21	PCC	19.6	4.5	-	Otolith	Section	NC	4	FG				**4**		
RG_GC_PCC-07	RG_GC_PCC-07-OT_20210420	20-Apr-21	PCC	16.2	2.8	-	Otolith	Section	NC	3	FG				**3**		
RG_GC_PCC-08	RG_GC_PCC-08-OT_20210421	21-Apr-21	PCC	29.3	19.2	-	Otolith	Section	NC	8	F				**8**		

April Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes	agree
RG_GC_PCC-09	RG_GC_PCC-09-OT_20210421	21-Apr-21	PCC	27.1	18.0	-	Otolith	Section	NC	10	F	CC	10	FG	**10**		0
RG_GC_PCC-10	RG_GC_PCC-10-OT_20210421	21-Apr-21	PCC	26.6	16.4	-	Otolith	Section	NC	9	FG				**9**		
RG_GC_PCC-11	RG_GC_PCC-11-OT_20210421	21-Apr-21	PCC	26.0	14.0	-	Otolith	Section	NC	7	FG				**7**		
RG_GC_PCC-12	RG_GC_PCC-12-OT_20210421	21-Apr-21	PCC	25.2	12.9	-	Otolith	Section	NC	9	F				**9**		
RG_GC_PCC-13	RG_GC_PCC-13-OT_20210421	21-Apr-21	PCC	26.0	14.0	-	Otolith	Section	NC	8	FP	CC	9	F	**9**		1
RG_GC_PCC-14	RG_GC_PCC-14-OT_20210421	21-Apr-21	PCC	27.2	15.4	-	Otolith	Section	NC	10	F				**10**		
RG_GC_PCC-15	RG_GC_PCC-15-OT_20210421	21-Apr-21	PCC	25.0	12.7	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-16	RG_GC_PCC-16-OT_20210421	21-Apr-21	PCC	25.7	12.7	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-17	RG_GC_PCC-17-OT_20210422	22-Apr-21	PCC	27.7	17.1	-	Otolith	Section	NC	9	FP	CC	9	FP	**9**		0
RG_GC_PCC-18	RG_GC_PCC-18-OT_20210422	22-Apr-21	PCC	27.2	14.9	-	Otolith	Section	NC	7	FP				**7**		
RG_GC_PCC-19	RG_GC_PCC-19-OT_20210422	22-Apr-21	PCC	24.9	11.3	-	Otolith	Section	NC	9	F				**9**		
RG_GC_PCC-20	RG_GC_PCC-20-OT_20210422	22-Apr-21	PCC	28.1	15.2	-	Otolith	Section	NC	10	F				**10**		
RG_GC_PCC-21	RG_GC_PCC-21-OT_20210422	22-Apr-21	PCC	27.5	17.5	-	Otolith	Section	NC	11	FP	CC	9	FP	**11**		1
RG_GC_PCC-22	RG_GC_PCC-22-OT_20210422	22-Apr-21	PCC	26.2	14.7	-	Otolith	Section	NC	6	FP				**6**		
RG_GC_PCC-23	RG_GC_PCC-23-OT_20210422	22-Apr-21	PCC	22.6	8.7	-	Otolith	Section	NC	7	FG				**7**		
RG_GC_PCC-24	RG_GC_PCC-24-OT_20210422	22-Apr-21	PCC	25.8	12.5	-	Otolith	Section	NC	13	F				**13**		
RG_GC_PCC-25	RG_GC_PCC-25-OT_20210422	22-Apr-21	PCC	23.2	10.3	-	Otolith	Section	NC	6	F	CC	6	F	**6**		0
RG_GC_PCC-26	RG_GC_PCC-26-OT_20210422	22-Apr-21	PCC	23.1	9.2	-	Otolith	Section	NC	8	F				**8**		
RG_GC_PCC-27	RG_GC_PCC-27-OT_20210424	24-Apr-21	PCC	25.8	10.7	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-28	RG_GC_PCC-28-OT_20210425	25-Apr-21	PCC	24.3	11.3	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-29	RG_GC_PCC-29-OT_20210425	25-Apr-21	PCC	24.9	11.5	-	Otolith	Section	NC	6	F	CC	6	F	**6**		0
RG_GC_PCC-30	RG_GC_PCC-30-OT_20210427	27-Apr-21	PCC	24.6	11.8	-	Otolith	Section	NC	6	F				**6**		
RG_GC_PCC-31	RG_GC_PCC-31-OT_20210427	27-Apr-21	PCC	25.4	12.5	-	Otolith	Section	NC	7	FG				**7**		
RG_GC_PCC-32	RG_GC_PCC-32-OT_20210427	27-Apr-21	PCC	24.4	10.8	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-33	RG_GC_PCC-33-OT_20210427	27-Apr-21	PCC	23.7	10.4	-	Otolith	Section	NC	6	FP	CC	6	F	**6**		0
RG_GC_PCC-34	RG_GC_PCC-34-OT_20210427	27-Apr-21	PCC	24.9	10.9	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-35	RG_GC_PCC-35-OT_20210427	27-Apr-21	PCC	24.6	12.1	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-36	RG_GC_PCC-36-OT_20210428	28-Apr-21	PCC	24.7	11.1	-	Otolith	Section	NC	8	FP				**8**		
RG_GC_PCC-37	RG_GC_PCC-37-OT_20210428	28-Apr-21	PCC	25.3	12.3	-	Otolith	Section	NC	8	F	CC	8	F	**8**		0
RG_GC_PCC-38	RG_GC_PCC-38-OT_20210428	28-Apr-21	PCC	25.1	14.3	-	Otolith	Section	NC	9	F				**9**		
RG_GC_PCC-39	RG_GC_PCC-39-OT_20210428	28-Apr-21	PCC	25.1	12.1	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-40	RG_GC_PCC-40-OT_20210429	29-Apr-21	PCC	23.4	10.3	-	Otolith	Section	NC	7	F				**7**		
RG_GC_PCC-41	RG_GC_PCC-41-OT_20210429	29-Apr-21	PCC	23.2	10.6	-	Otolith	Section	NC	7	F	CC	7	FG	**7**		0
RG_GC_SS-01	RG_GC_SS-01-OT_20210420	20-Apr-21	SS	7.8	6.3	-	Otolith	Whole	NC	3	FG	CC	3	F	**3**		0
RG_GC_SS-02	RG_GC_SS-02-OT_20210420	20-Apr-21	SS	8.8	11.0	-	-	-	-	-	-	-	-	-	-	ı of sample sent (no ageing structures)	
RG_GC_SS-03	RG_GC_SS-03-OT_20210421	21-Apr-21	SS	9.0	8.4	-	Otolith	Whole	NC	3	FG				**3**		
RG_GC_SS-04	RG_GC_SS-04-OT_20210423	23-Apr-21	SS	10.8	19.0	-	Otolith	Whole	NC	4	FG				**4**		
RG_GC_SS-05	RG_GC_SS-05-OT_20210424	24-Apr-21	SS	8.7	8.7	-	Otolith	Whole	NC	3	F	CC	3	F	**3**		0
RG_GC_SS-06	RG_GC_SS-06-OT_20210427	27-Apr-21	SS	8.4	6.9	-	Otolith	Whole	NC	3	F				**3**		
RG_GC_SS-07	RG_GC_SS-07-OT_20210427	27-Apr-21	SS	7.6	4.8	-	Otolith	Whole	NC	3	FG				**3**		
RG_GC_SS-08	RG_GC_SS-08-OT_20210428	28-Apr-21	SS	9.0	8.6	-	Otolith	Whole	NC	3	FG				**3**		
RG_GC_SS-09	RG_GC_SS-09-OT_20210428	28-Apr-21	SS	7.3	5.1	-	Otolith	Whole	NC	3	F	CC	3	FG	**3**		0
RG_GC_SS-10	RG_GC_SS-10-OT_20210428	28-Apr-21	SS	7.6	7.7	-	Otolith	Whole	NC	3	F				**3**		
RG_GC_SS-11	RG_GC_SS-11-OT_20210430	30-Apr-21	SS	10.1	13.2	-	Otolith	Whole	NC	3	FG				**3**		
RG_GC_SS-12	RG_GC_SS-12-OT_20210430	30-Apr-21	SS	6.1	2.6	-	Otolith	Whole	NC	2	F				**2**		
RG_GC_SS-13	RG_GC_SS-13-OT_20210430	30-Apr-21	SS	6.8	3.1	-	Otolith	Whole	NC	4	F	CC	4	F	**4**		0
RG_ER_SS-01	RG_ER_SS-01-OT_20210429	29-Apr-21	SS	10.3	13.7	-	Otolith	Whole	NC	3	F				**3**		
RG_ER_SS-02	RG_ER_SS-02-OT_20210430	30-Apr-21	SS	8.4	7.8	-	Otolith	Whole	NC	4	FG				**4**		
RG_ER_SS-03	RG_ER_SS-03-OT_20210430	30-Apr-21	SS	8.6	10.1	-	Otolith	Whole	NC	4	F				**4**		
RG_ER_SS-04	RG_ER_SS-04-OT_20210430	30-Apr-21	SS	6.9	4.0	-	Otolith	Whole	NC	3	FG	CC	3	FG	**3**		0
										374			95		374		
																	4

May Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes
RG_SC_PCC-01	RG_SC_PCC-01-OT_20210527	27-May-21	PCC	26.9	144.0	-	Otolith	Section	NC	8	F	CC	8	FG	**8**	
RG_SC_PCC-02	RG_SC_PCC-02-OT_20210527	27-May-21	PCC	32.1	250.0	-	Otolith	Section	NC	10	FP				**10**	
RG_SC_PCC-03	RG_SC_PCC-03-OT_20210528	28-May-21	PCC	28.5	201.5	-	Otolith	Section	NC	9	F				**9**	
RG_SC_PCC-04	RG_SC_PCC-04-OT_20210528	28-May-21	PCC	27.0	175.5	-	Otolith	Section	NC	10	F				**10**	
RG_SC_PCC-05	RG_SC_PCC-05-OT_20210528	28-May-21	PCC	29.0	208.3	-	Otolith	Section	NC	8	F	CC	8	F	**8**	
RG_SC_PCC-06	RG_SC_PCC-06-OT_20210528	28-May-21	PCC	27.2	153.7	-	Otolith	Section	NC	8	F				**8**	
RG_SC_PCC-07	RG_SC_PCC-07-OT_20210528	28-May-21	PCC	25.7	139.1	-	Otolith	Section	NC	8	FG				**8**	
RG_SC_PCC-08	RG_SC_PCC-08-OT_20210528	28-May-21	PCC	27.6	159.8	-	Otolith	Section	NC	8	F				**8**	
RG_SC_PCC-09	RG_SC_PCC-09-OT_20210528	28-May-21	PCC	25.5	135.6	-	Otolith	Section	NC	7	F	CC	7	F	**7**	
RG_SC_PCC-10	RG_SC_PCC-10-OT_20210528	28-May-21	PCC	26.6	136.9	-	Otolith	Section	NC	7	F				**7**	
RG_ER_PCC-01	RG_ER_PCC-01-OT_20210528	28-May-21	PCC	28.0	184.1	-	Otolith	Section	NC	7	FP				**7**	
RG_ER_PCC-02	RG_ER_PCC-02-OT_20210528	28-May-21	PCC	25.5	149.2	-	Otolith	Section	NC	10	F				**10**	
RG_ER_PCC-03	RG_ER_PCC-03-OT_20210528	28-May-21	PCC	26.5	164.1	-	Otolith	Section	NC	10	F	CC	10	F	**10**	
RG_ER_PCC-04	RG_ER_PCC-04-OT_20210529	29-May-21	PCC	27.0	159.1	-	Otolith	Section	NC	14	F				**14**	
RG_ER_PCC-05	RG_ER_PCC-05-OT_20210529	29-May-21	PCC	27.1	153.3	-	Otolith	Section	NC	7	F				**7**	
RG_ER_PCC-06	RG_ER_PCC-06-OT_20210529	29-May-21	PCC	25.5	134.2	-	Otolith	Section	NC	7	F				**7**	
RG_ER_PCC-07	RG_ER_PCC-07-OT_20210529	29-May-21	PCC	25.5	161.2	-	Otolith	Section	NC	7	F	CC	7	F	**7**	
RG_ER_PCC-08	RG_ER_PCC-08-OT_20210529	29-May-21	PCC	24.0	105.3	-	Otolith	Section	NC	8	F				**8**	
RG_ER_PCC-09	RG_ER_PCC-09-OT_20210529	29-May-21	PCC	25.8	136.9	-	Otolith	Section	NC	6	FG				**6**	
RG_ER_PCC-10	RG_ER_PCC-10-OT_20210529	29-May-21	PCC	23.4	102.9	-	Otolith	Section	NC	7	FG				**7**	
RG_GC_PCC-01	RG_GC_PCC-01-OT_20210525	25-May-21	PCC	28.5	174.8	-	Otolith	Section	NC	15	F	CC	15	FP	**15**	
RG_GC_PCC-02	RG_GC_PCC-02-OT_20210525	25-May-21	PCC	27.4	156.0	-	Otolith	Section	NC	8	F				**8**	
RG_GC_PCC-03	RG_GC_PCC-03-OT_20210525	25-May-21	PCC	25.7	137.0	-	Otolith	Section	NC	7	FG				**7**	
RG_GC_PCC-04	RG_GC_PCC-04-OT_20210525	25-May-21	PCC	28.5	156.327	-	Otolith	Section	NC	12	FP				**12**	
RG_GC_PCC-05	RG_GC_PCC-05-OT_20210528	28-May-21	PCC	27.6	173.8	-	Otolith	Section	NC	9	F	CC	9	F	**9**	
RG_GC_PCC-06	RG_GC_PCC-06-OT_20210528	28-May-21	PCC	27.7	195.5	-	Otolith	Section	NC	7	F				**7**	
RG_GC_PCC-07	RG_GC_PCC-07-OT_20210528	28-May-21	PCC	24.5	116.56	-	Otolith	Section	NC	8	FG				**8**	
RG_GC_PCC-08	RG_GC_PCC-08-OT_20210528	28-May-21	PCC	24.2	116.5	-	Otolith	Section	NC	8	F				**8**	
RG_GC_PCC-09	RG_GC_PCC-09-OT_20210528	28-May-21	PCC	25.9	162.8	-	Otolith	Section	NC	7	F	CC	7	F	**7**	
RG_GC_PCC-10	RG_GC_PCC-10-OT_20210528	28-May-21	PCC	26.0	137.37	-	Otolith	Section	NC	7	FP				**7**	

June Fish Aging Structures - AAE

Minnow Sample ID	Teck Reporting ID	Date	Species	Total Length (cm)	Body Weight (g)	Plus Growth	Ageing Structure	Ageing Method	Primary Ager	Age Estimate	CI	QA/QC Ager	Age Estimate	CI	Final Age	Notes
RG_GC-PCC-01-OT_20210623	RG_GC-PCC-01-OT_20210623	23-Jun-21	PCC	21.0	69.294	-	Otolith	Section	NC	6	F	CC	6	F	**6**	
RG_GC-PCC-02-OT_20210624	RG_GC-PCC-02-OT_20210624	24-Jun-21	PCC	25.6	112.062	-	Otolith	Section	NC	7	F				**7**	
RG_GC-PCC-03-OT_20210624	RG_GC-PCC-03-OT_20210624	24-Jun-21	PCC	25.0	107.787	-	Otolith	Section	NC	5	F				**5**	
RG_GC-RSC-01-OT_20210622	RG_GC-RSC-01-OT_20210622	22-Jun-21	RSC	12.2	17.523	-	Otolith	Section	NC	5	F	CC	5	F	**5**	
RG_GC-RSC-02-OT_20210622	RG_GC-RSC-02-OT_20210622	22-Jun-21	RSC	11.7	16.147	-	Otolith	Section	NC	4	FP				**4**	
RG_GC-RSC-03-OT_20210622	RG_GC-RSC-03-OT_20210622	22-Jun-21	RSC	12.4	18.192	-	Otolith	Section	NC	4	F				**4**	
RG_GC-RSC-04-OT_20210622	RG_GC-RSC-04-OT_20210622	22-Jun-21	RSC	12.5	18.730	-	Otolith	Section	NC	4	F				**4**	
RG_GC-RSC-05-OT_20210622	RG_GC-RSC-05-OT_20210622	22-Jun-21	RSC	10.2	8.892	-	Otolith	Section	NC	3	F				**3**	
RG_GC-RSC-06-OT_20210622	RG_GC-RSC-06-OT_20210622	22-Jun-21	RSC	11.6	13.098	-	Otolith	Section	NC	4	F	CC	4	FG	**4**	
RG_GC-RSC-07-OT_20210622	RG_GC-RSC-07-OT_20210622	22-Jun-21	RSC	10.4	10.421	-	Otolith	Section	NC	3	F				**3**	
RG_GC-RSC-08-OT_20210622	RG_GC-RSC-08-OT_20210622	22-Jun-21	RSC	10.6	10.864	-	Otolith	Section	NC	3	F				**3**	
RG_GC-RSC-09-OT_20210622	RG_GC-RSC-09-OT_20210622	22-Jun-21	RSC	10.3	10.889	-	Otolith	Section	NC	3	F				**3**	
RG_GC-RSC-10-OT_20210622	RG_GC-RSC-10-OT_20210622	22-Jun-21	RSC	9.5	7.999	-	Otolith	Section	NC	3	F				**3**	
RG_ER-PCC-01-OT_20210622	RG_ER-PCC-01-OT_20210622	22-Jun-21	PCC	25.1	107.880	-	Otolith	Section	NC	8	F	CC	8	F	**8**	
RG_ER-PCC-02-OT_20210622	RG_ER-PCC-02-OT_20210622	22-Jun-21	PCC	23.8	104.290	-	Otolith	Section	NC	7	FG				**7**	
RG_ER-PCC-03-OT_20210622	RG_ER-PCC-03-OT_20210622	22-Jun-21	PCC	24.2	90.740	-	Otolith	Section	NC	6	F				**6**	
RG_ER-PCC-04-OT_20210622	RG_ER-PCC-04-OT_20210622	22-Jun-21	PCC	24.9	113.466	-	Otolith	Section	NC	8	F				**8**	
RG_ER-PCC-05-OT_20210623	RG_ER-PCC-05-OT_20210623	23-Jun-21	PCC	26.0	137.00	-	Otolith	Section	NC	7	F				**7**	
RG_ER-PCC-06-OT_20210623	RG_ER-PCC-06-OT_20210623	23-Jun-21	PCC	27.0	124.20	-	Otolith	Section	NC	8	FG	CC	8	FG	**8**	
RG_ER-PCC-07-OT_20210623	RG_ER-PCC-07-OT_20210623	23-Jun-21	PCC	24.4	119.738	-	Otolith	Section	NC	8	F				**8**	
RG_ER-PCC-08-OT_20210623	RG_ER-PCC-08-OT_20210623	23-Jun-21	PCC	24.5	114.007	-	Otolith	Section	NC	7	F				**7**	
RG_ER-PCC-09-OT_20210623	RG_ER-PCC-09-OT_20210623	23-Jun-21	PCC	26.5	143.820	-	Otolith	Section	NC	8	FG				**8**	
RG_ER-PCC-10-SC_20210623	RG_ER-PCC-10-OT_20210623	23-Jun-21	PCC	26.2	142.006	-	Scales	Whole	CC	7	FP				**7**	Did not receive otoliths
RG_SC-PCC-01-OT_20210623	RG_SC-PCC-01-OT_20210623	23-Jun-21	PCC	24.7	119.259	-	Otolith	Section	NC	8	F	CC	8	F	**8**	
RG_SC-PCC-02-OT_20210623	RG_SC-PCC-02-OT_20210623	23-Jun-21	PCC	27.0	130.345	-	Otolith	Section	NC	8	FG				**8**	
RG_SC-PCC-03-OT_20210623	RG_SC-PCC-03-OT_20210623	23-Jun-21	PCC	26.4	131.070	-	Otolith	Section	NC	9	F				**9**	
RG_SC-PCC-05-OT_20210623	RG_SC-PCC-05-OT_20210623	23-Jun-21	PCC	26.9	140.263	-	Otolith	Section	NC	7	F				**7**	
RG_SC-PCC-06-OT_20210625	RG_SC-PCC-06-OT_20210625	25-Jun-21	PCC	26.2	159.416	-	Otolith	Section	NC	7	F				**7**	
RG_SC-PCC-07-OT_20210625	RG_SC-PCC-07-OT_20210625	25-Jun-21	PCC	26.6	136.404	-	Otolith	Section	NC	8	F	CC	8	F	**8**	
RG_SC-PCC-08-OT_20210625	RG_SC-PCC-08-OT_20210625	25-Jun-21	PCC	25.0	119.561	-	Otolith	Section	NC	7	F				**7**	
RG_SC-PCC-09-OT_20210625	RG_SC-PCC-09-OT_20210625	25-Jun-21	PCC	27.1	174.560	-	Scales	Whole	NC	6	F				**6**	No otolith in envelope
RG_SC-PCC-10-OT_20210625	RG_SC-PCC-10-OT_20210625	25-Jun-21	PCC	25.7	141.491	-	Otolith	Section	NC	9	FG				**9**	
RG_SC-PCC-11-OT_20210625	RG_SC-PCC-11-OT_20210625	25-Jun-21	PCC	24.6	112.838	-	Otolith	Section	NC	7	FG	CC	7	F	**7**	
RG_ER-RSC-01-OT_20210622	RG_ER-RSC-01-OT_20210622	22-Jun-21	RSC	12.2	17.644	-	Otolith	Section	CC	4	F				**4**	
RG_ER-RSC-02-OT_20210622	RG_ER-RSC-02-OT_20210622	22-Jun-21	RSC	11.3	15.431	-	Otolith	Section	CC	3	F				**3**	
RG_ER-RSC-03-OT_20210622	RG_ER-RSC-03-OT_20210622	22-Jun-21	RSC	10.3	10.870	-	Otolith	Section	CC	3	F				**3**	
RG_ER-RSC-04-OT_20210622	RG_ER-RSC-04-OT_20210622	22-Jun-21	RSC	9.6	8.768	-	Otolith	Section	CC	3	F	JL	3	F	**3**	
RG_ER-RSC-05-OT_20210622	RG_ER-RSC-05-OT_20210622	22-Jun-21	RSC	10.5	10.745	-	Otolith	Section	CC	3	F				**3**	
RG_ER-RSC-06-OT_20210622	RG_ER-RSC-06-OT_20210622	22-Jun-21	RSC	12.3	18.927	-	Otolith	Section	CC	4	FG				**4**	
RG_ER-RSC-07-OT_20210622	RG_ER-RSC-07-OT_20210622	22-Jun-21	RSC	11.5	14.270	-	Otolith	Section	CC	4	F				**4**	
RG_ER-RSC-08-OT_20210622	RG_ER-RSC-08-OT_20210622	22-Jun-21	RSC	10.6	11.702	-	Otolith	Section	CC	3	F	JL	3	F	**3**	
RG_ER-RSC-09-OT_20210622	RG_ER-RSC-09-OT_20210622	22-Jun-21	RSC	10.6	12.592	-	Otolith	Section	CC	3	FG				**3**	
RG_ER-RSC-10-OT_20210622	RG_ER-RSC-10-OT_20210622	22-Jun-21	RSC	11.2	12.730	-	Otolith	Section	CC	4	FG				**4**	
RG_SC-RSC-01-OT_20210625	RG_SC-RSC-01-OT_20210625	25-Jun-21	RSC	12.1	18.518	-	Otolith	Section	NC	3	F	CC	3	F	**3**	
RG_SC-RSC-02-OT_20210625	RG_SC-RSC-02-OT_20210625	25-Jun-21	RSC	13.0	21.661	-	Otolith	Section	NC	5	F				**5**	
RG_SC-RSC-03-OT_20210625	RG_SC-RSC-03-OT_20210625	25-Jun-21	RSC	10.3	11.671	-	Otolith	Section	NC	5	F				**5**	
RG_SC-RSC-04-OT_20210625	RG_SC-RSC-04-OT_20210625	25-Jun-21	RSC	12.9	19.611	-	Otolith	Section	NC	5	F				**5**	
RG_SC-RSC-05-OT_20210625	RG_SC-RSC-05-OT_20210625	25-Jun-21	RSC	12.2	17.397	-	Otolith	Section	NC	4	FG	CC	4	FG	**4**	
RG_SC-RSC-06-OT_20210625	RG_SC-RSC-06-OT_20210625	25-Jun-21	RSC	10.7	11.935	-	Otolith	Section	NC	4	F				**4**	
RG_SC-RSC-07-OT_20210625	RG_SC-RSC-07-OT_20210625	25-Jun-21	RSC	11.0	13.960	-	Otolith	Section	NC	3	FP				**3**	
RG_SC-RSC-08-OT_20210625	RG_SC-RSC-08-OT_20210625	25-Jun-21	RSC	10.7	11.610	-	Otolith	Section	NC	4	F				**4**	
RG_SC-RSC-09-OT_20210625	RG_SC-RSC-09-OT_20210625	25-Jun-21	RSC	11.0	12.847	-	Otolith	Section	NC	4	F	CC	4	F	**4**	
RG_SC-RSC-10-OT_20210625	RG_SC-RSC-10-OT_20210625	25-Jun-21	RSC	10.6	11.684	-	Otolith	Section	NC	4	F				**4**	

APPENDIX B
WATER QUALITY

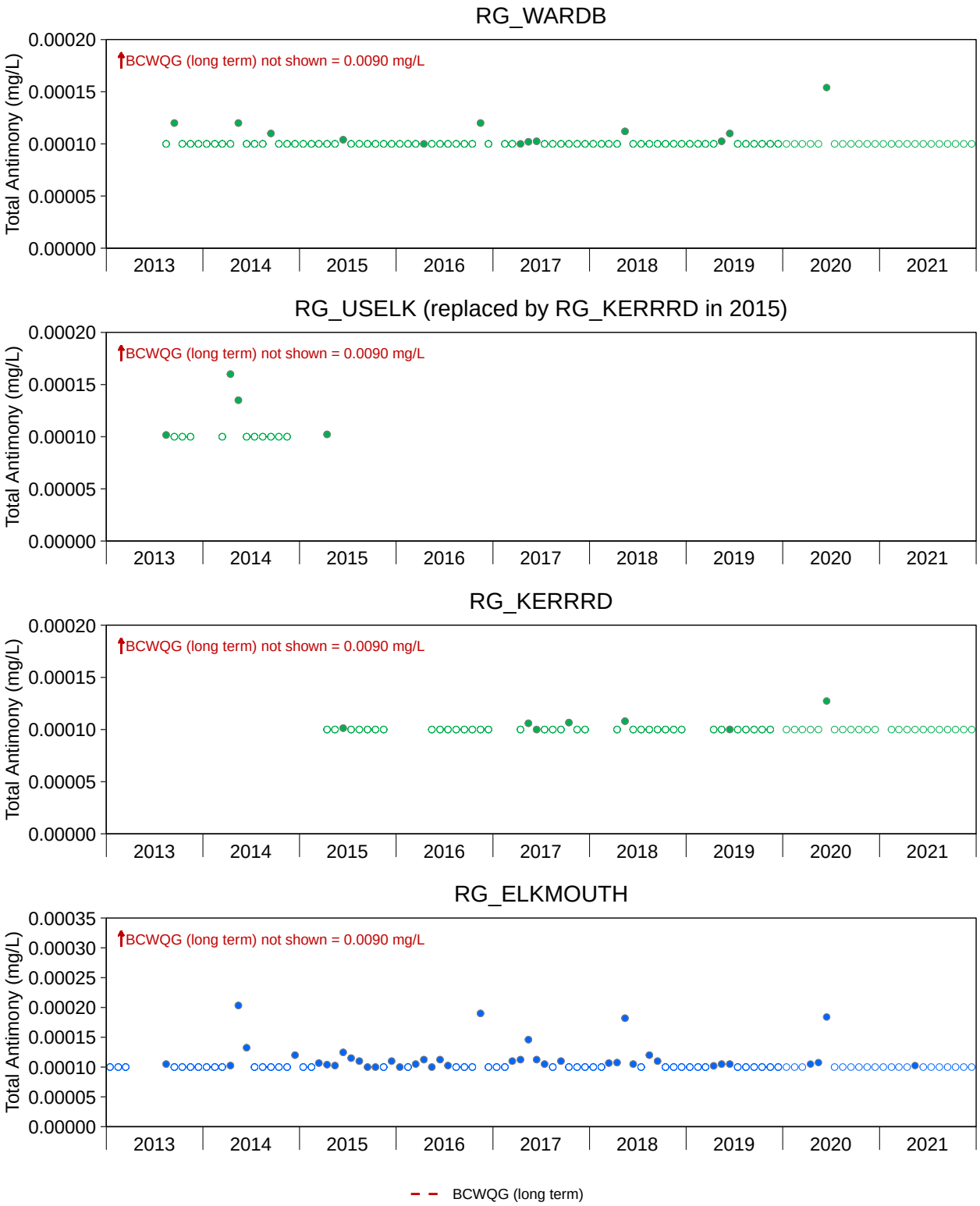

Figure B.1: Monthly Average Concentrations of Total Antimony in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

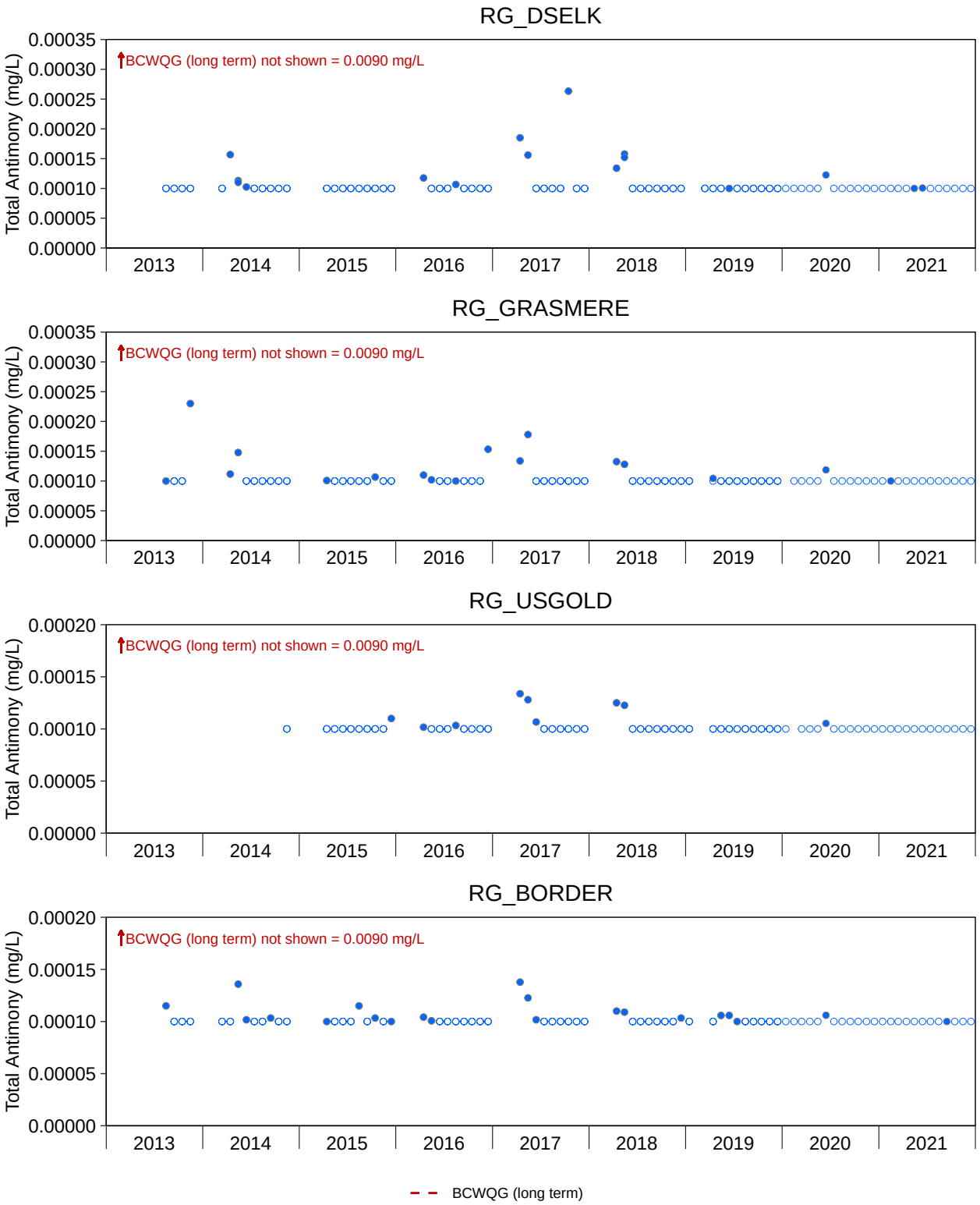

Figure B.1: Monthly Average Concentrations of Total Antimony in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

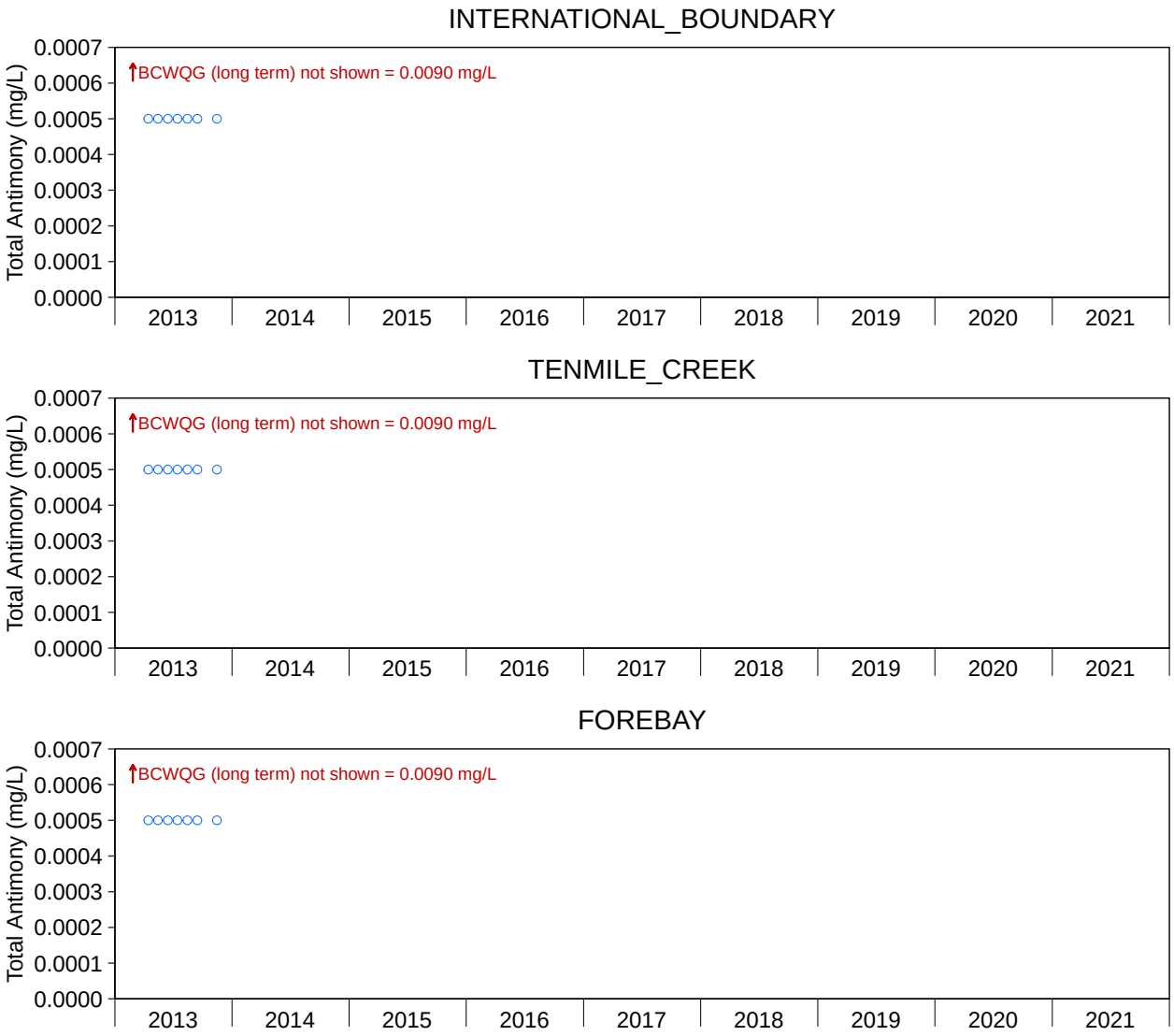

Figure B.1: Monthly Average Concentrations of Total Antimony in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

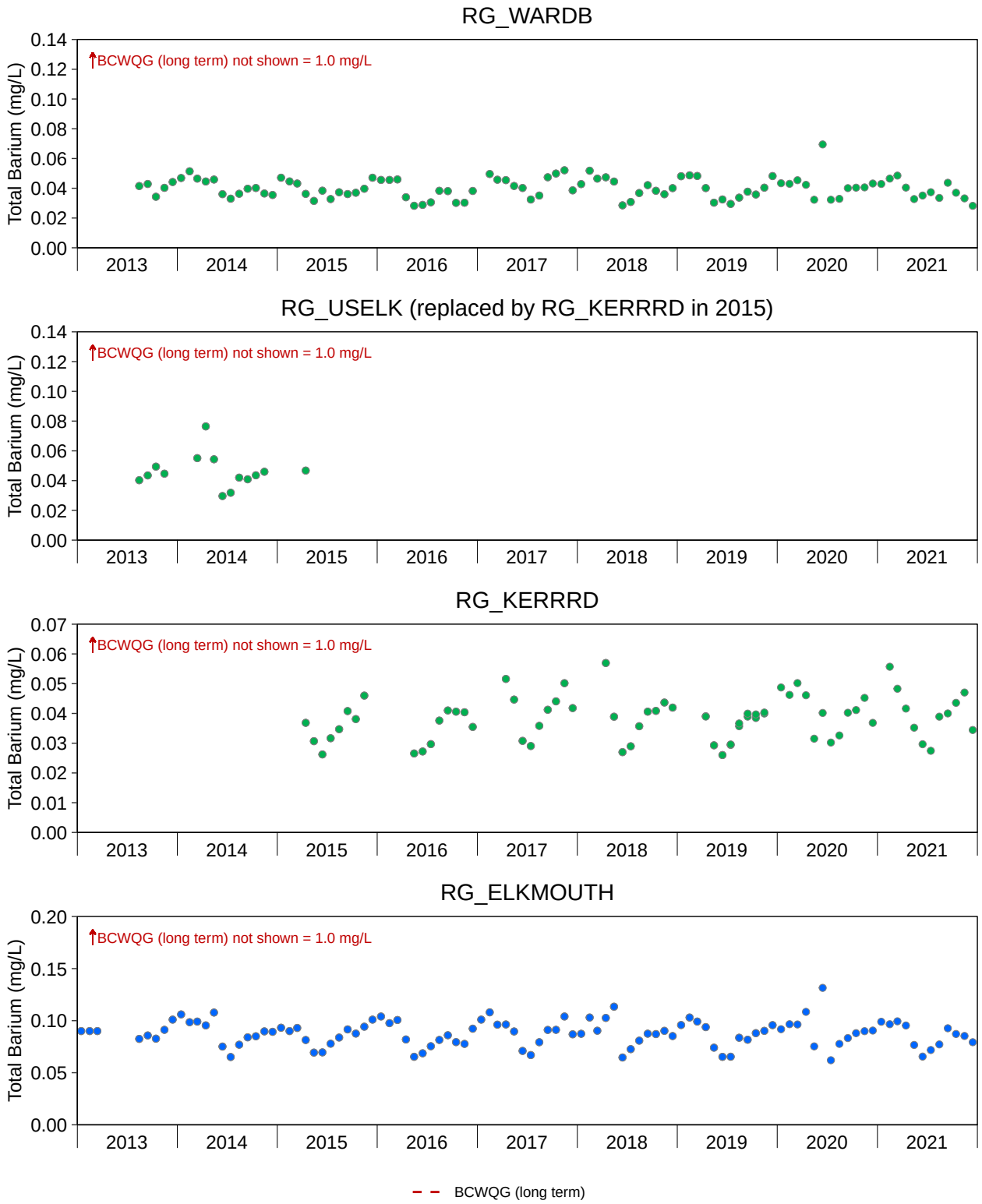

Figure B.2: Monthly Average Concentrations of Total Barium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

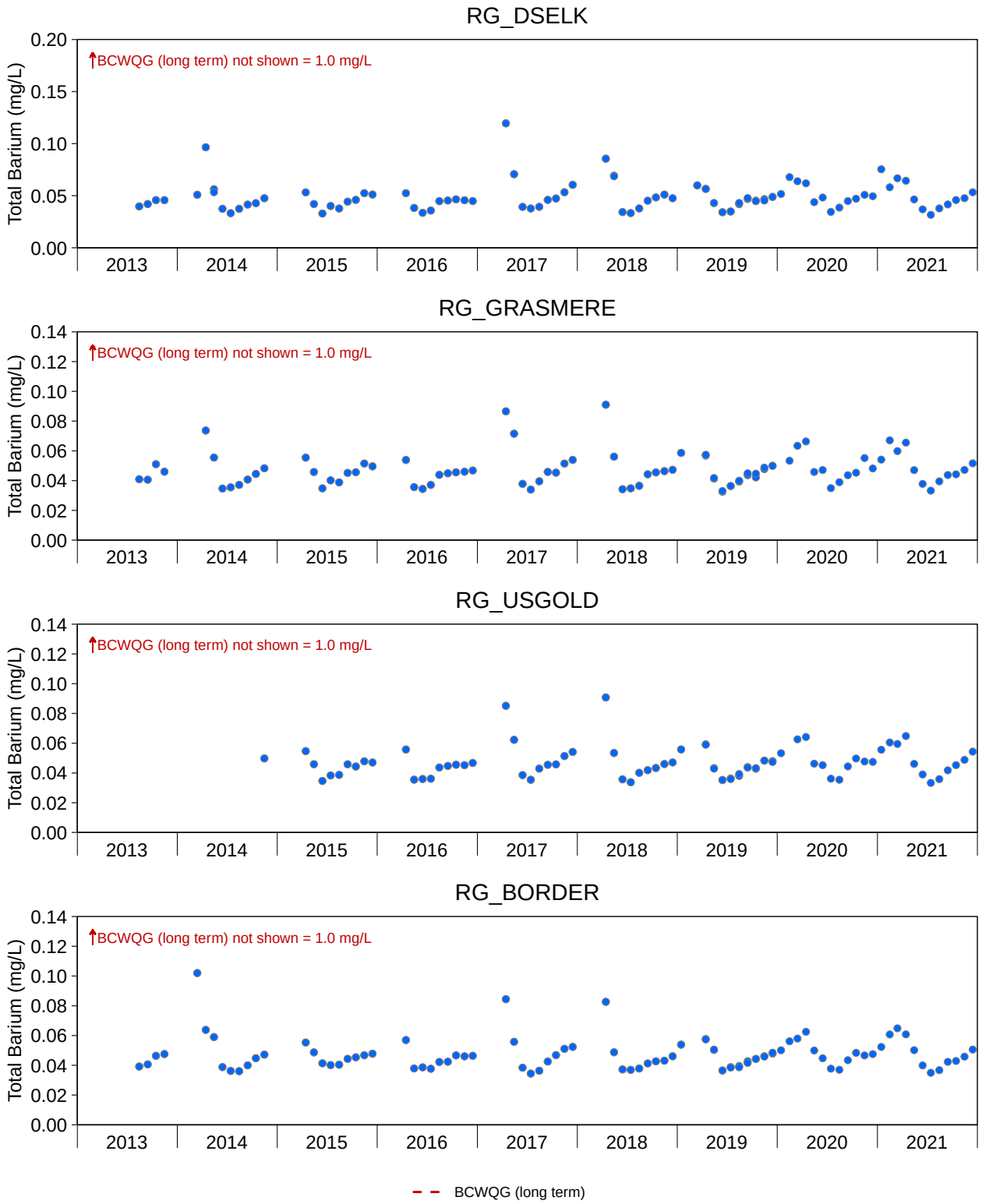

Figure B.2: Monthly Average Concentrations of Total Barium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

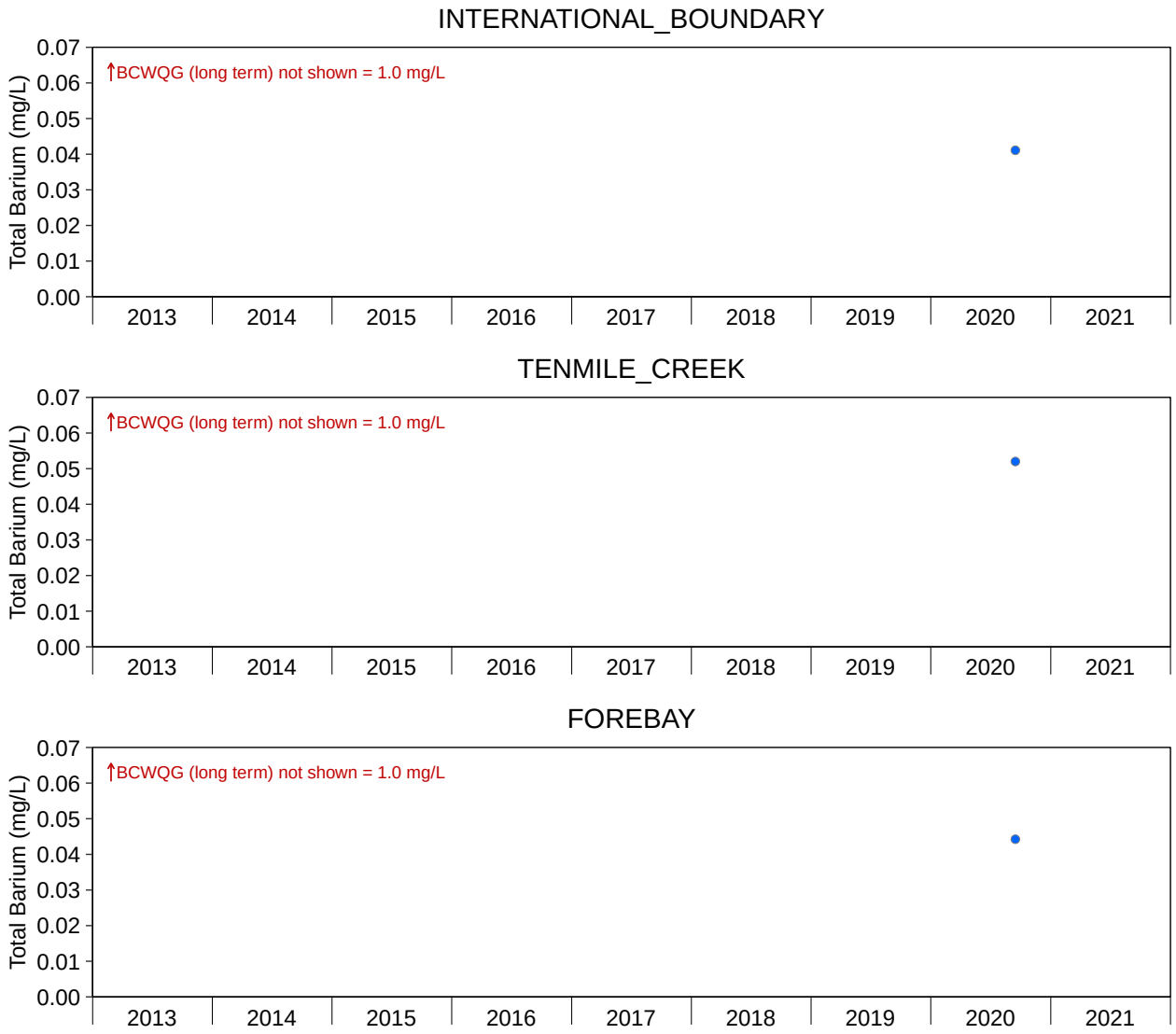

Figure B.2: Monthly Average Concentrations of Total Barium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

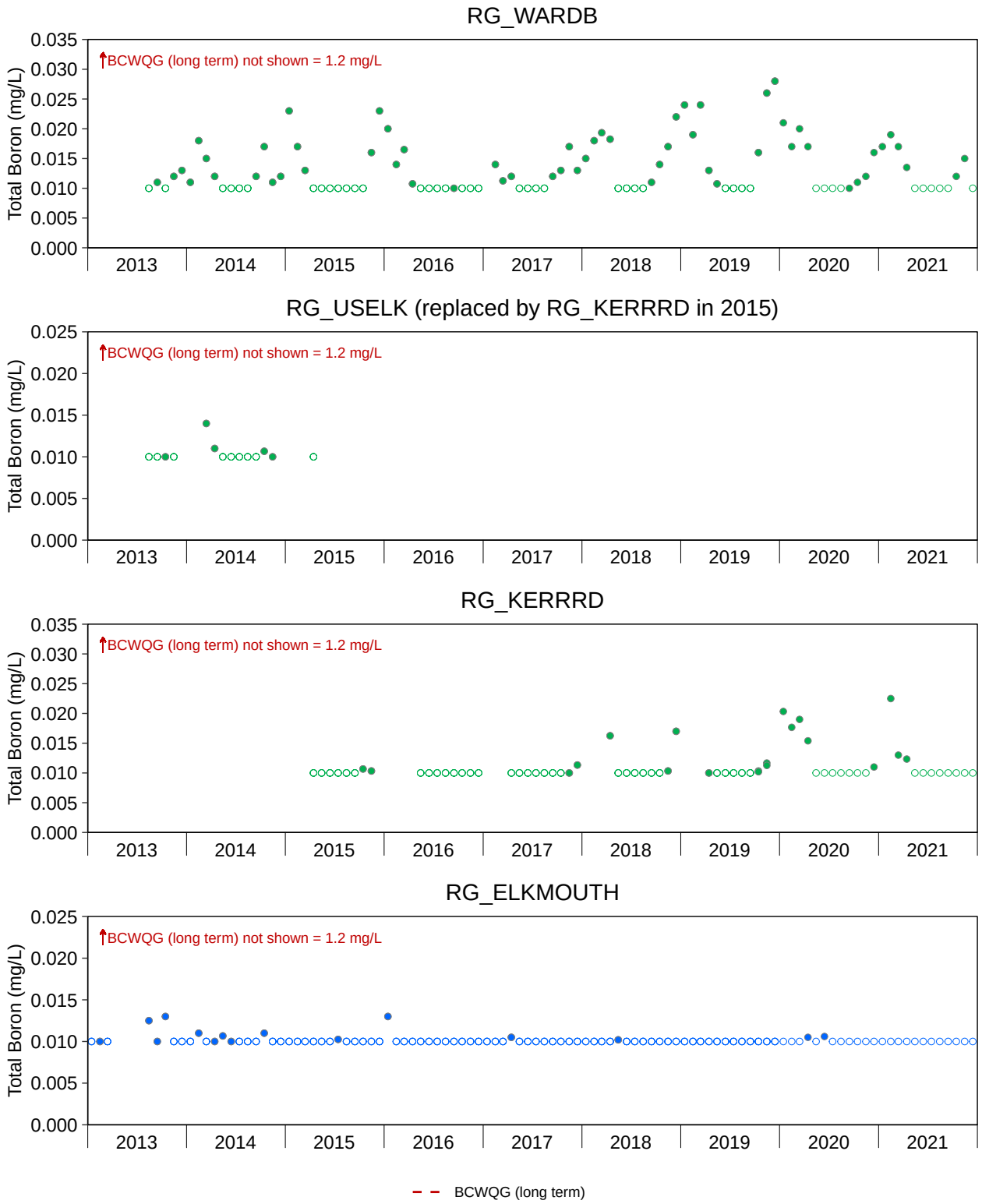

Figure B.3: Monthly Average Concentrations of Total Boron in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

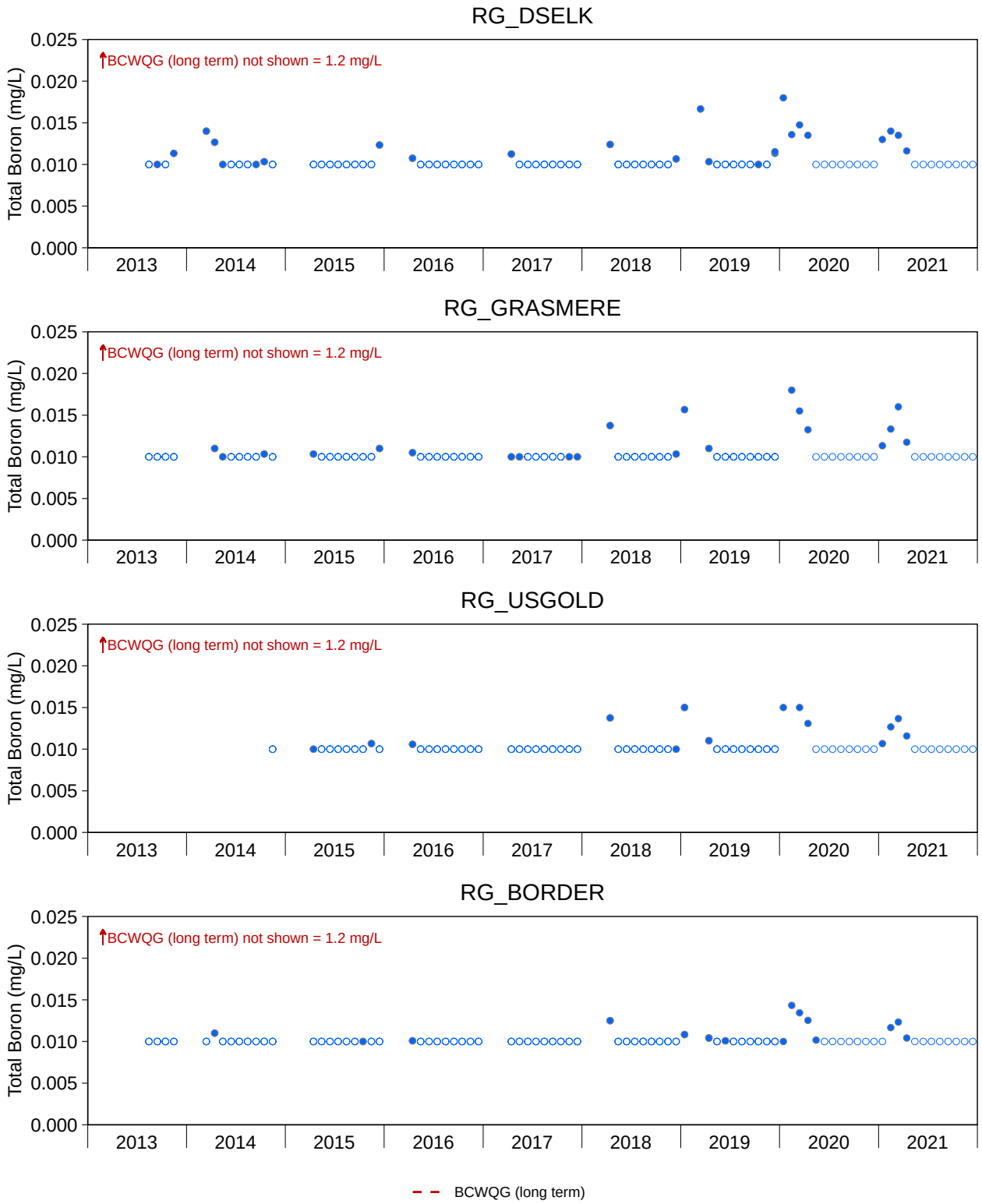

Figure B.3: Monthly Average Concentrations of Total Boron in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

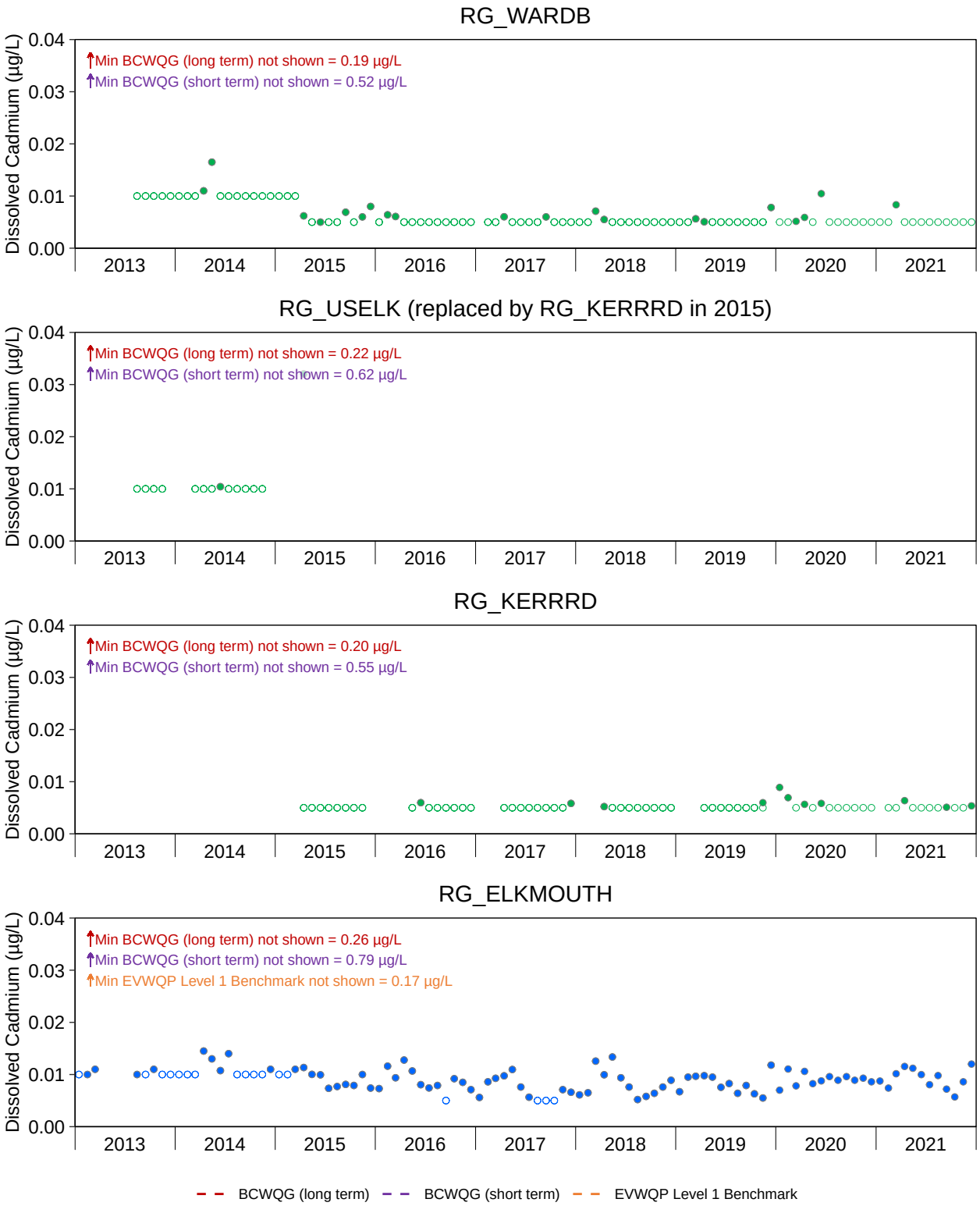

Figure B.4: Monthly Average Concentrations of Dissolved Cadmium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

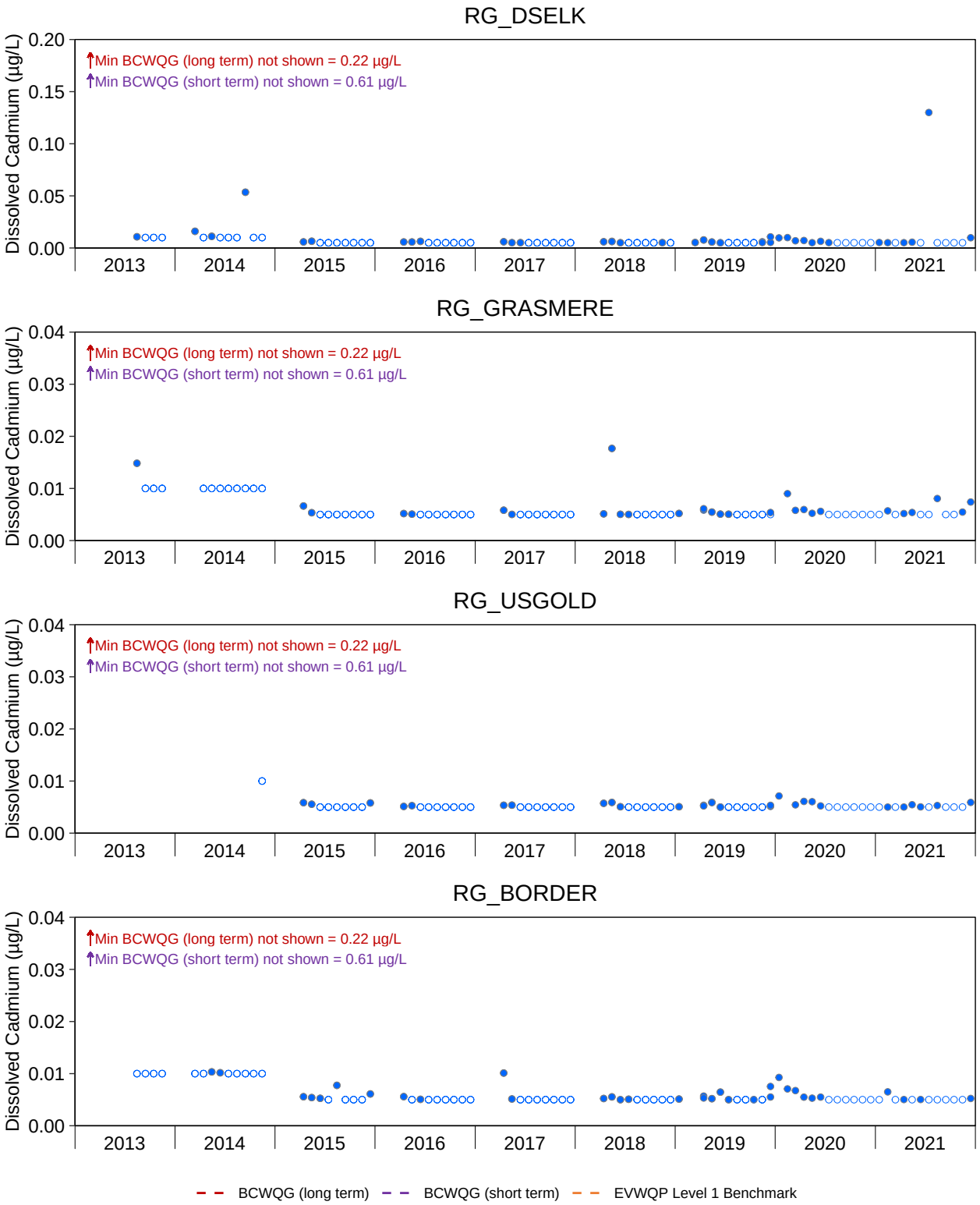

Figure B.4: Monthly Average Concentrations of Dissolved Cadmium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

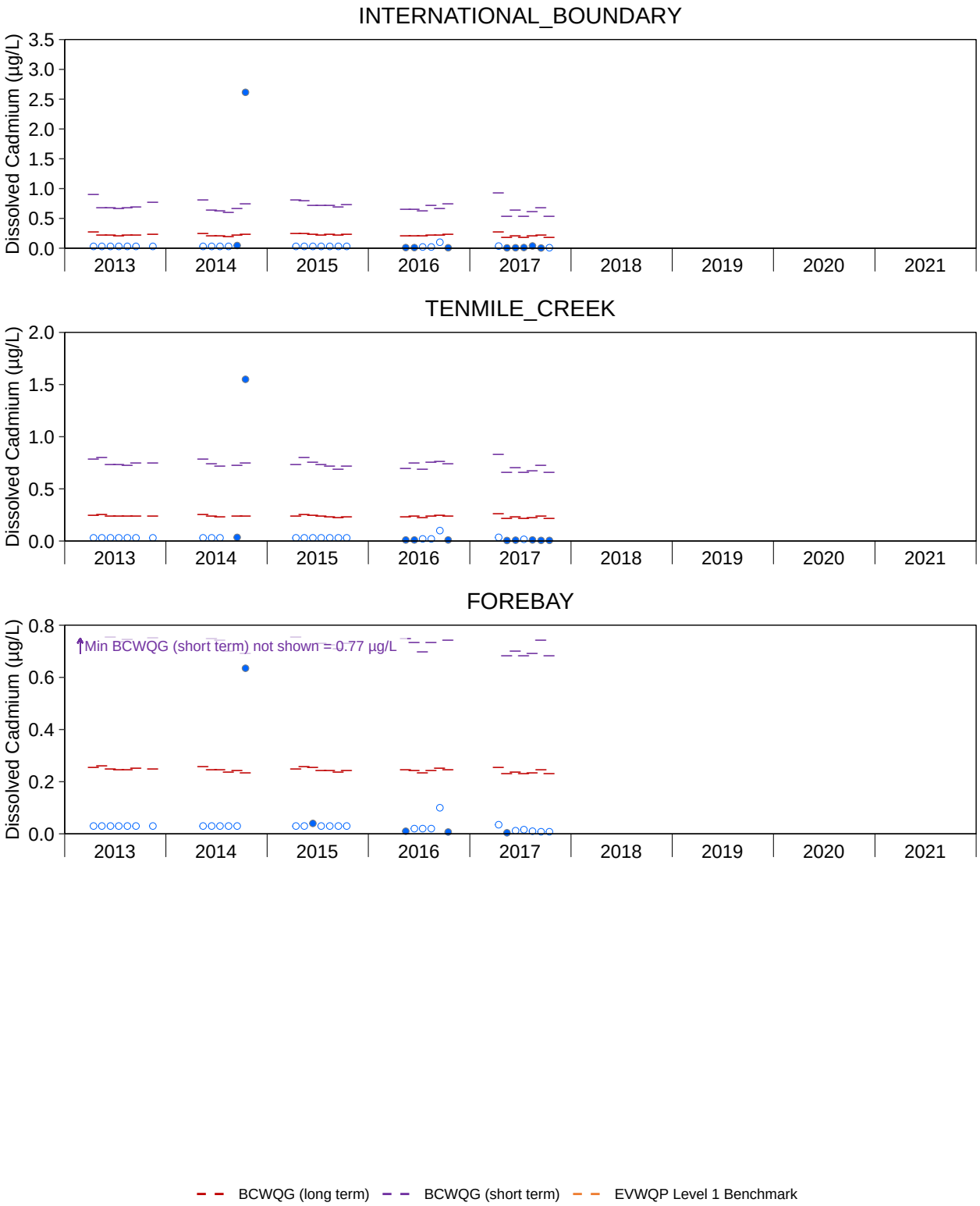

Figure B.4: Monthly Average Concentrations of Dissolved Cadmium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

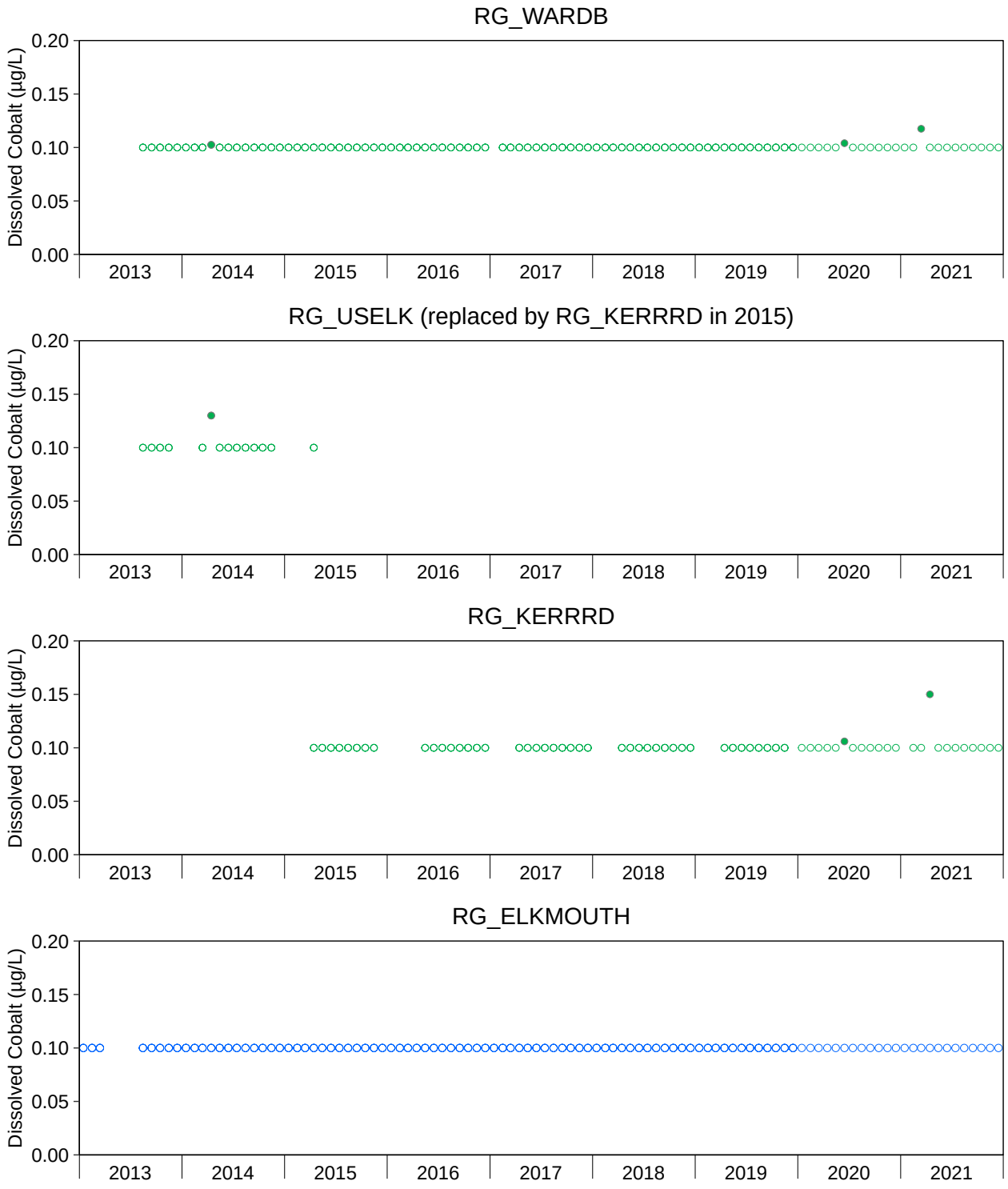

Figure B.5: Monthly Average Concentrations of Dissolved Cobalt in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

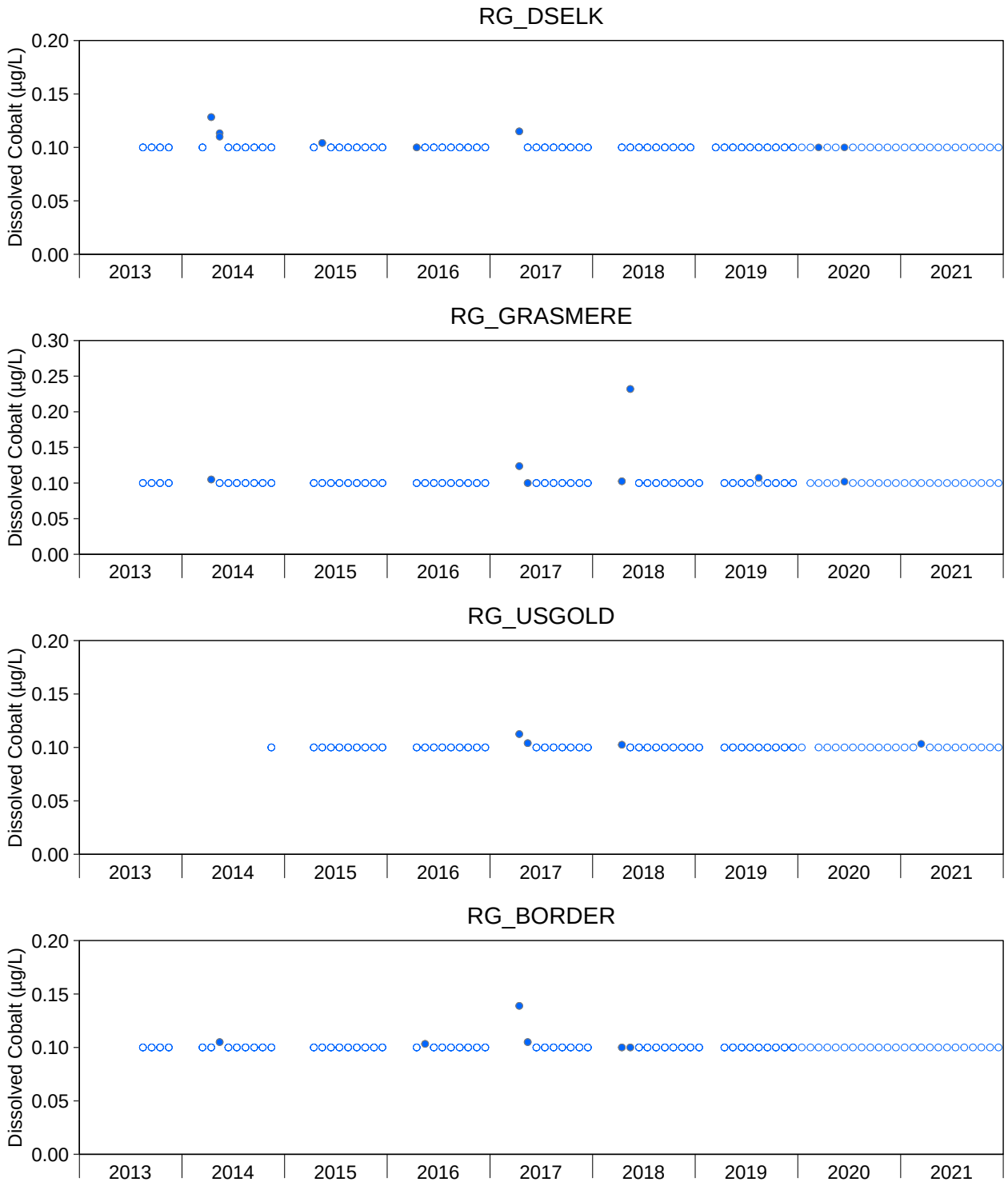

Figure B.5: Monthly Average Concentrations of Dissolved Cobalt in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

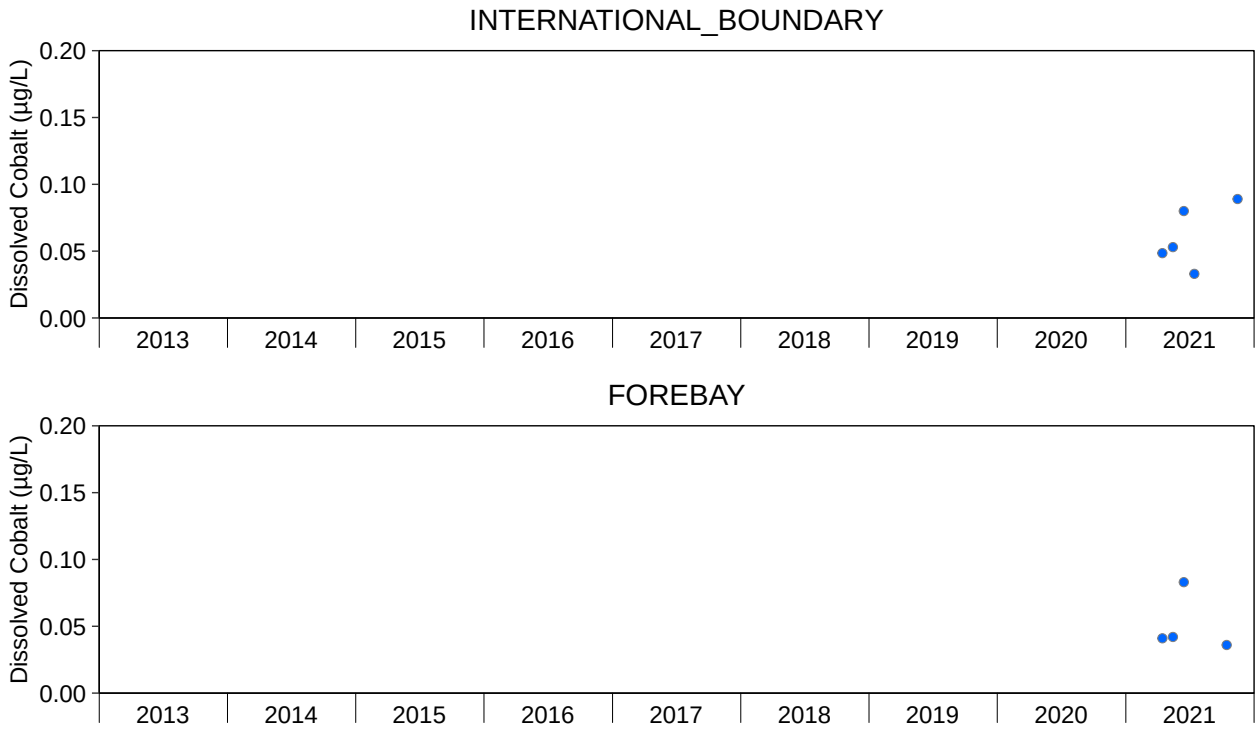

Figure B.5: Monthly Average Concentrations of Dissolved Cobalt in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

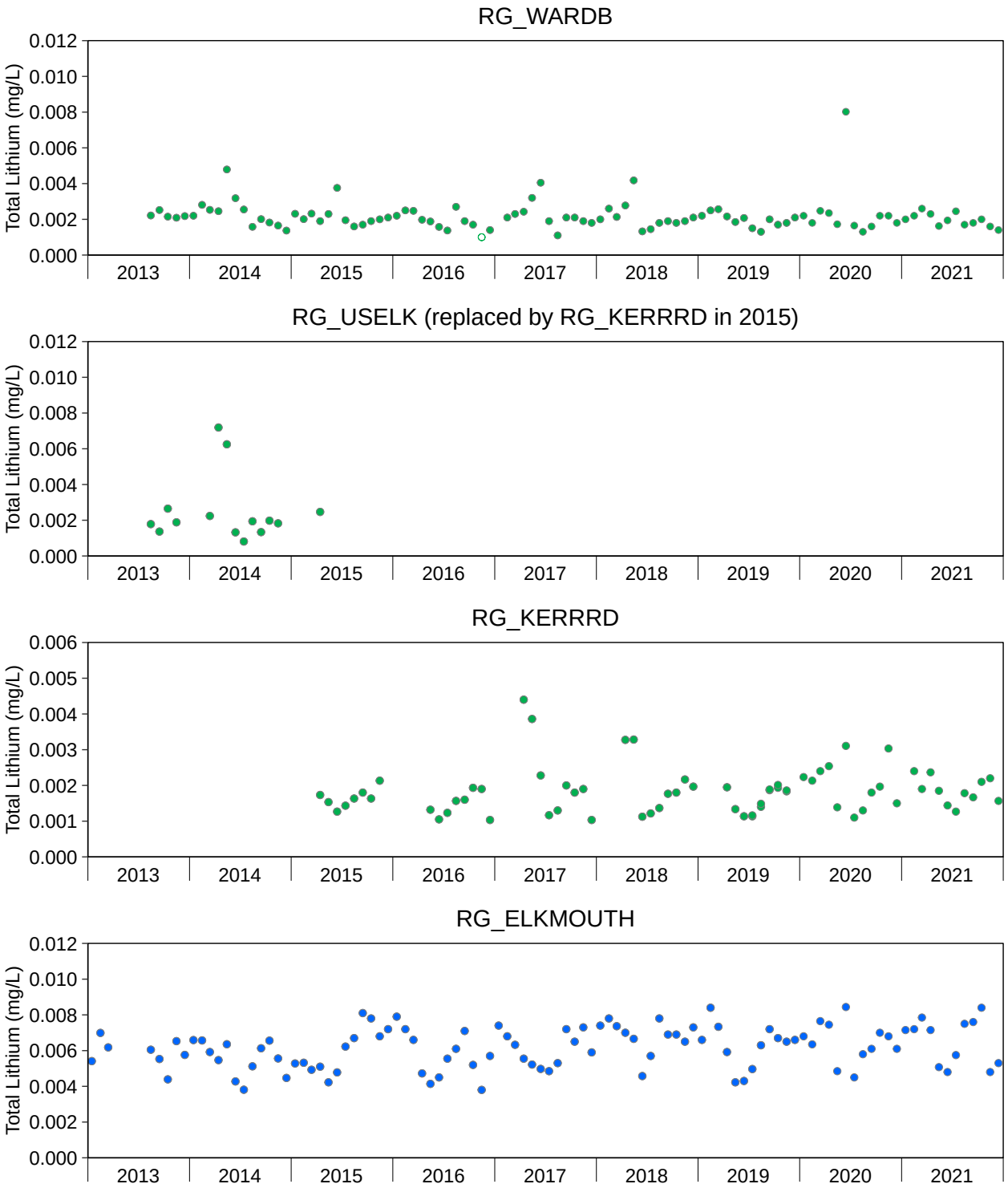

Figure B.6: Monthly Average Concentrations of Total Lithium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

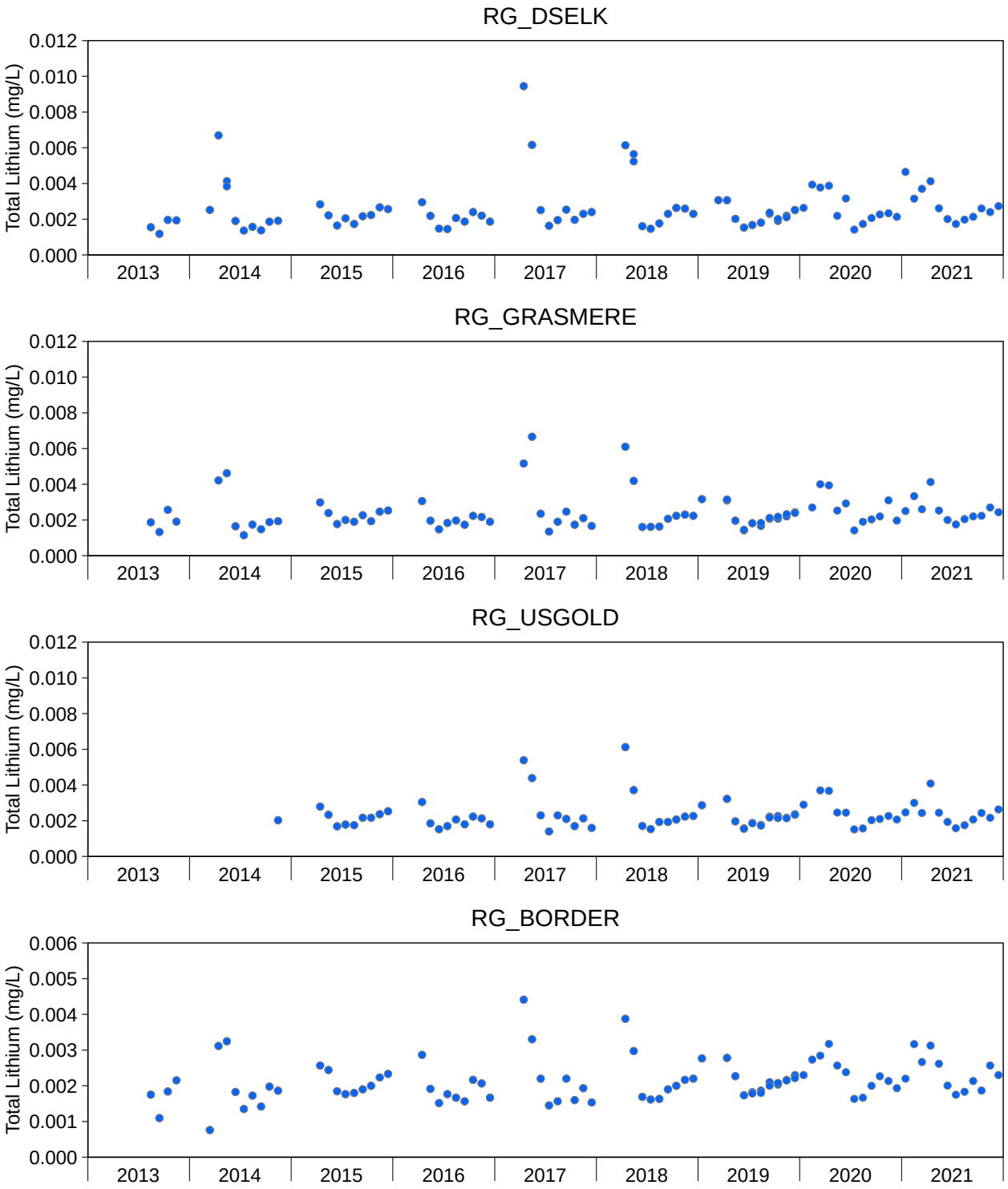

Figure B.6: Monthly Average Concentrations of Total Lithium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

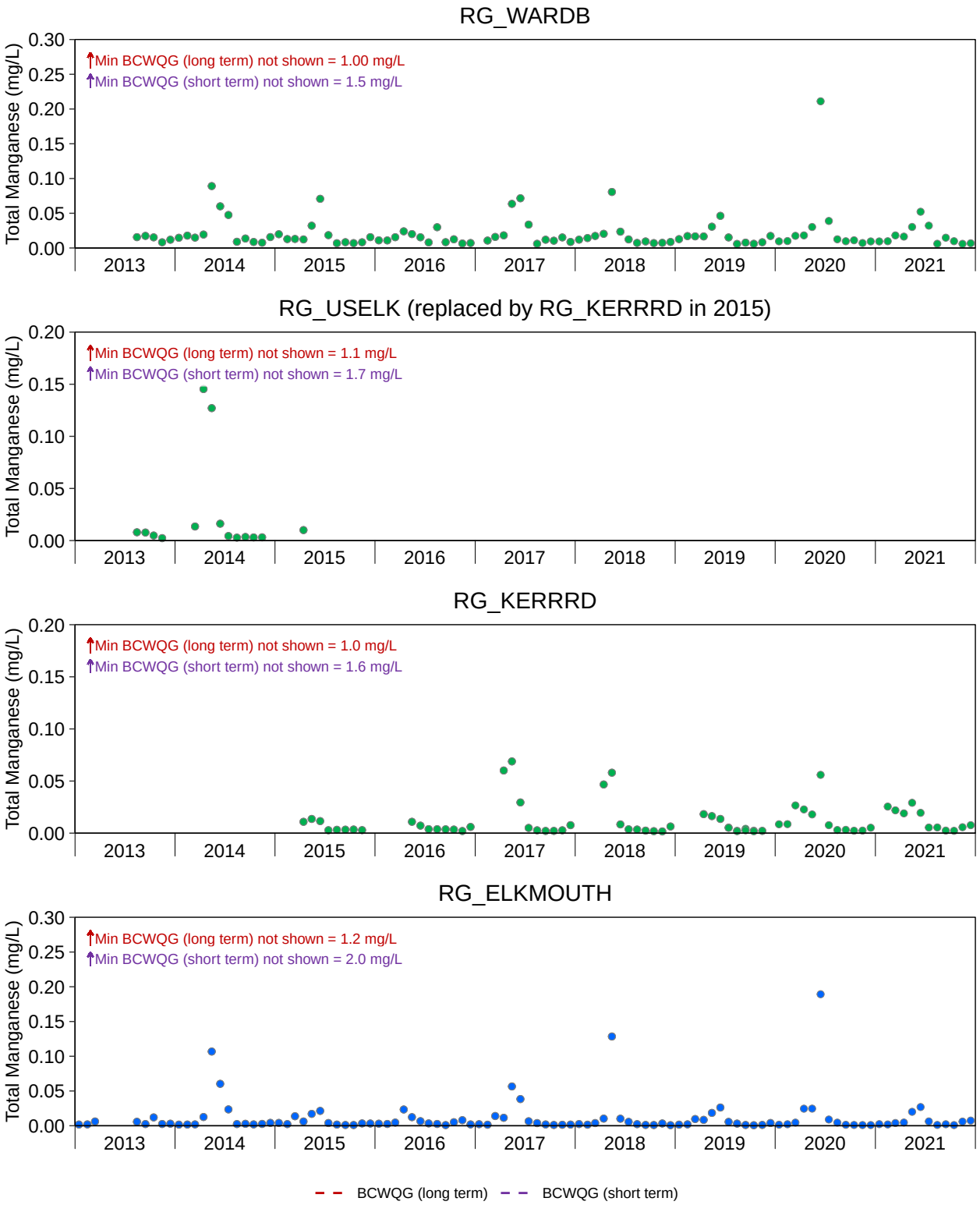

Figure B.7: Monthly Average Concentrations of Total Manganese in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

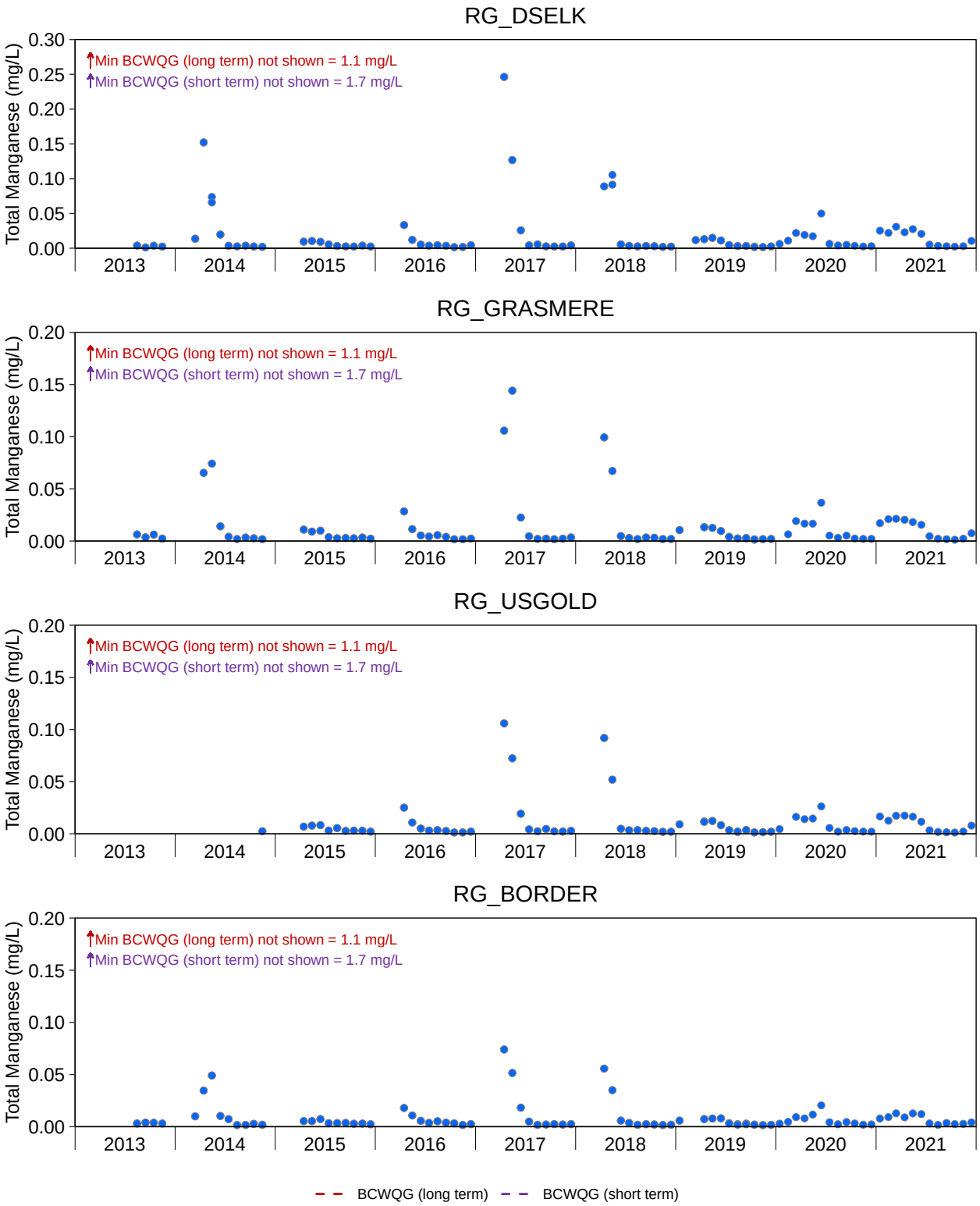

Figure B.7: Monthly Average Concentrations of Total Manganese in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

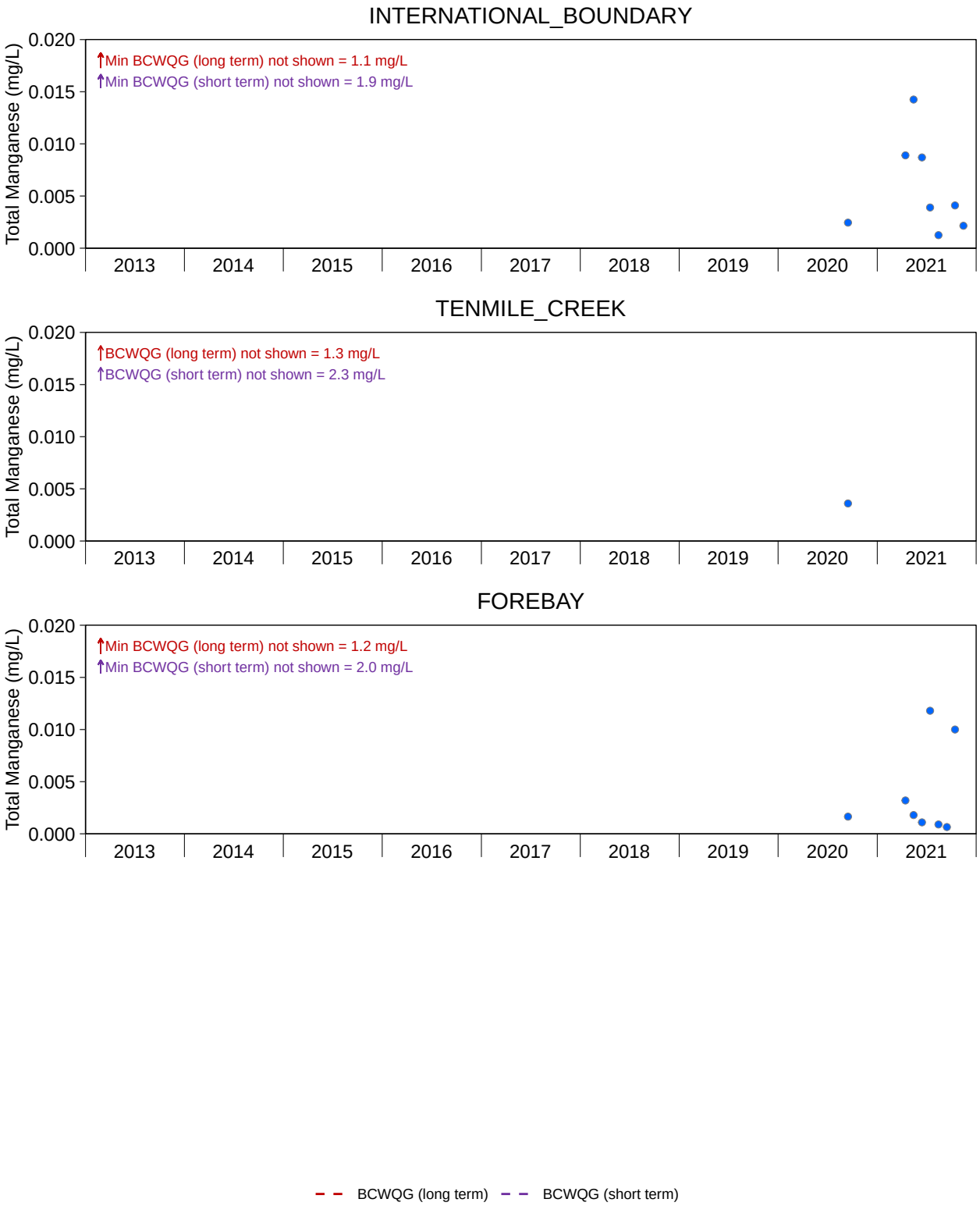

Figure B.7: Monthly Average Concentrations of Total Manganese in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

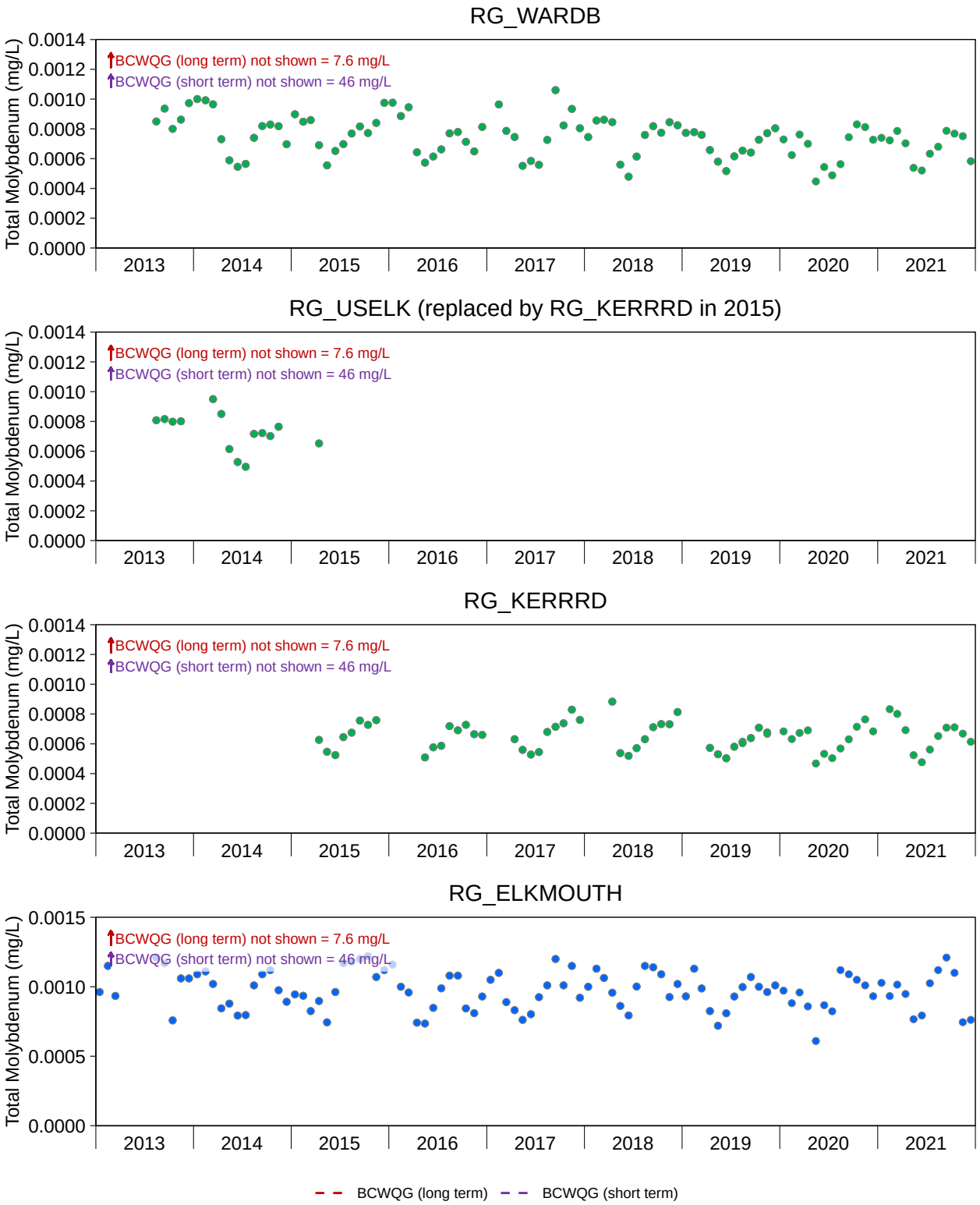

Figure B.8: Monthly Average Concentrations of Total Molybdenum in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

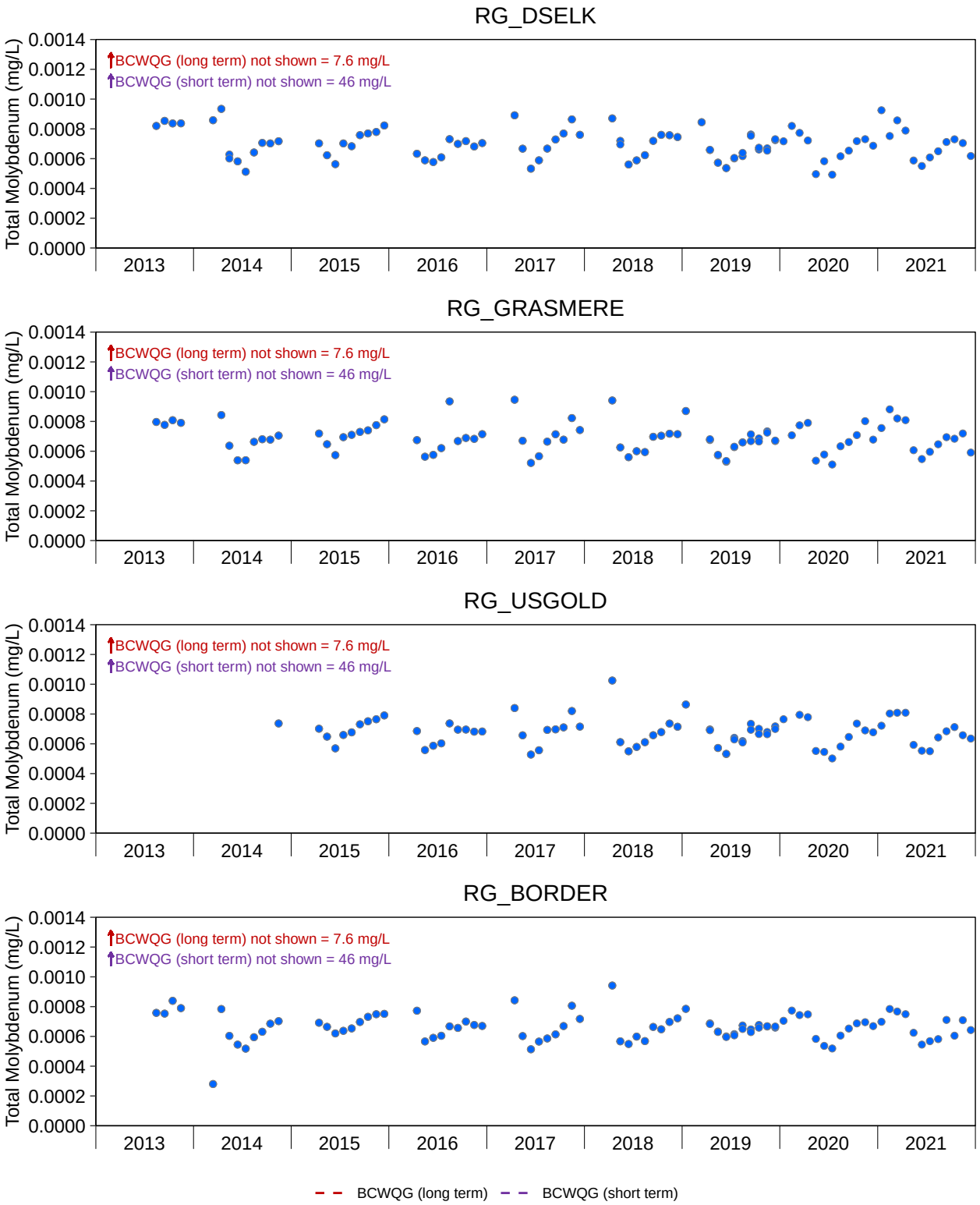

Figure B.8: Monthly Average Concentrations of Total Molybdenum in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

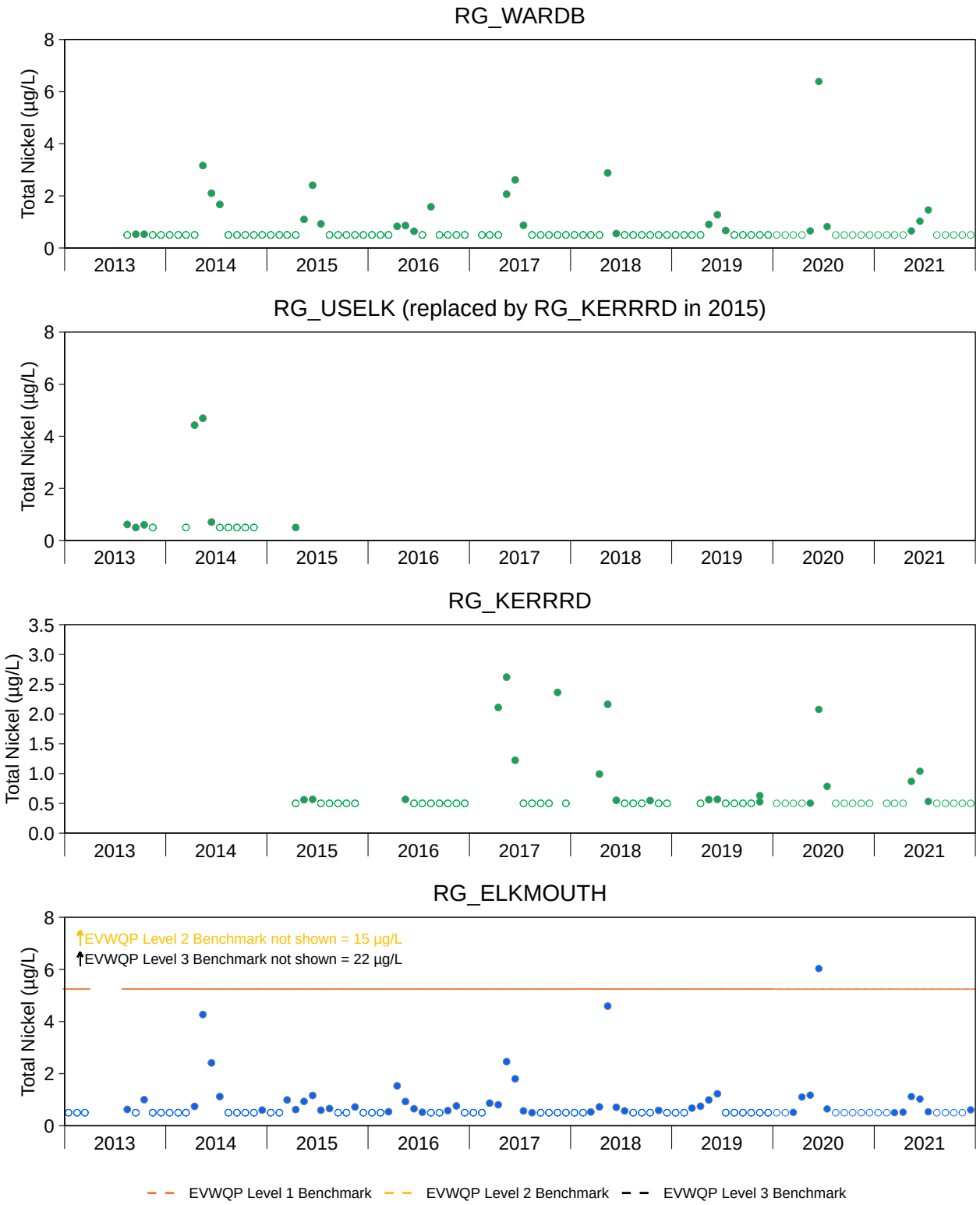

Figure B.9: Monthly Average Concentrations of Total Nickel in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

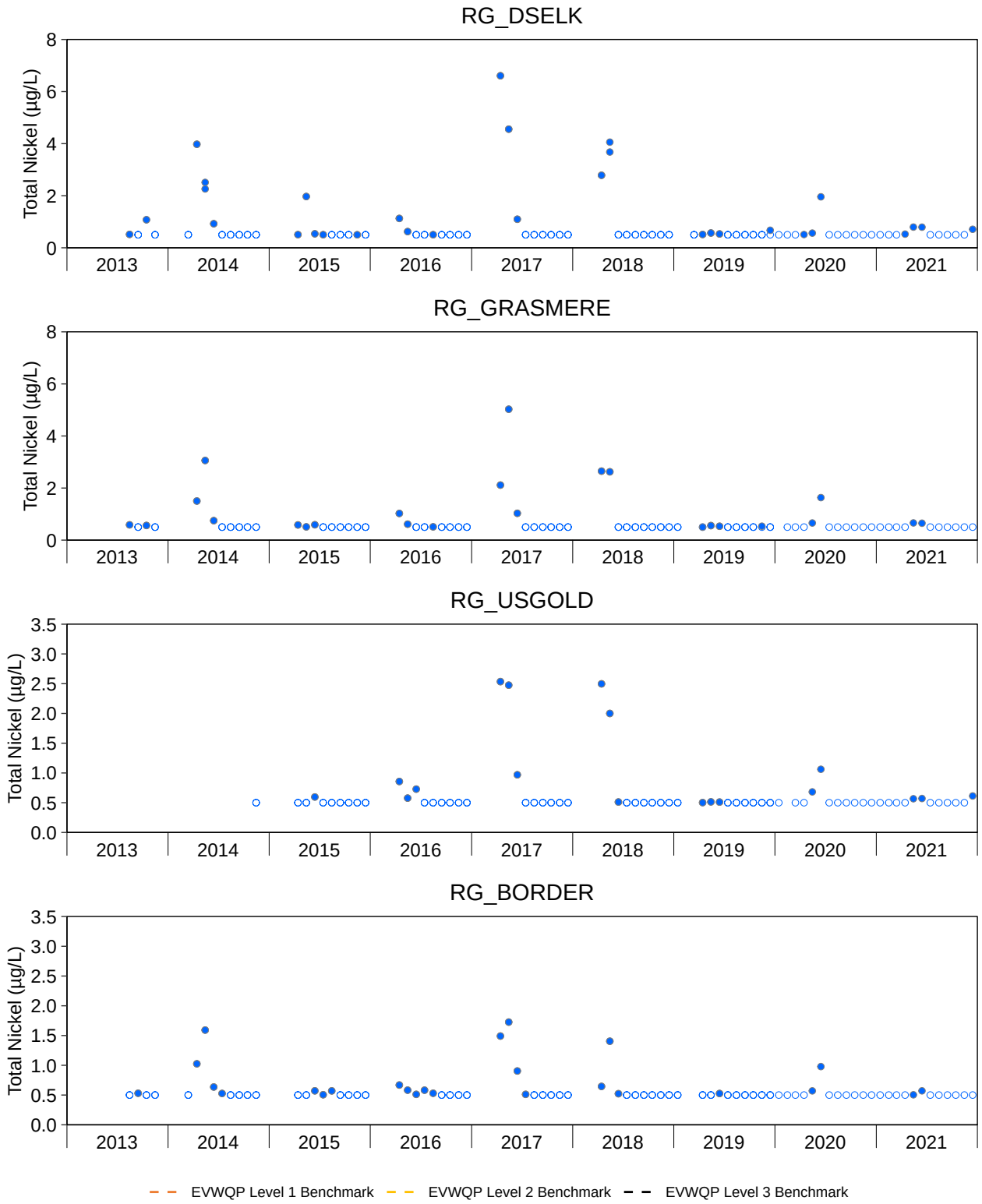

Figure B.9: Monthly Average Concentrations of Total Nickel in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

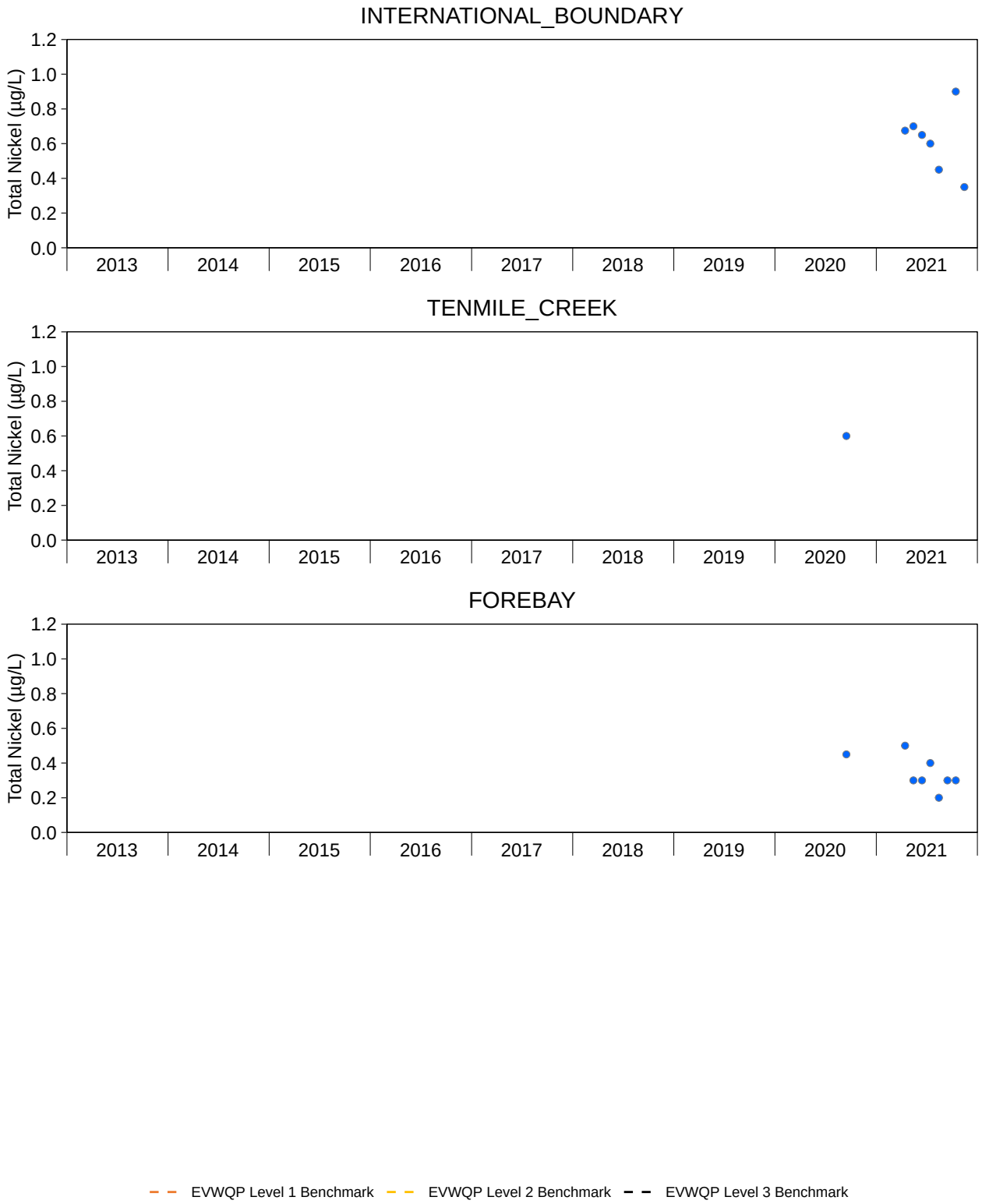

Figure B.9: Monthly Average Concentrations of Total Nickel in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

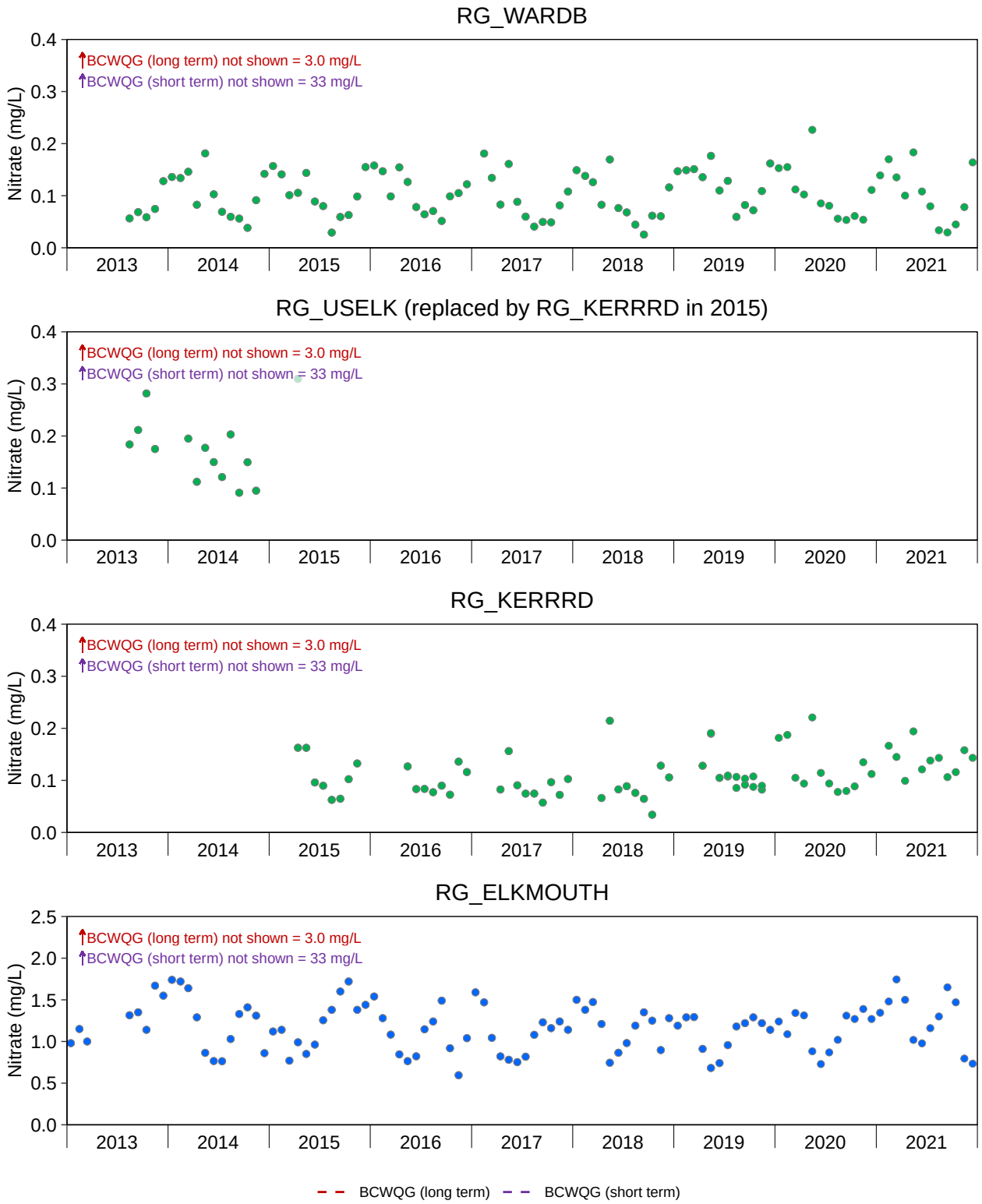

Figure B.10: Monthly Average Concentrations of Nitrate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

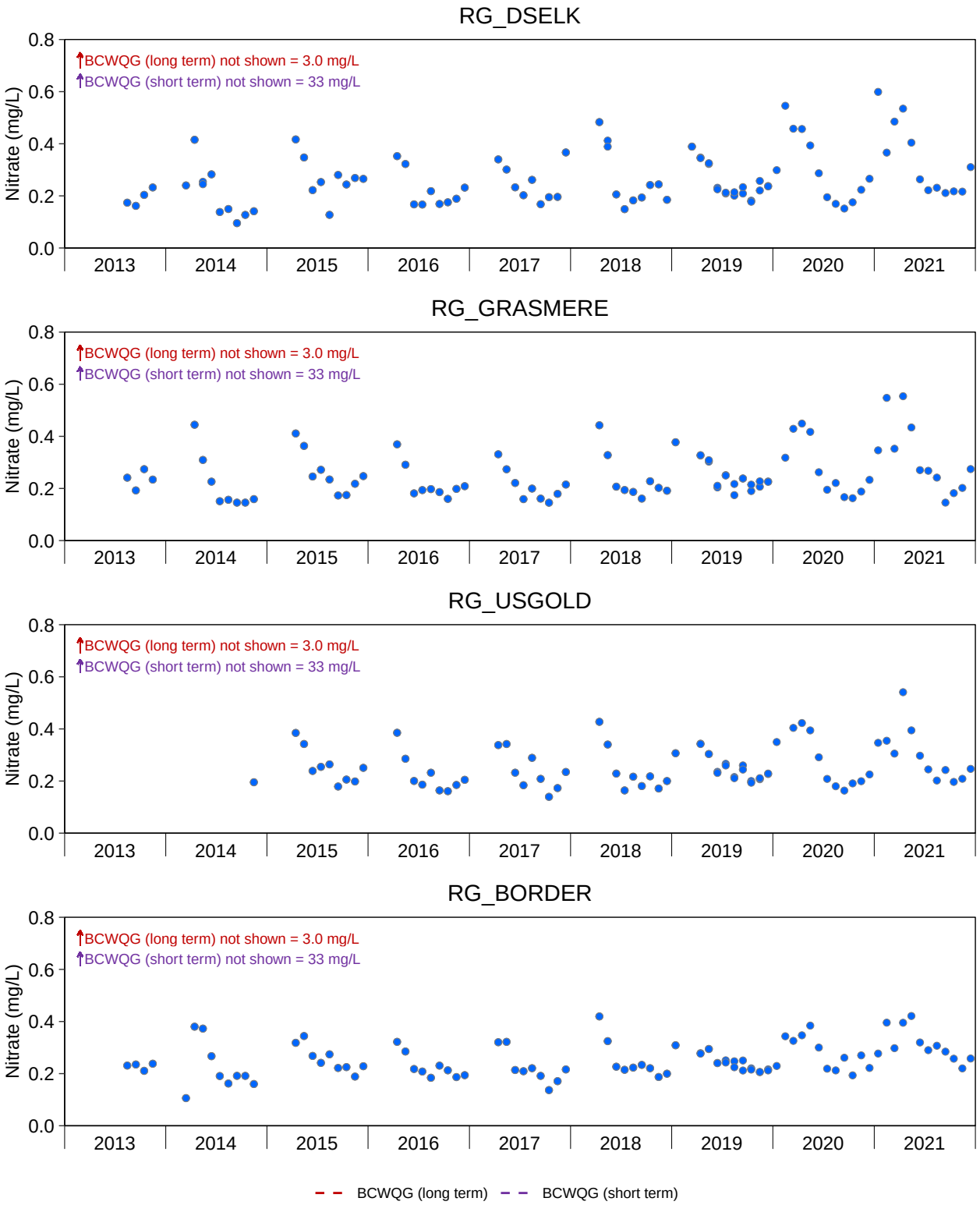

Figure B.10: Monthly Average Concentrations of Nitrate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

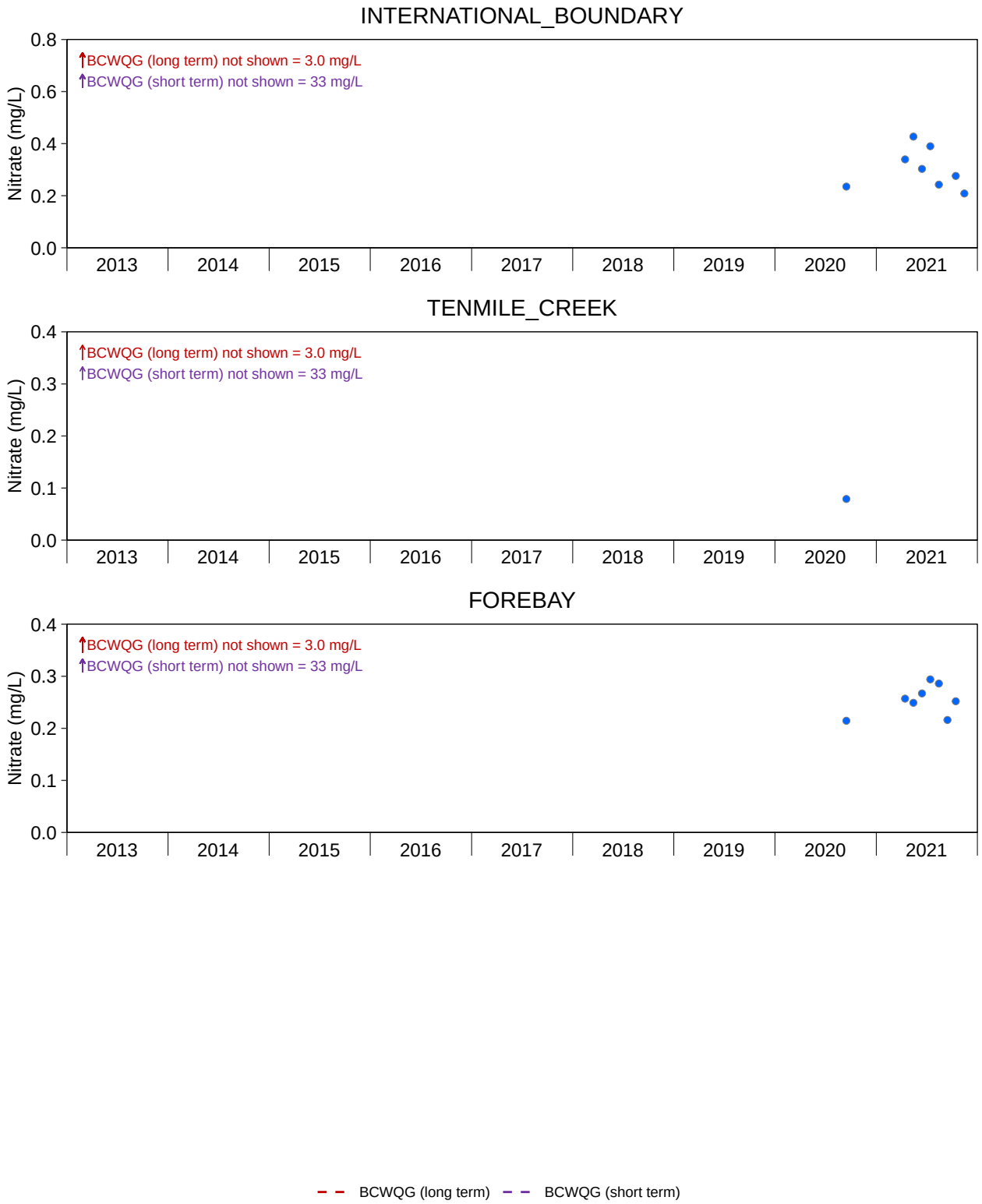

Figure B.10: Monthly Average Concentrations of Nitrate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

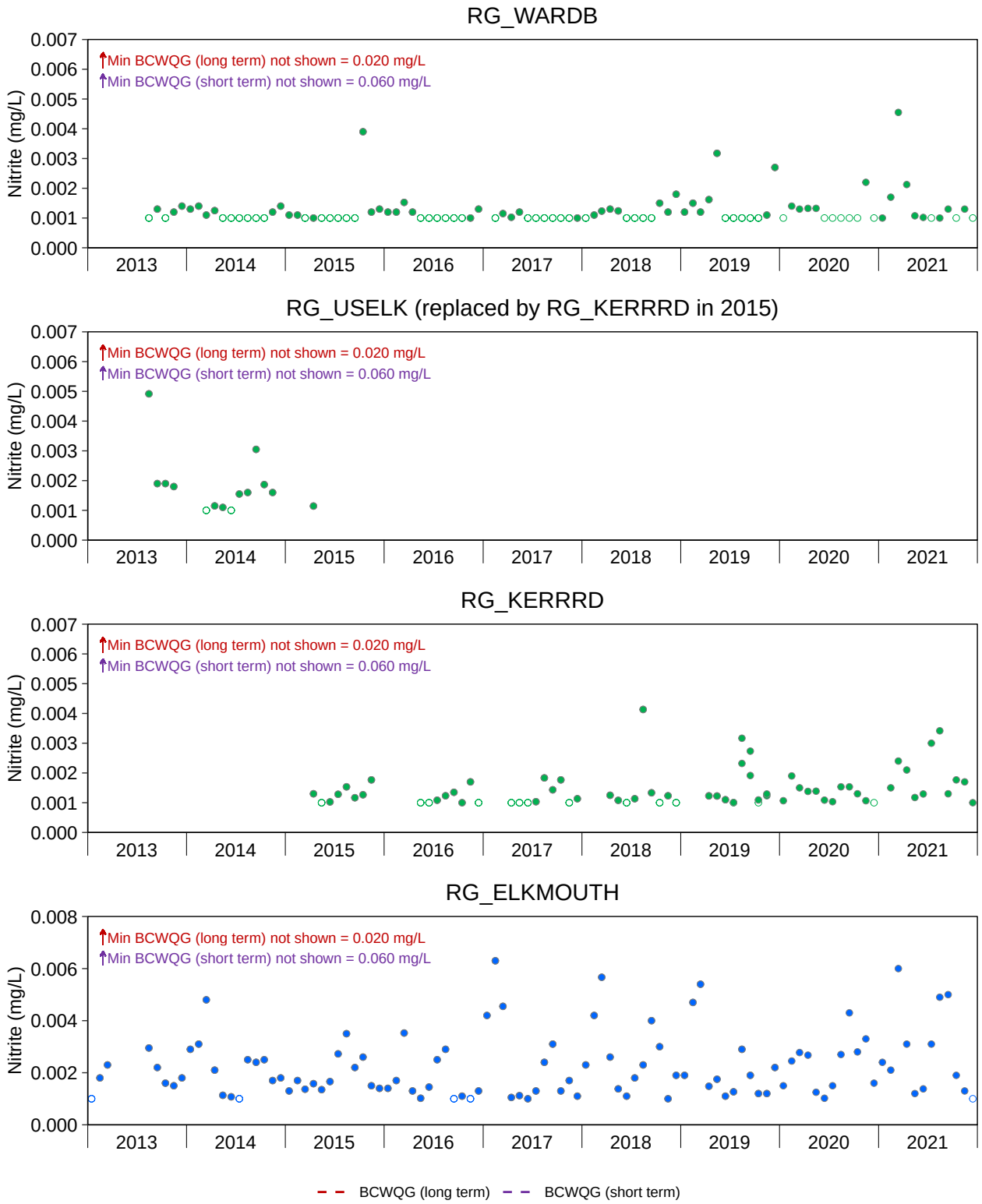

Figure B.11: Monthly Average Concentrations of Nitrite in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations.

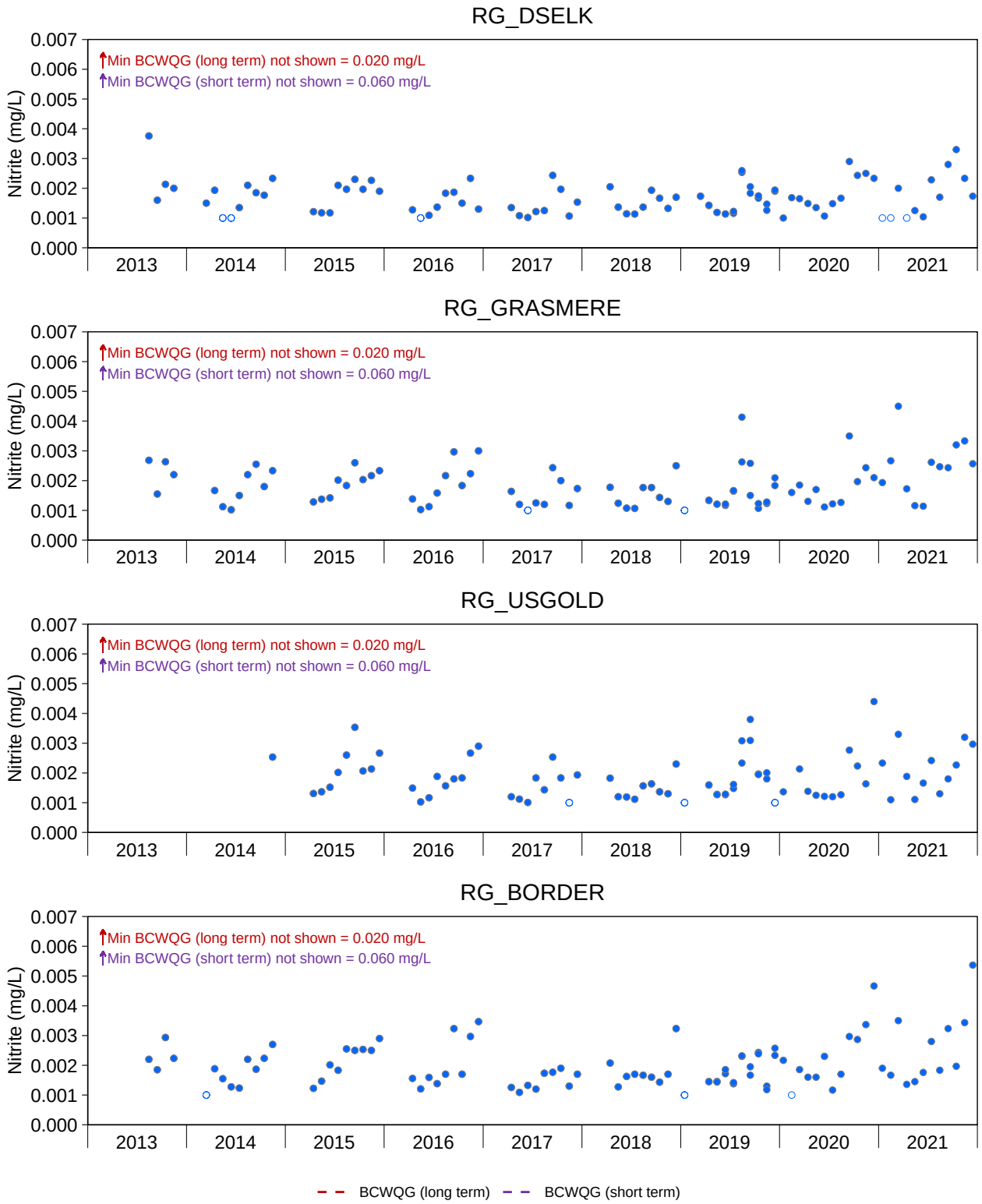

Figure B.11: Monthly Average Concentrations of Nitrite in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations.

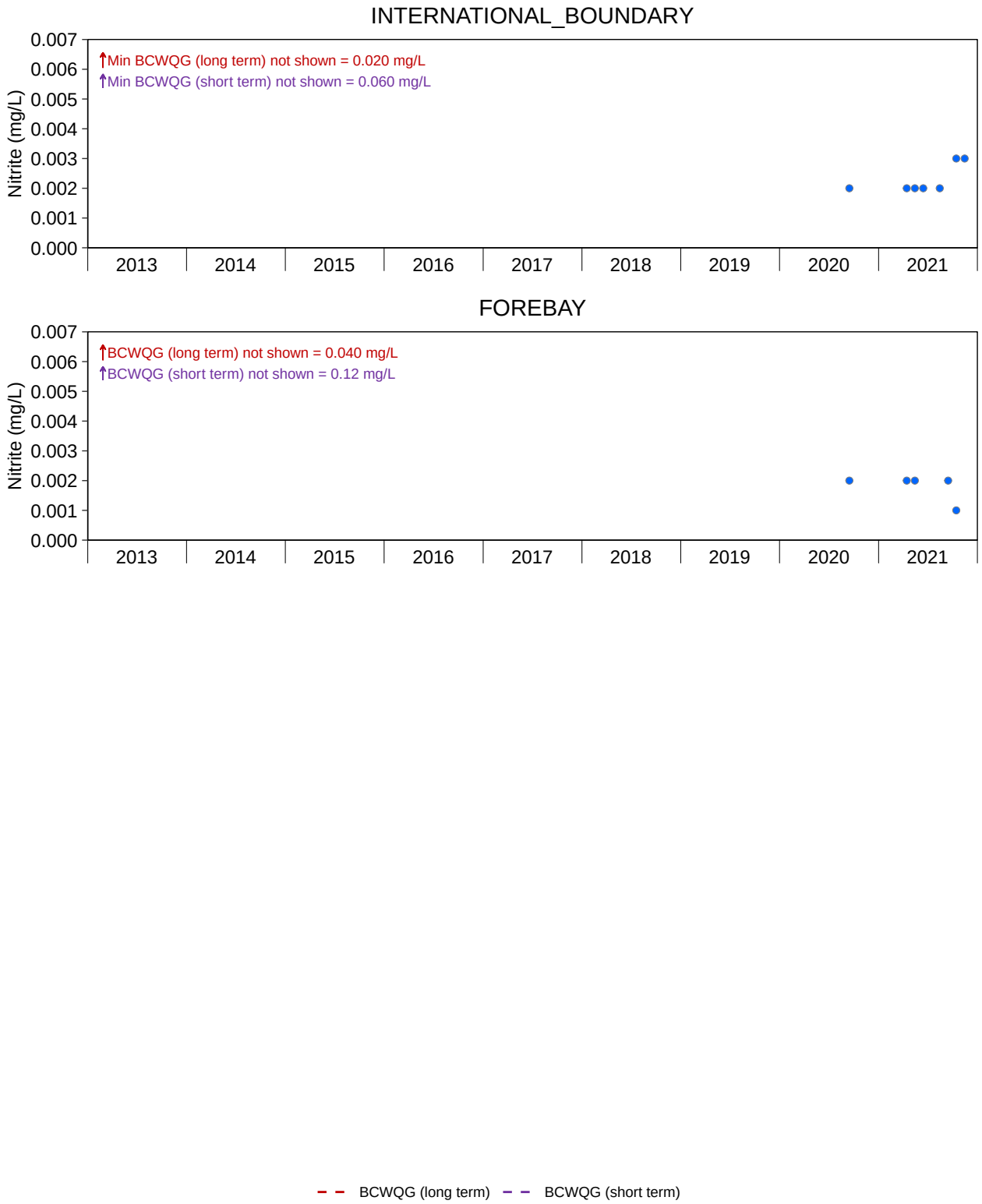

Figure B.11: Monthly Average Concentrations of Nitrite in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water chloride concenrations.

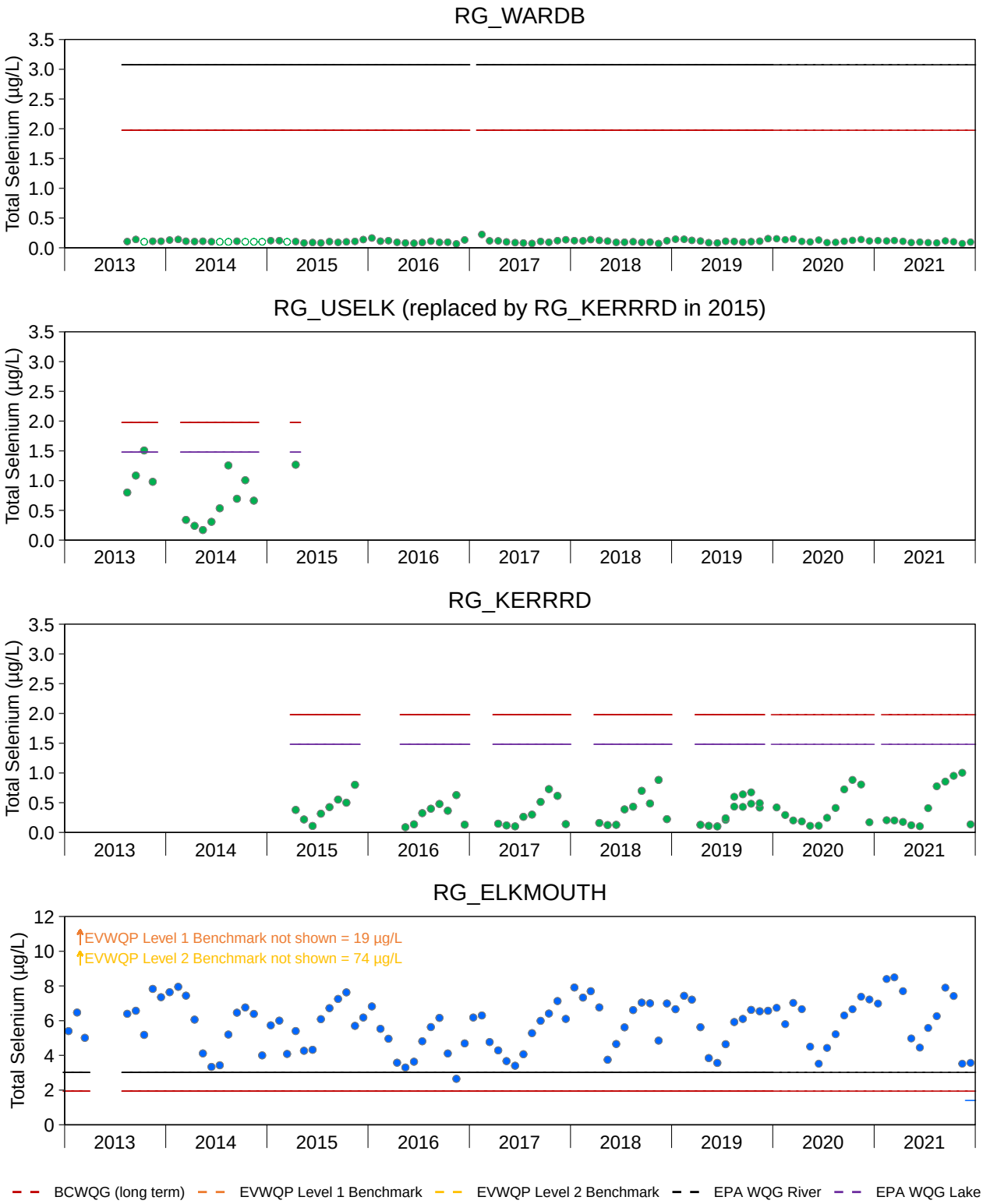

Figure B.12: Monthly Average Concentrations of Total Selenium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When selenium is compared to the site performance objective (2 µg/L), values are rounded to the nearest whole number. This same factor is not applied for comparison to BC WQGs, therefore, values elevated to the guideline at RG_DSELK are not considered as out of compliance.

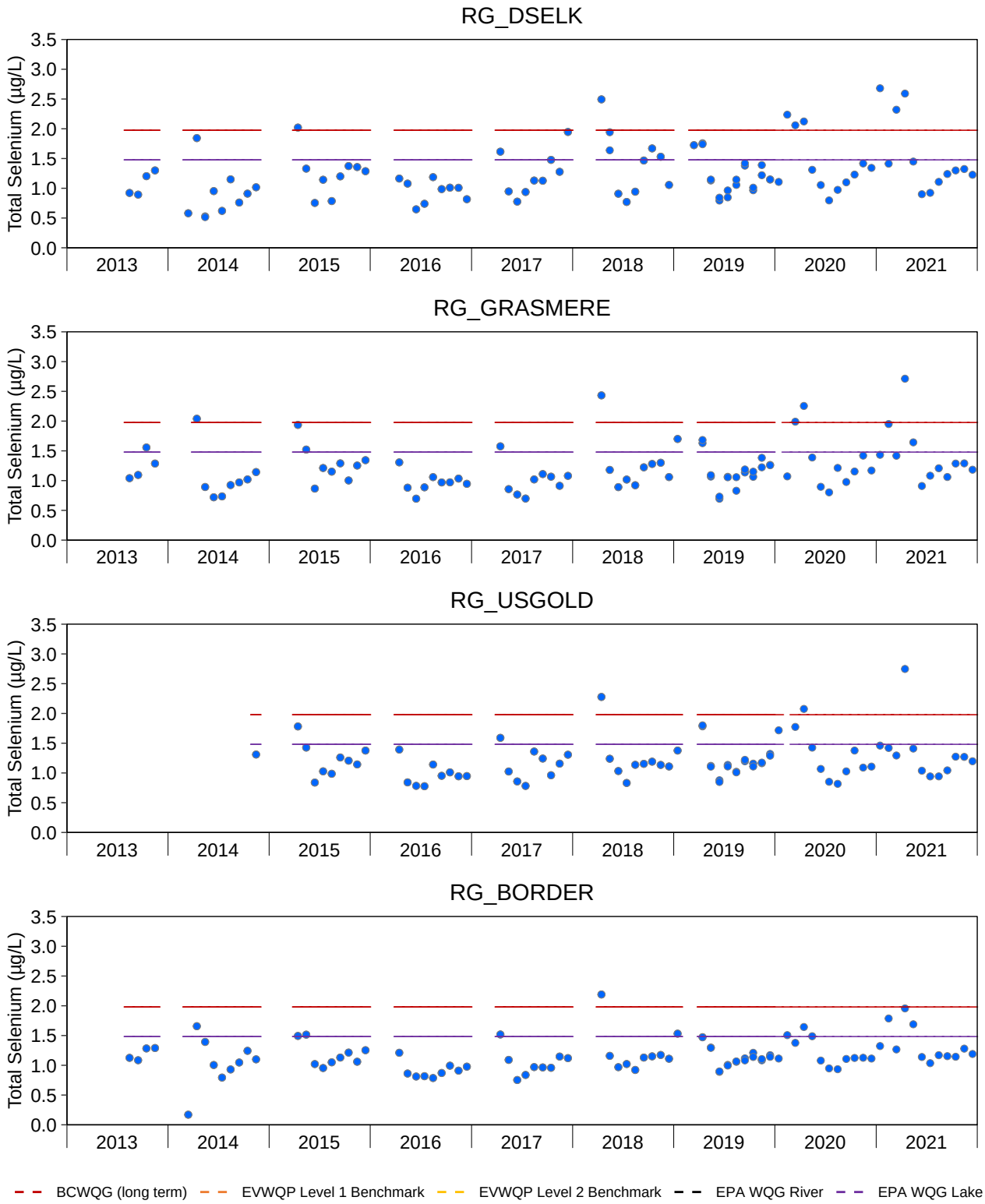

Figure B.12: Monthly Average Concentrations of Total Selenium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When selenium is compared to the site performance objective (2 µg/L), values are rounded to the nearest whole number. This same factor is not applied for comparison to BC WQGs, therefore, values elevated to the guideline at RG_DSELK are not considered as out of compliance.

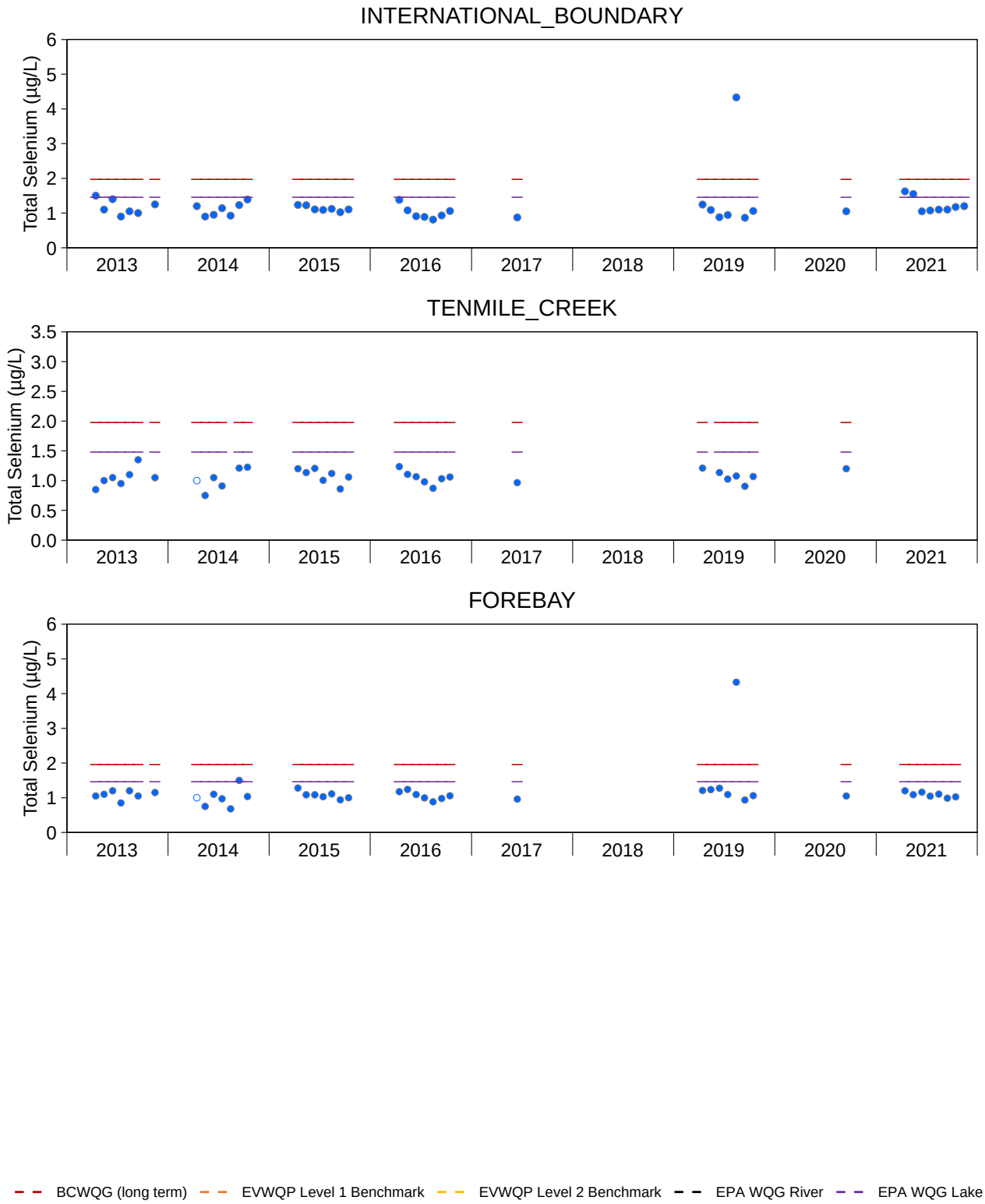

Figure B.12: Monthly Average Concentrations of Total Selenium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. When selenium is compared to the site performance objective (2 µg/L), values are rounded to the nearest whole number. This same factor is not applied for comparison to BC WQGs, therefore, values elevated to the guideline at RG_DSELK are not considered as out of compliance.

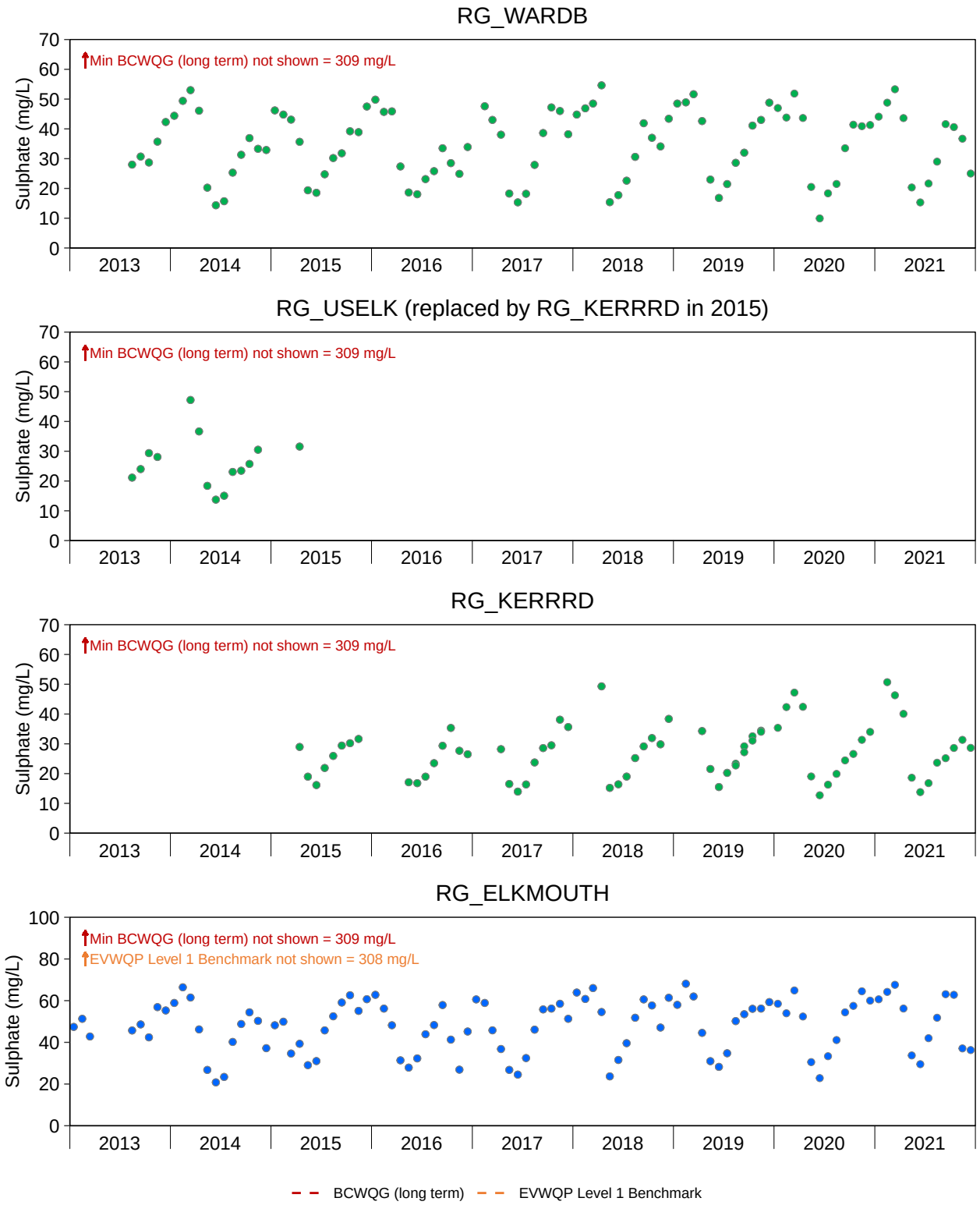

Figure B.13: Monthly Average Concentrations of Sulphate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

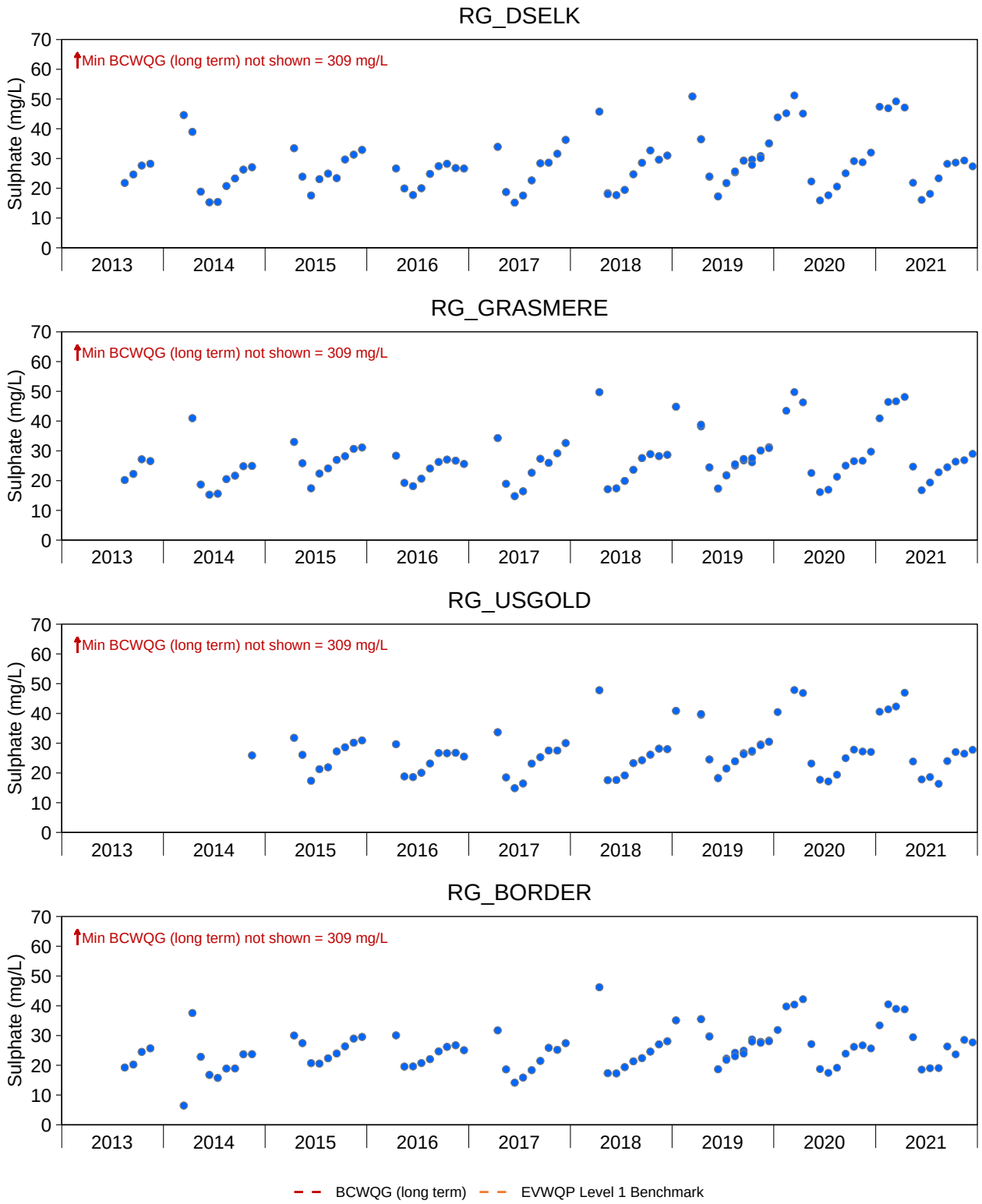

Figure B.13: Monthly Average Concentrations of Sulphate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

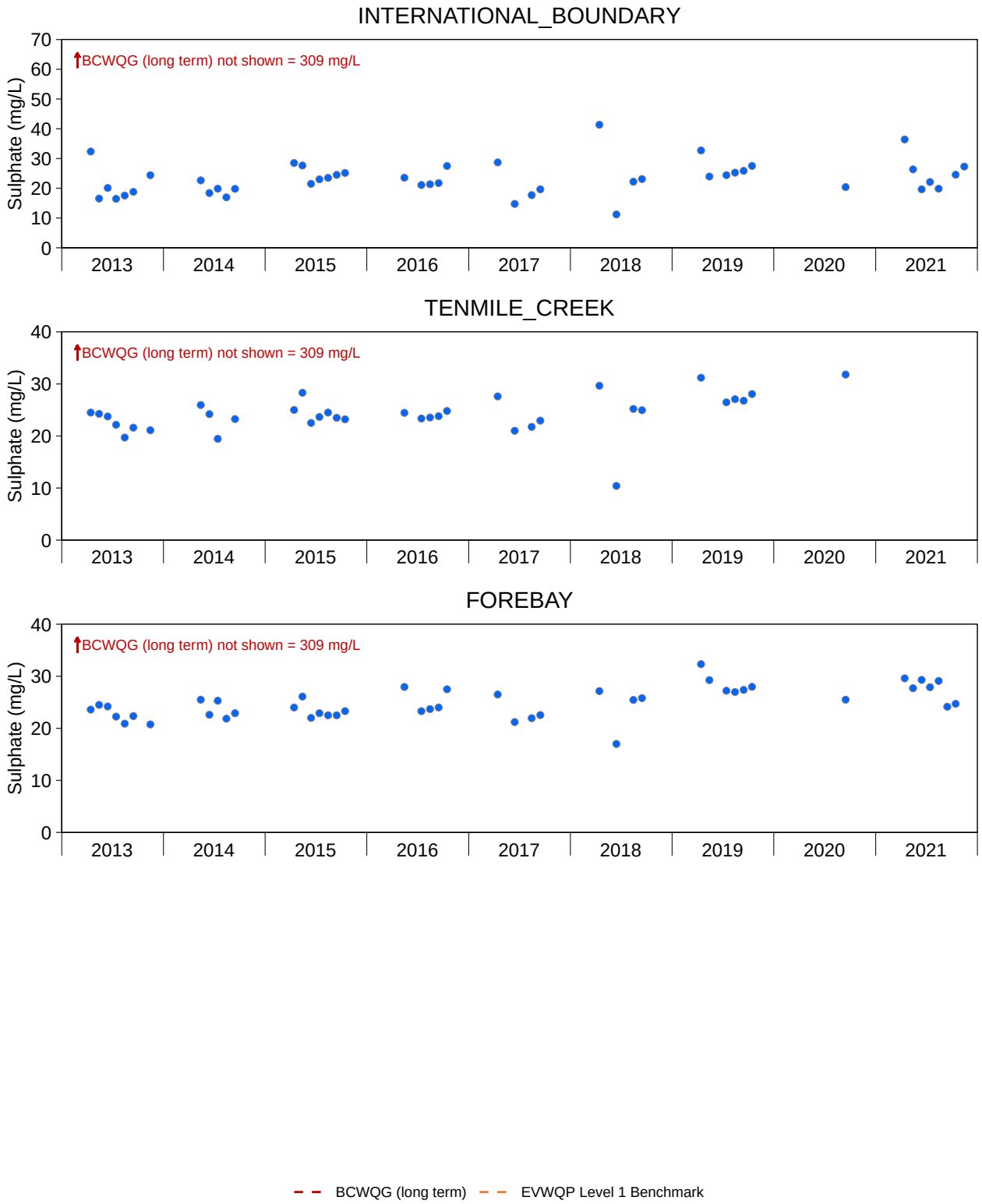

Figure B.13: Monthly Average Concentrations of Sulphate in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

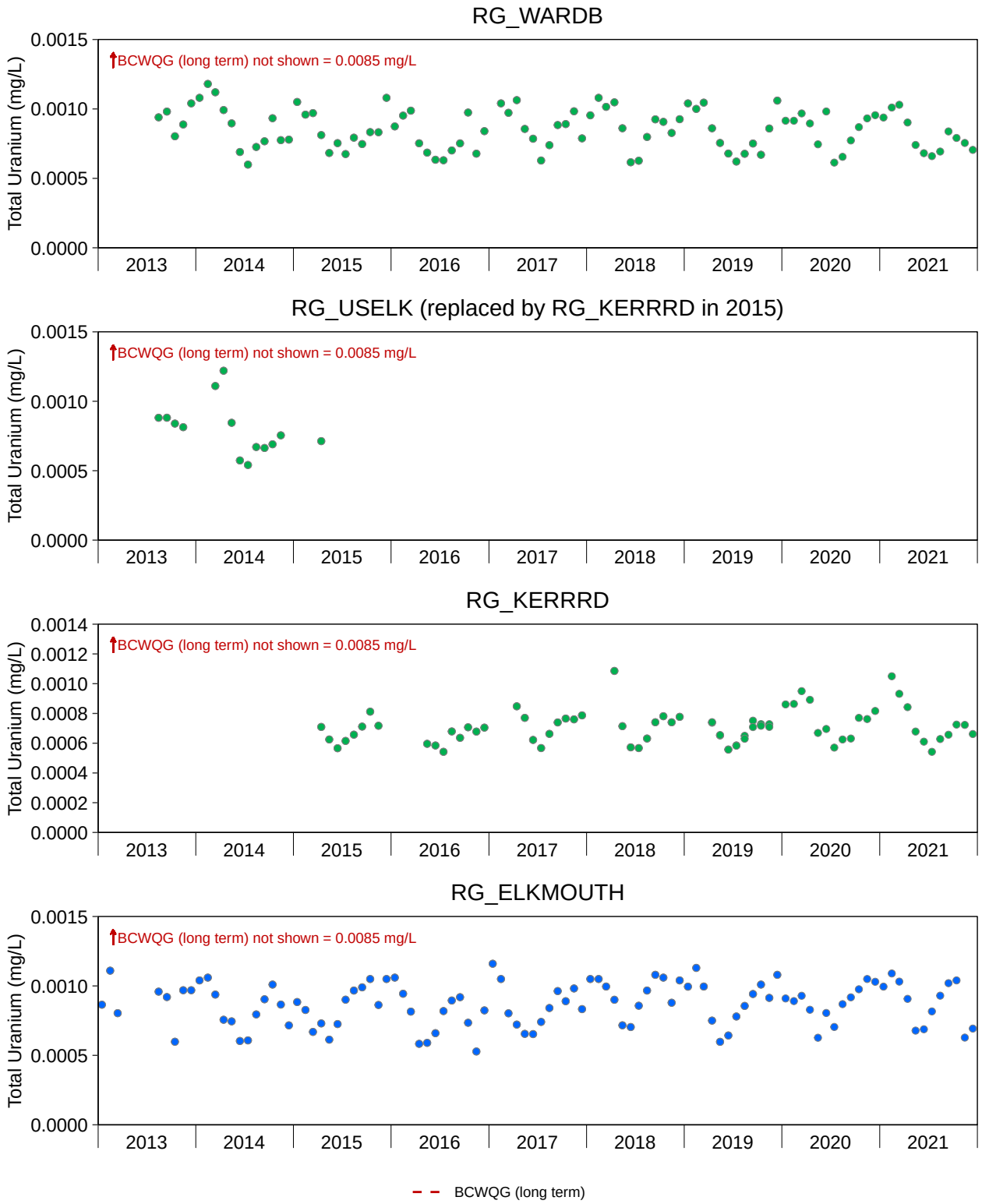

Figure B.14: Monthly Average Concentrations of Total Uranium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

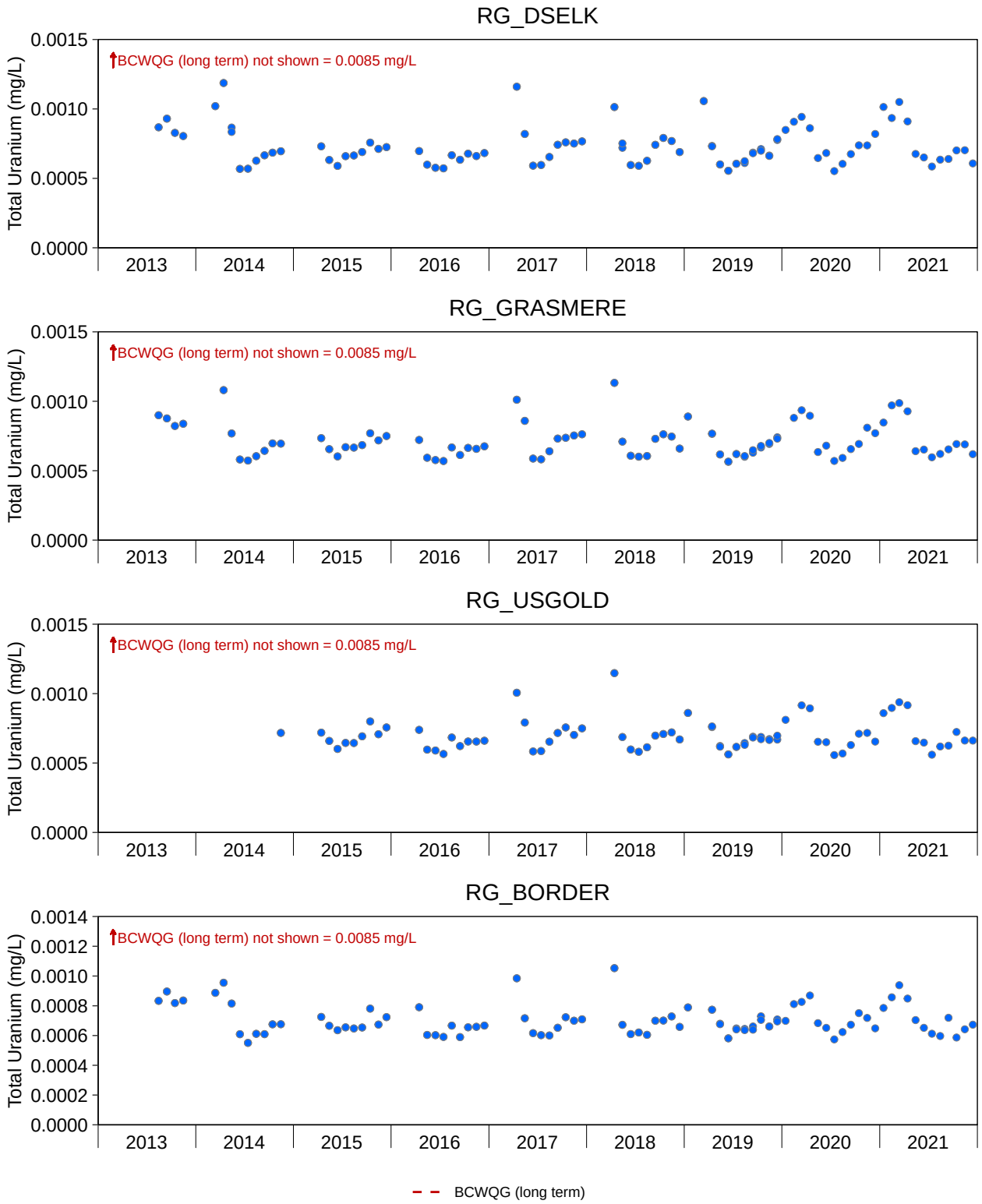

Figure B.14: Monthly Average Concentrations of Total Uranium in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

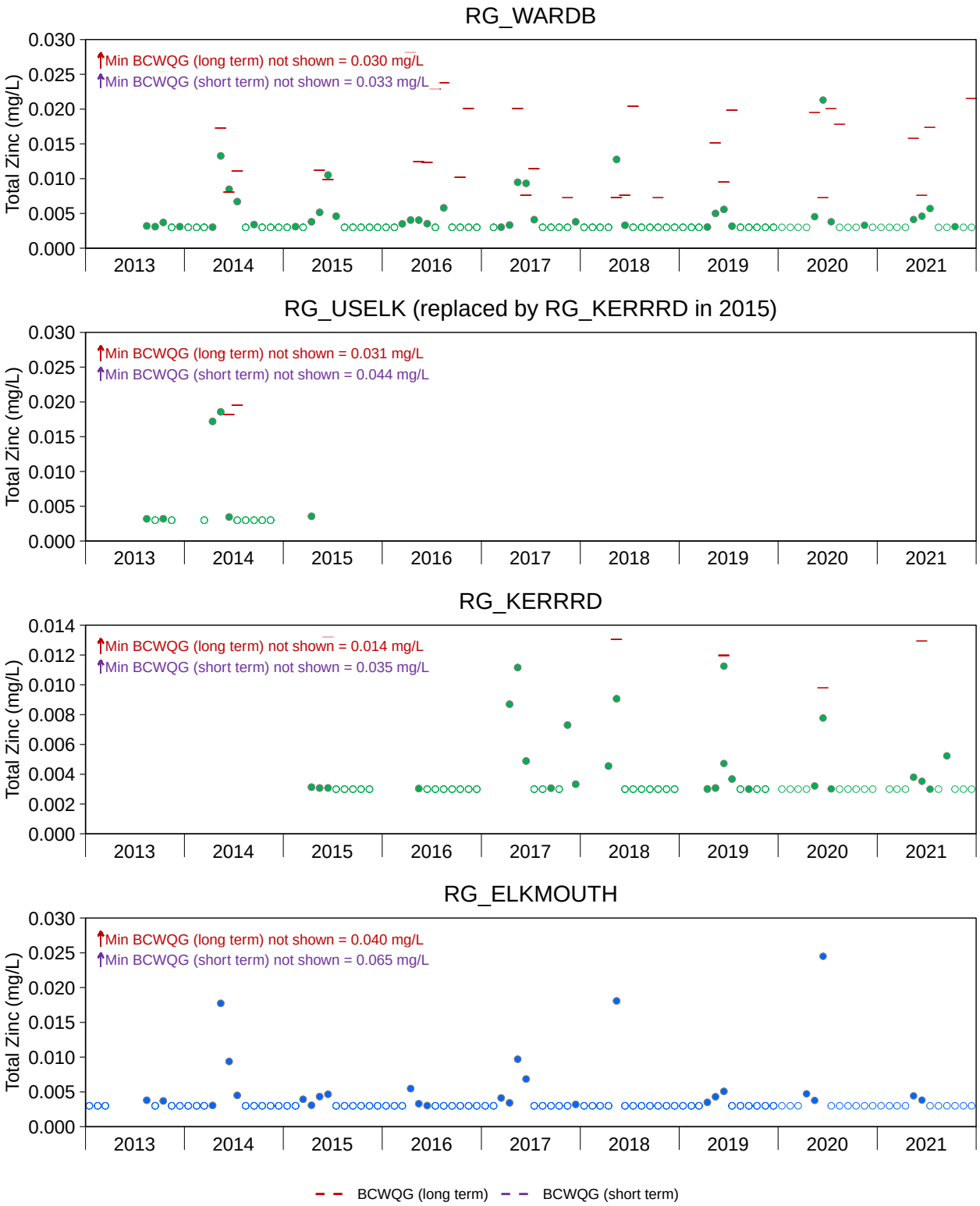

Figure B.15: Monthly Average Concentrations of Total Zinc in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

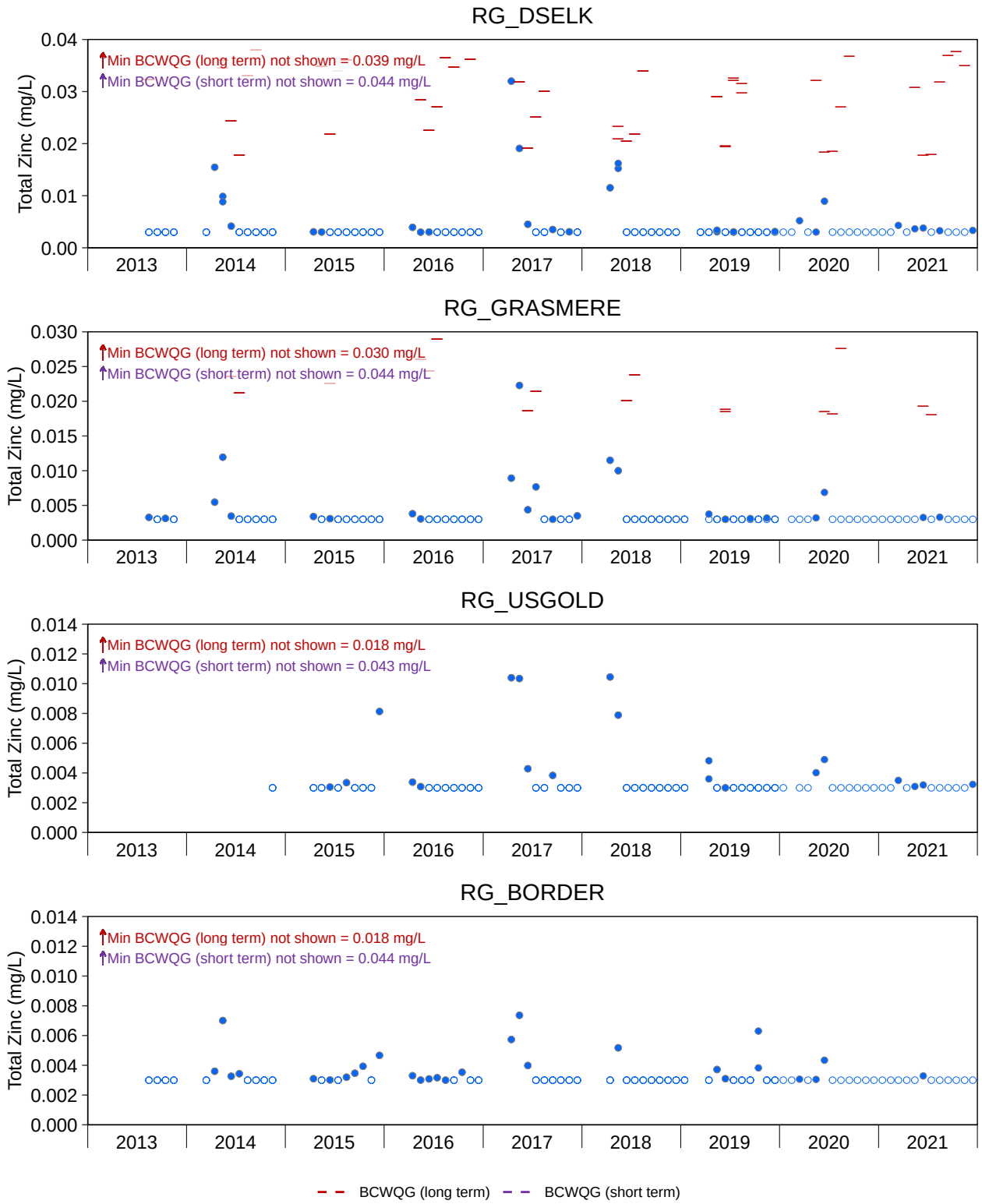

Figure B.15: Monthly Average Concentrations of Total Zinc in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

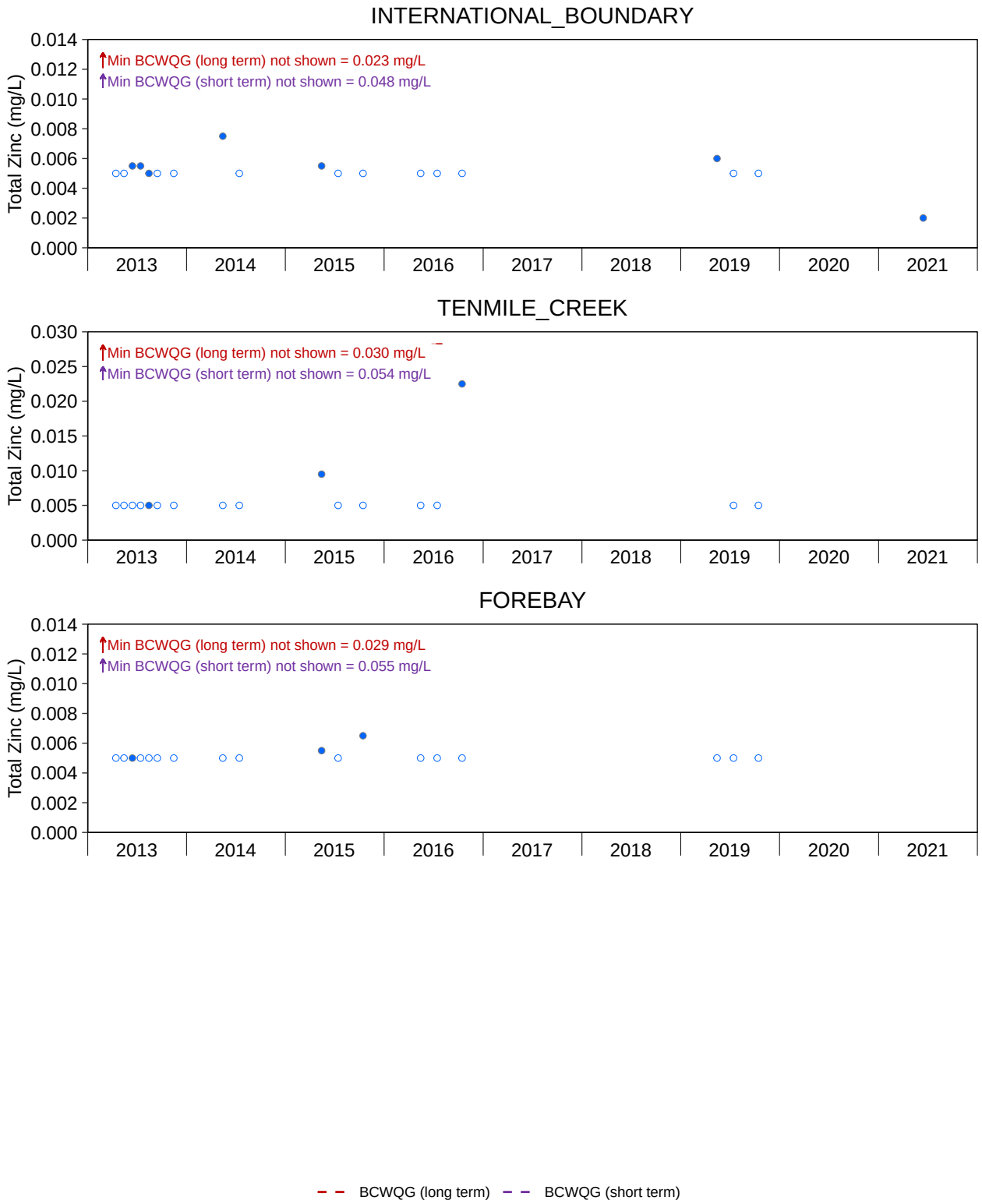

Figure B.15: Monthly Average Concentrations of Total Zinc in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL. Guidelines are dependent on water hardness.

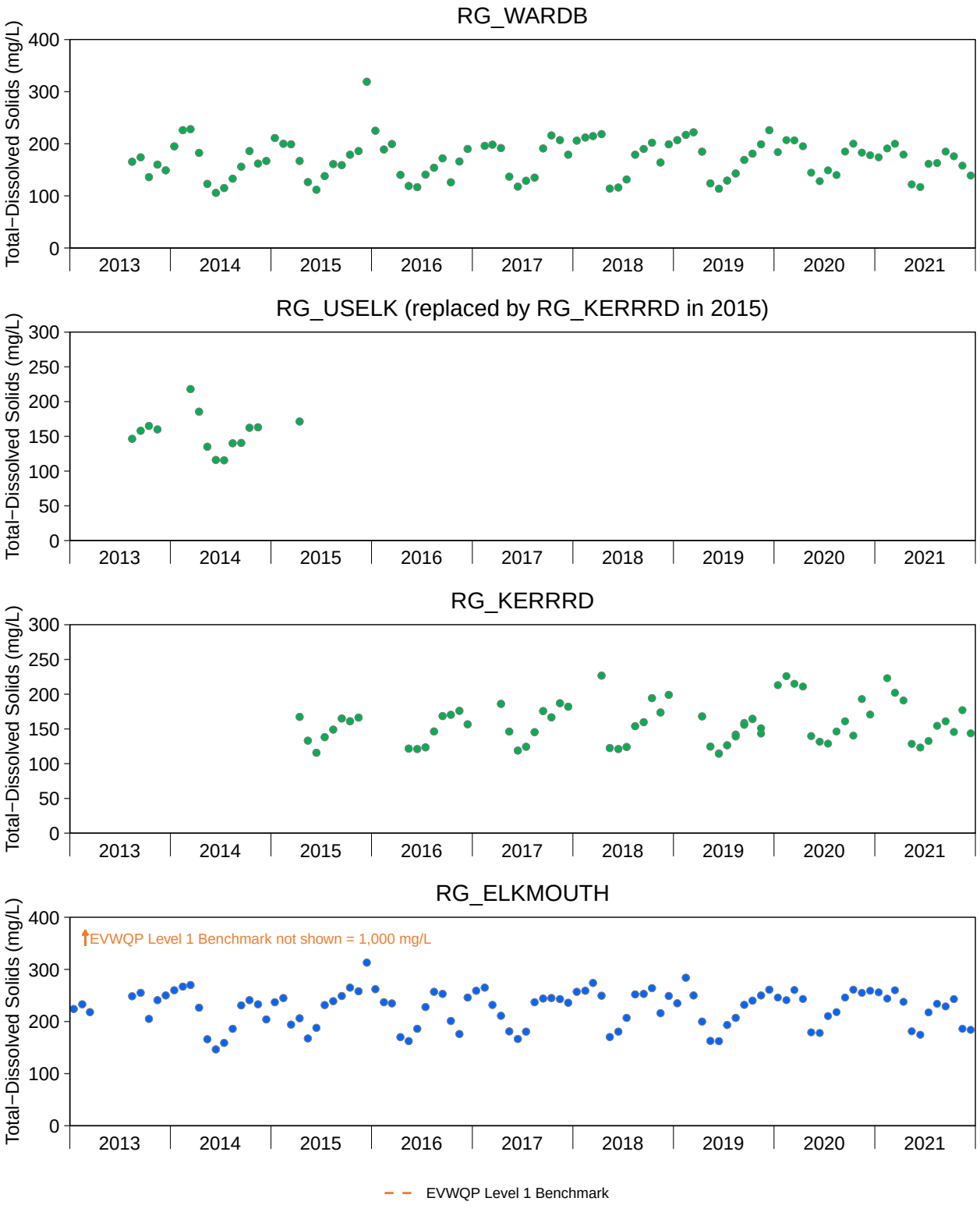

Figure B.16: Monthly Average Concentrations of Total−Dissolved Solids in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

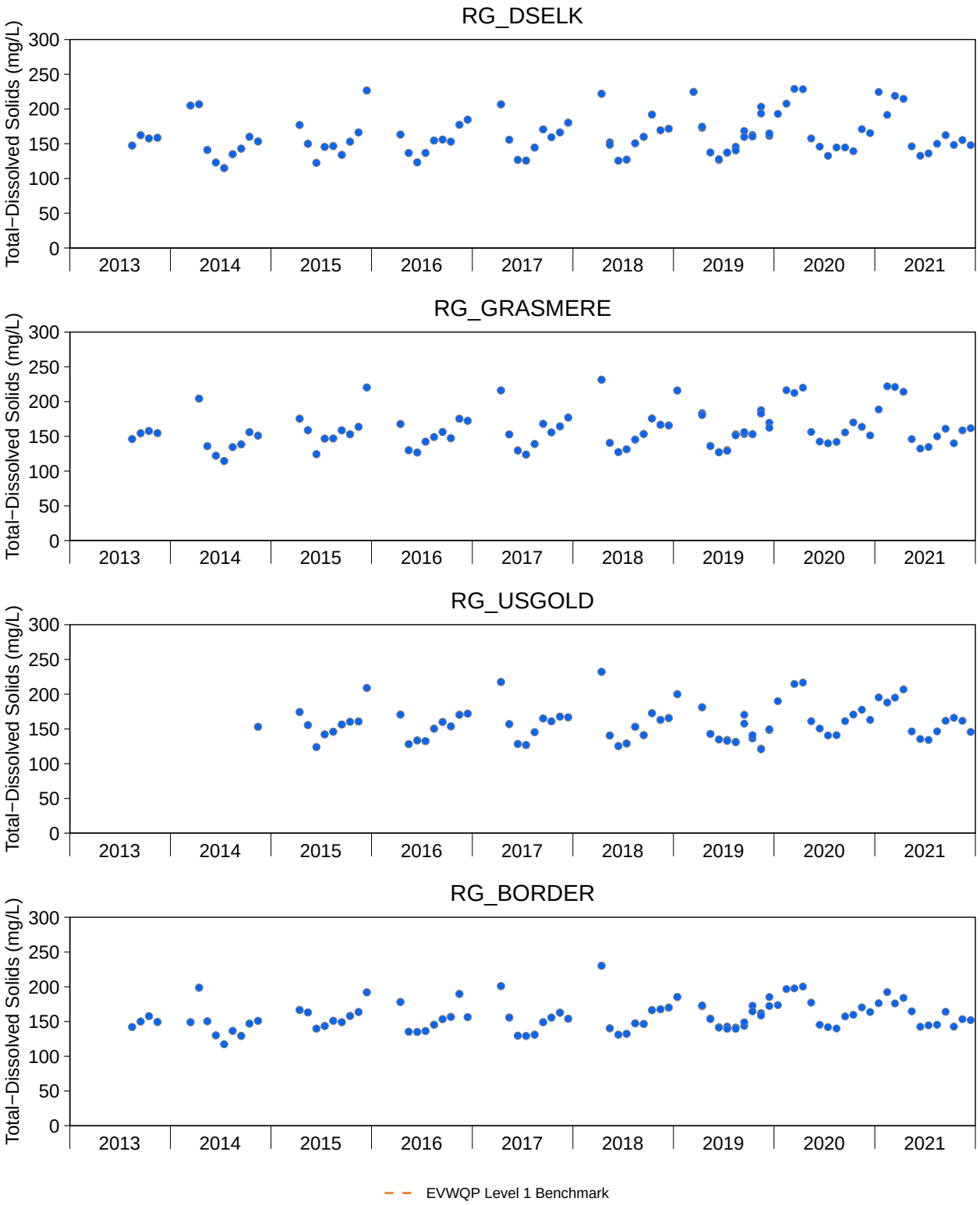

Figure B.16: Monthly Average Concentrations of Total−Dissolved Solids in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

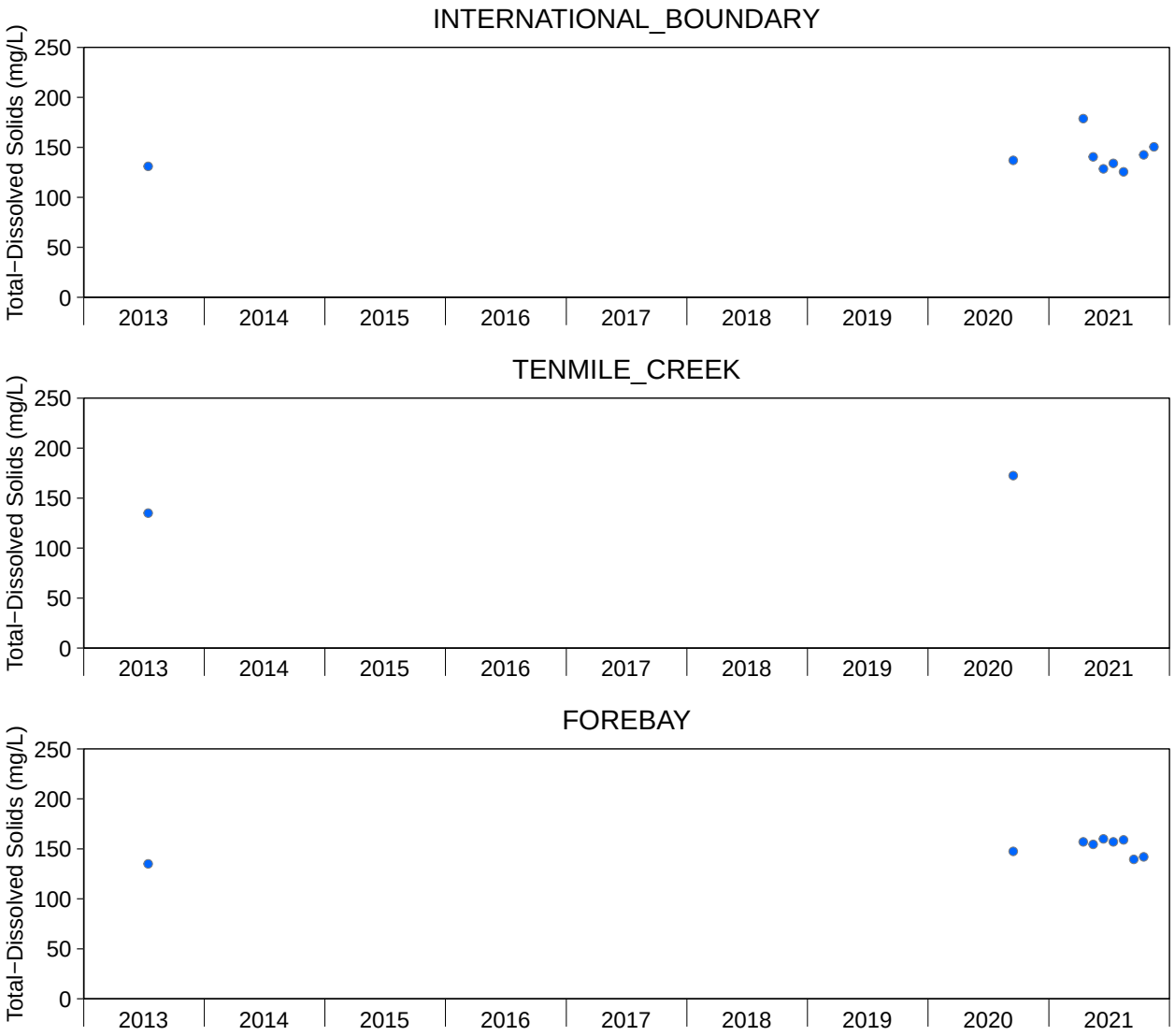

Figure B.16: Monthly Average Concentrations of Total−Dissolved Solids in the Koocanusa Reservoir Water Quality Sampling Areas, 2013 to 2021

Notes: Concentrations reported below the laboratory reporting limit (LRL) are plotted as open symbols at the LRL.

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Hardness (mg/L)	Temperature °C	Total Dissolved Solids (mg/L)	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Dissolved Organic Carbon (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Orthophosphate (mg/L)
RG_WARDB	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	90.4	0	117	8.00	8.06	7.65	0.920	83.0	0.0294	<0.001	<0.005	<0.05	<0.001
	Annual Maximum	170	17.9	200	8.27	8.51	12.8	2.09	128	0.183	0.00455	0.0501	1.17	0.0104
	Annual Mean	130	7.88	164	8.16	8.25	10.3	1.54	106	0.105	0.00151	0.0141	0.187	0.00338
	Annual Median	130	8.36	168	8.16	8.22	10.6	1.52	107	0.104	0.00105	0.00750	0.0950	0.00280
	% < LRL	0%	0%	0%	0%	0%	0%	0%	0%	0%	25%	33%	25%	33%
	% > BCWQG[a]	-	-	-	-	0%	17%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA River Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_KERRRD	n	11	11	11	11	11	11	11	11	11	11	11	11	11
	Annual Minimum	97.3	0.120	123	7.90	7.79	7.83	0.963	87.9	0.0991	0.00100	0.00573	0.0587	<0.001
	Annual Maximum	194	19.7	223	8.37	8.35	12.5	3.13	144	0.194	0.00342	0.0476	0.331	0.00575
	Annual Mean	136	9.94	162	8.19	8.02	10.4	1.80	113	0.139	0.00188	0.0155	0.122	0.00180
	Annual Median	134	8.94	154	8.21	7.95	10.2	1.82	110	0.143	0.00170	0.00963	0.0977	0.00112
	% < LRL	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	36%
	% > BCWQG[a]	-	-	-	-	0%	9%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_ELKMOUTH	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	152	0.200	175	8.19	8.19	9.34	0.530	122	0.734	<0.001	<0.005	0.103	<0.001
	Annual Maximum	241	17.0	260	8.41	8.52	13.6	3.90	164	1.74	0.00600	0.132	0.854	0.00580
	Annual Mean	195	6.82	221	8.31	8.32	11.7	1.55	146	1.26	0.00278	0.0219	0.320	0.00181
	Annual Median	204	5.85	232	8.28	8.32	11.9	1.41	152	1.32	0.00225	0.00962	0.304	0.00139
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	8%	25%	0%	25%
	% > BCWQG[a]	-	-	-	-	0%	0%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA River Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > Level 1 Benchmark	-	-	0%	-	-	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_DSELK	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	104	0.510	133	7.85	7.82	7.96	0.972	90.8	0.211	<0.001	0.00522	0.0787	<0.001
	Annual Maximum	214	18.4	224	8.41	8.49	13.0	2.45	152	0.599	0.00330	0.0407	0.284	0.00457
	Annual Mean	144	9.35	169	8.18	8.16	10.6	1.67	118	0.338	0.00179	0.0179	0.142	0.00176
	Annual Median	130	9.72	153	8.21	8.12	10.3	1.79	113	0.287	0.00172	0.0115	0.126	0.00123
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	25%	0%	0%	33%
	% > BCWQG[a]	-	-	-	-	0%	8%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_GRASMERE	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	104	1.16	132	8.01	7.72	8.29	1.06	94.3	0.146	0.00114	<0.005	0.0628	<0.001
	Annual Maximum	200	18.0	222	8.33	8.35	13.7	2.31	144	0.554	0.00450	0.0287	0.252	0.00247
	Annual Mean	144	9.60	169	8.20	8.15	10.6	1.65	118	0.318	0.00248	0.0127	0.126	0.00127
	Annual Median	132	10.1	160	8.20	8.18	10.3	1.62	113	0.272	0.00252	0.0105	0.113	<0.001
	% < LRL	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	8%	0%	58%
	% > BCWQG[a]	-	-	-	-	0%	0%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Hardness (mg/L)	Temperature °C	Total Dissolved Solids (mg/L)	Lab pH	Field pH	Dissolved Oxygen (mg/L)	Dissolved Organic Carbon (mg/L)	Alkalinity (mg/L)	Nitrate-N (mg/L)	Nitrite-N (mg/L)	Ammonia (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Orthophosphate (mg/L)
RG_USGOLD	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	104	1.45	134	7.92	7.89	7.67	1.30	92.9	0.197	0.00110	<0.005	0.0610	<0.001
	Annual Maximum	180	16.7	207	8.35	8.32	12.8	2.89	141	0.541	0.00330	0.0300	0.225	0.00217
	Annual Mean	139	9.77	165	8.20	8.17	10.3	1.85	117	0.298	0.00211	0.0126	0.135	0.00120
	Annual Median	133	10.3	162	8.24	8.18	10.2	1.84	113	0.272	0.00207	0.0112	0.115	0.00105
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%	8%	0%	50%
	% > BCWQG[a]	-	-	-	-	0%	8%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_BORDER	n	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	108	1.55	142	7.84	7.82	7.58	0.830	95.2	0.220	0.00136	0.00557	0.0507	<0.001
	Annual Maximum	170	15.5	192	8.35	8.29	12.6	2.13	139	0.421	0.00537	0.0357	0.302	0.00146
	Annual Mean	136	9.25	161	8.18	8.07	10.1	1.51	116	0.310	0.00252	0.0131	0.139	0.00108
	Annual Median	130	10.2	159	8.20	8.10	10.1	1.49	112	0.294	0.00193	0.0103	0.107	<0.001
	% < LRL	0%	0%	0%	0%	0%	0.0%	0%	0%	0%	0%	0%	0%	67%
	% > BCWQG[a]	-	-	-	-	0%	17%	-	0%	0%	0%	0%	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
INTERNATIONAL_BOUNDARY	n	7	3	7	0	6	1	7	7	7	6	0	0	0
	Annual Minimum	119	5.70	126	-	8.10	7.50	1.00	97.3	0.208	0.00200	-	-	-
	Annual Maximum	162	12.4	179	-	8.30	7.50	1.72	127	0.427	0.00300	-	-	-
	Annual Mean	134	9.73	143	-	8.22	7.50	1.36	108	0.312	0.00233	-	-	-
	Annual Median	133	11.0	140	-	8.25	7.50	1.34	103	0.303	0.00200	-	-	-
	% < LRL	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	-	-	-
	% > BCWQG[a]	-	-	-	-	0%	100%	-	0%	0%	0%	-	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	-	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
TENMILE_CREEK	n	0	0	0	0	0	0	0	0	0	0	0	0	0
	Annual Minimum	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Mean	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Median	-	-	-	-	-	-	-	-	-	-	-	-	-
	% < LRL	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[a]	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[b]	-	-	-	-	-	-	-	-	-	-	-	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREBAY	n	7	2	7	0	5	1	7	7	7	4	0	0	0
	Annual Minimum	132	3.00	140	-	7.80	9.20	1.12	105	0.216	0.00100	-	-	-
	Annual Maximum	149	9.30	160	-	8.25	9.20	1.24	120	0.294	0.00200	-	-	-
	Annual Mean	142	6.15	153	-	8.02	9.20	1.18	114	0.260	0.00175	-	-	-
	Annual Median	144	6.15	157	-	8.00	9.20	1.20	116	0.257	0.00200	-	-	-
	% < LRL	0%	0%	0%	-	0%	0.0%	0%	0%	0%	0%	-	-	-
	% > BCWQG[a]	-	-	-	-	0%	0%	-	0%	0%	0%	-	-	-
	% > BCWQG[b]	-	-	-	-	0%	0%	-	-	0%	0%	-	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples approached or exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures. The rounding factor applied to constituents with site performance objective (i.e., dissolved cadmium, nitrate, selenium, and sulphate) is not applied for comparison to BC WQGs.

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life.

[c] Benchmarks for Nickel are Interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Phosphorus (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)	Total Cobalt (µg/L)	Total Copper (mg/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)
RG_WARDB	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00350	15.3	1.67	0.0400	<0.0001	0.000390	0.0282	<0.00002	<0.01	0.000100	<0.1	<0.0005	0.0380	0.0000660	0.00140
	Annual Maximum	0.328	53.3	8.05	0.106	<0.0001	0.000770	0.0485	0.0000570	0.0190	0.00120	0.626	0.00200	1.12	0.00131	0.00260
	Annual Mean	0.0388	35.0	5.09	0.0725	<0.0001	0.000547	0.0383	0.0000253	0.0128	0.000358	0.212	0.000839	0.318	0.000397	0.00197
	Annual Median	0.00845	38.7	4.94	0.0720	<0.0001	0.000565	0.0372	<0.00002	0.0110	0.000185	0.104	0.000500	0.134	0.000210	0.00197
	% < LRL	0%	0%	0%	0%	100%	0%	0%	75%	50%	0%	50%	50%	0%	0%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	17%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	17%	0%	-
	EPA River Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_KERRRD	n	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
	Annual Minimum	0.00287	13.8	1.37	0.0494	<0.0001	0.000335	0.0274	<0.00002	<0.01	0.000107	<0.1	<0.0005	0.0213	0.0000647	0.00127
	Annual Maximum	0.0156	50.7	6.75	0.0940	<0.0001	0.000691	0.0557	0.0000308	0.0225	0.000899	0.389	0.00105	0.753	0.000804	0.00240
	Annual Mean	0.00854	29.4	3.49	0.0710	<0.0001	0.000485	0.0402	0.0000217	0.0116	0.000310	0.159	0.000605	0.210	0.000286	0.00187
	Annual Median	0.00730	28.6	2.83	0.0700	<0.0001	0.000437	0.0400	<0.00002	<0.01	0.000210	0.103	0.000507	0.112	0.000227	0.00185
	% < LRL	0%	0%	0%	0%	100%	0%	0%	82%	73%	0%	45%	45%	0%	0%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_ELKMOUTH	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	<0.002	29.5	0.844	0.0900	<0.0001	0.000200	0.0655	<0.00002	<0.01	0.000210	<0.1	<0.0005	0.0130	<0.00005	0.00480
	Annual Maximum	0.0342	67.6	4.24	0.173	0.000102	0.000425	0.0994	0.0000322	<0.01	0.000742	0.248	0.000848	0.484	0.000385	0.00840
	Annual Mean	0.00817	50.4	2.35	0.132	0.000100	0.000279	0.0855	0.0000216	<0.01	0.000354	0.123	0.000551	0.126	0.000123	0.00655
	Annual Median	0.00420	54.0	2.10	0.133	<0.0001	0.000254	0.0862	<0.00002	<0.01	0.000313	<0.1	<0.0005	0.0771	0.0000710	0.00715
	% < LRL	17%	0%	0%	0%	92%	0%	0%	83%	100%	0%	83%	83%	0%	42%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA River Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > Level 1 Benchmark	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > Level 2 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_DSELK	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00250	16.1	1.20	0.0592	<0.0001	0.000300	0.0316	<0.00002	<0.01	<0.0001	<0.1	<0.0005	0.0177	<0.00005	0.00173
	Annual Maximum	0.0175	49.2	5.96	0.116	0.000101	0.000612	0.0754	0.0000293	0.0140	0.000755	0.307	0.00110	0.532	0.000696	0.00465
	Annual Mean	0.00728	32.0	3.20	0.0848	0.000100	0.000456	0.0505	0.0000219	0.0110	0.000323	0.151	0.000602	0.190	0.000240	0.00282
	Annual Median	0.00473	28.4	2.55	0.0838	<0.0001	0.000450	0.0470	<0.00002	<0.01	0.000235	0.109	<0.0005	0.104	0.000145	0.00261
	% < LRL	0%	0%	0%	0%	83%	0%	0%	75%	67%	8%	42%	58%	0%	8%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_GRASMERE	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00230	16.8	1.25	0.0548	<0.0001	0.000305	0.0333	<0.00002	<0.01	<0.0001	<0.1	<0.0005	0.0113	<0.00005	0.00175
	Annual Maximum	0.0125	48.1	6.03	0.102	0.000100	0.000552	0.0671	0.0000282	0.0160	0.000653	0.235	0.000838	0.383	0.000448	0.00412
	Annual Mean	0.00588	31.0	3.11	0.0793	0.000100	0.000415	0.0492	0.0000208	0.0110	0.000241	0.124	0.000553	0.127	0.000181	0.00254
	Annual Median	0.00495	26.6	2.44	0.0795	<0.0001	0.000398	0.0471	<0.00002	<0.01	0.000168	<0.1	<0.0005	0.0833	0.000130	0.00247
	% < LRL	0%	0%	0%	0%	92%	0%	0%	83%	67%	8%	67%	58%	0%	8%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Phosphorus (mg/L)	Sulphate (mg/L)	Total Chloride (mg/L)	Total Fluoride (mg/L)	Total Antimony (mg/L)	Total Arsenic (mg/L)	Total Barium (mg/L)	Total Beryllium (mg/L)	Total Boron (mg/L)	Total Chromium (mg/L)	Total Cobalt (µg/L)	Total Copper (mg/L)	Total Iron (mg/L)	Total Lead (mg/L)	Total Lithium (mg/L)
RG_USGOLD	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00233	16.4	1.35	0.0562	<0.0001	0.000312	0.0333	<0.00002	<0.01	<0.0001	<0.1	<0.0005	0.0117	<0.00005	0.00158
	Annual Maximum	0.0105	47.0	5.37	0.114	<0.0001	0.000520	0.0648	0.0000245	0.0137	0.000481	0.190	0.000691	0.325	0.000370	0.00408
	Annual Mean	0.00508	29.4	2.95	0.0744	<0.0001	0.000412	0.0487	0.0000208	0.0107	0.000224	0.122	0.000541	0.110	0.000181	0.00242
	Annual Median	0.00375	26.8	2.36	0.0689	<0.0001	0.000422	0.0475	<0.00002	<0.01	0.000151	<0.1	<0.0005	0.0735	0.000157	0.00243
	% < LRL	0%	0%	0%	0%	100%	0%	0%	75%	67%	17%	58%	67%	0%	8%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_BORDER	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00220	18.6	1.42	0.0615	<0.0001	0.000317	0.0350	<0.00002	<0.01	0.000103	<0.1	<0.0005	0.0230	0.0000517	0.00175
	Annual Maximum	0.0118	40.5	4.82	0.113	0.000100	0.000487	0.0649	0.0000229	0.0123	0.000408	0.181	0.000664	0.239	0.000351	0.00317
	Annual Mean	0.00493	28.7	2.84	0.0789	0.000100	0.000395	0.0485	0.0000202	0.0104	0.000178	0.110	0.000521	0.0711	0.000137	0.00235
	Annual Median	0.00347	28.1	2.53	0.0706	<0.0001	0.000392	0.0480	<0.00002	<0.01	0.000138	<0.1	<0.0005	0.0480	0.000109	0.00225
	% < LRL	0%	0%	0%	0%	92%	0%	0%	92%	75%	0%	75%	75%	0%	0%	0%
	% > BCWQG[a]	-	0%	0%	-	0%	-	0%	0%	0%	0%	0%	-	-	0%	-
	% > BCWQG[b]	-	-	0%	0%	-	0%	-	-	-	-	0%	-	0%	0%	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
INTERNATIONAL_BOUNDARY	n	5	7	7	0	0	0	0	0	0	0	7	7	7	0	0
	Annual Minimum	0.00400	19.6	1.60	-	-	-	-	-	-	-	0.0300	0.000650	0.0296	-	-
	Annual Maximum	0.0145	36.4	3.92	-	-	-	-	-	-	-	0.160	0.00305	0.242	-	-
	Annual Mean	0.00830	25.2	2.32	-	-	-	-	-	-	-	0.0771	0.00149	0.106	-	-
	Annual Median	0.00700	24.6	2.28	-	-	-	-	-	-	-	0.0600	0.00110	0.0700	-	-
	% < LRL	0%	0%	0%	-	-	-	-	-	-	-	0%	0%	0%	-	-
	% > BCWQG[a]	-	0%	0%	-	-	-	-	-	-	-	0%	-	-	-	-
	% > BCWQG[b]	-	-	0%	-	-	-	-	-	-	-	0%	-	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
TENMILE_CREEK	n	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Annual Minimum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% < LRL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREBAY	n	3	7	7	0	0	0	0	0	0	0	1	6	7	0	0
	Annual Minimum	0.00300	24.2	2.25	-	-	-	-	-	-	-	0.0900	0.000500	0.00850	-	-
	Annual Maximum	0.00800	29.6	3.02	-	-	-	-	-	-	-	0.0900	0.00170	0.153	-	-
	Annual Mean	0.00533	27.5	2.70	-	-	-	-	-	-	-	0.0900	0.000867	0.0352	-	-
	Annual Median	0.00500	27.9	2.76	-	-	-	-	-	-	-	0.0900	0.000650	0.0162	-	-
	% < LRL	0%	0%	0%	-	-	-	-	-	-	-	0%	0%	0%	-	-
	% > BCWQG[a]	-	0%	0%	-	-	-	-	-	-	-	0%	-	-	-	-
	% > BCWQG[b]	-	-	0%	-	-	-	-	-	-	-	0%	-	0%	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

> 5% of samples approached or exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures. The rounding factor applied to constituents with site performance objective (i.e., dissolved cadmium, nitrate, selenium, and sulphate) is not applied for comparison to BC WQGs.

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life.

[c] Benchmarks for Nickel are Interim screening values.

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (µg/L)[c]	Total Selenium (µg/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (µg/L)	Dissolved Cobalt (µg/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
RG_WARDB	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00597	<0.0000005	0.000520	<0.5	0.0710	<0.00001	<0.00001	0.000660	<0.003	<0.003	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0522	0.00000253	0.000787	1.46	0.122	<0.00001	0.0000175	0.00103	0.00570	0.0127	0.00833	0.118	0.000330	0.0298
	Annual Mean	0.0176	0.00000101	0.000684	0.637	0.100	<0.00001	0.0000107	0.000812	0.00346	0.00634	0.00528	0.101	0.000241	0.0136
	Annual Median	0.0123	0.000000755	0.000713	<0.5	0.0985	<0.00001	<0.00001	0.000773	<0.003	0.00538	<0.005	<0.1	0.000224	0.0104
	% < LRL	0%	25%	0%	75%	0%	100%	83%	0%	67%	17%	92%	92%	33%	42%
	% > BCWQG[a]	0%	25%	0%	-	0%	0%	0%	0%	0%	0%	0%	-	0%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA River Guideline	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
RG_KERRRD	n	11	11	11	11	11	11	11	11	11	11	11	11	11	11
	Annual Minimum	0.00225	<0.0000005	0.000476	<0.5	0.104	<0.00001	<0.00001	0.000542	<0.003	0.00223	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0291	0.00000141	0.000832	1.04	1.00	<0.00001	0.0000103	0.00105	0.00523	0.0479	0.00637	0.150	0.000353	0.0780
	Annual Mean	0.0131	0.000000797	0.000658	0.586	0.449	<0.00001	0.0000100	0.000732	0.00332	0.00953	0.00517	0.105	0.000261	0.0171
	Annual Median	0.00765	0.000000750	0.000668	<0.5	0.206	<0.00001	<0.00001	0.000678	<0.003	0.00548	<0.005	<0.1	0.000245	<0.01
	% < LRL	0%	27%	0%	73%	0%	100%	91%	0%	64%	18%	73%	91%	18%	55%
	% > BCWQG[a]	0%	9%	0%	-	0%	0%	0%	0%	0%	0%	0%	-	0%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA Lake Guideline	-	-	-	-	0%	-	-	-	-	-	-	-	-	-
RG_ELKMOUTH	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.000920	<0.0000005	0.000745	<0.5	3.52	<0.00001	<0.00001	0.000628	<0.003	<0.001	0.00570	<0.1	<0.0002	<0.01
	Annual Maximum	0.0269	0.00000270	0.00121	1.12	8.49	0.0000132	0.0000170	0.00109	0.00442	0.0132	0.0120	<0.1	0.00231	0.0120
	Annual Mean	0.00694	0.00000108	0.000954	0.609	6.27	0.0000103	0.0000109	0.000876	0.00319	0.00445	0.00920	<0.1	0.000408	0.0102
	Annual Median	0.00426	0.000000601	0.000982	0.501	6.62	<0.00001	<0.00001	0.000918	<0.003	0.00290	0.00928	<0.1	0.000235	<0.01
	% < LRL	0%	42%	0%	50%	0%	83%	83%	0%	83%	33%	0%	100%	25%	83%
	% > BCWQG[a]	0%	42%	0%	-	100%	0%	0%	0%	0%	0%	0%	-	8%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA River Guideline	-	-	-	-	100%	-	-	-	-	-	-	-	-	-
	% > Level 1 Benchmark	-	-	-	0%	0%	-	-	-	-	-	0%	-	-	-
	% > Level 2 Benchmark	-	-	-	0%	0%	-	-	-	-	-	-	-	-	-
	% > Level 3 Benchmark	-	-	-	0%	-	-	-	-	-	-	-	-	-	-
RG_DSELK	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00223	<0.0000005	0.000551	<0.5	0.900	<0.00001	<0.00001	0.000585	<0.003	0.00226	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0308	0.00000180	0.000925	0.795	2.68	0.0000110	0.0000138	0.00105	0.00430	0.0129	0.130	<0.1	0.000347	0.0240
	Annual Mean	0.0146	0.000000859	0.000707	0.568	1.54	0.0000102	0.0000107	0.000759	0.00328	0.00619	0.0159	<0.1	0.000272	0.0117
	Annual Median	0.0155	0.000000613	0.000708	<0.5	1.31	<0.00001	<0.00001	0.000689	<0.003	0.00502	0.00505	<0.1	0.000265	0.0101
	% < LRL	0%	33%	0%	67%	0%	75%	75%	0%	58%	17%	50%	100%	8%	50%
	% > BCWQG[a]	0%	25%	0%	-	17%	0%	0%	0%	0%	0%	0%	-	0%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA Lake Guideline	-	-	-	-	25%	-	-	-	-	-	-	-	-	-
RG_GRASMERE	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00124	<0.0000005	0.000547	<0.5	0.909	<0.00001	<0.00001	0.000596	<0.003	0.00229	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0213	0.00000142	0.000881	0.660	2.71	0.0000100	0.0000118	0.000987	0.00330	0.0107	0.00807	<0.1	0.000333	0.0130
	Annual Mean	0.0111	0.000000791	0.000696	0.526	1.43	0.0000100	0.0000102	0.000741	0.00305	0.00538	0.00560	<0.1	0.000259	0.0103
	Annual Median	0.0115	0.000000560	0.000689	<0.5	1.29	<0.00001	<0.00001	0.000672	<0.003	0.00483	0.00509	<0.1	0.000262	<0.01
	% < LRL	0%	17%	0%	83%	0%	92%	83%	0%	83%	17%	50%	100%	17%	75%
	% > BCWQG[a]	0%	25%	0%	-	8%	0%	0%	0%	0%	0%	0%	-	0%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA Lake Guideline	-	-	-	-	25%	-	-	-	-	-	-	-	-	-

Table B.1: Summary of Water Chemistry Data for Key Parameters for the Koocanusa Reservoir Monitoring Stations, 2021

Station	Summary Statistic	Total Manganese (mg/L)	Total Mercury (mg/L)	Total Molybdenum (mg/L)	Total Nickel (µg/L)[c]	Total Selenium (µg/L)	Total Silver (mg/L)	Total Thallium (mg/L)	Total Uranium (mg/L)	Total Zinc (mg/L)	Dissolved Aluminum (mg/L)	Dissolved Cadmium (µg/L)	Dissolved Cobalt (µg/L)	Dissolved Copper (mg/L)	Dissolved Iron (mg/L)
RG_USGOLD	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00128	<0.0000005	0.000550	<0.5	0.942	<0.00001	<0.00001	0.000560	<0.003	0.00175	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0175	0.00000119	0.000809	0.613	2.75	0.0000103	0.0000123	0.000938	0.00350	0.0106	0.00590	0.103	0.000371	0.0451
	Annual Mean	0.00918	0.000000742	0.000681	0.521	1.34	0.0000100	0.0000103	0.000731	0.00308	0.00493	0.00514	0.100	0.000270	0.0129
	Annual Median	0.00976	0.000000538	0.000671	<0.5	1.27	<0.00001	<0.00001	0.000662	<0.003	0.00438	0.00500	<0.1	0.000270	<0.01
	% < LRL	0%	33%	0%	75%	0%	92%	75%	0%	67%	25%	50%	92%	8%	75%
	% > BCWQG[a]	0%	0%	0%	-	8%	0%	0%	0%	0%	0%	0%	-	0%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA Lake Guideline	-	-	-	-	8%	-	-	-	-	-	-	-	-	-
RG_BORDER	n	12	12	12	12	12	12	12	12	12	12	12	12	12	12
	Annual Minimum	0.00169	<0.0000005	0.000545	<0.5	1.04	<0.00001	<0.00001	0.000587	<0.003	<0.003	<0.005	<0.1	<0.0002	<0.01
	Annual Maximum	0.0128	0.00000118	0.000784	0.571	1.96	<0.00001	0.0000101	0.000938	0.00329	0.0108	0.00650	<0.1	0.00199	0.0333
	Annual Mean	0.00674	0.000000620	0.000665	0.506	1.34	<0.00001	0.0000100	0.000718	0.00302	0.00569	0.00515	<0.1	0.000420	0.0125
	Annual Median	0.00595	0.000000552	0.000670	<0.5	1.23	<0.00001	<0.00001	0.000688	<0.003	0.00456	<0.005	<0.1	0.000292	<0.01
	% < LRL	0%	42%	0%	83%	0%	100%	92%	0%	92%	17%	67%	100%	17%	67%
	% > BCWQG[a]	0%	0%	0%	-	0%	0%	0%	0%	0%	0%	0%	-	8%	-
	% > BCWQG[b]	0%	-	0%	-	-	0%	-	-	0%	0%	0%	-	0%	0%
	EPA Lake Guideline	-	-	-	-	25%	-	-	-	-	-	-	-	-	-
INTERNATIONAL_BOUNDARY	n	7	0	0	7	8	0	0	0	1	5	0	5	7	3
	Annual Minimum	0.00125	-	-	0.350	1.05	-	-	-	0.00200	0.00400	-	0.0330	0.000520	0.00780
	Annual Maximum	0.0142	-	-	0.900	1.62	-	-	-	0.00200	0.0120	-	0.0890	0.00460	0.00895
	Annual Mean	0.00618	-	-	0.618	1.23	-	-	-	0.00200	0.00830	-	0.0607	0.00192	0.00828
	Annual Median	0.00410	-	-	0.650	1.14	-	-	-	0.00200	0.00750	-	0.0530	0.000970	0.00810
	% < LRL	0%	-	-	0%	0%	-	-	-	0%	0%	-	0%	0%	0%
	% > BCWQG[a]	0%	-	-	-	0%	-	-	-	0%	0%	-	-	-	-
	% > BCWQG[b]	0%	-	-	-	-	-	-	-	0%	0%	-	-	-	0%
	EPA Lake Guideline	-	-	-	-	25%	-	-	-	-	-	-	-	-	-
TENMILE_CREEK	n	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Annual Minimum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Maximum	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Mean	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Annual Median	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% < LRL	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[a]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	% > BCWQG[b]	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	EPA Lake Guideline	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FOREBAY	n	7	0	0	7	7	0	0	0	0	1	0	4	6	0
	Annual Minimum	0.000650	-	-	0.200	0.988	-	-	-	-	0.00400	-	0.0360	0.000410	-
	Annual Maximum	0.0118	-	-	0.500	1.20	-	-	-	-	0.00400	-	0.0830	0.00418	-
	Annual Mean	0.00421	-	-	0.329	1.09	-	-	-	-	0.00400	-	0.0505	0.00114	-
	Annual Median	0.00180	-	-	0.300	1.09	-	-	-	-	0.00400	-	0.0415	0.000517	-
	% < LRL	0%	-	-	0%	0%	-	-	-	-	0%	-	0%	0%	-
	% > BCWQG[a]	0%	-	-	-	0%	-	-	-	-	0%	-	-	17%	-
	% > BCWQG[b]	0%	-	-	-	-	-	-	-	-	0%	-	-	0%	-
	EPA Lake Guideline	-	-	-	-	0%	-	-	-	-	-	-	-	-	-

> 5% of samples approached or exceed the guideline or benchmark.
> 50% of samples exceed the guideline or benchmark.
> 95% of samples exceed the guideline or benchmark.

Notes: "LRL" = laboratory reporting limit. "BCWQG" = British Columbia Working or Accepted Water Quality Guideline. For guidelines dependent on other analytes (e.g., hardness or chloride), guidelines were screened using concurrent concentrations. When concurrent hardness or chloride concentrations were not measured, the most conservative concentration observed for that station was used to estimate the guidelines or benchmark. All summary statistics are reported to 3 significant figures. The rounding factor applied to constituents with site performance objective (i.e., dissolved cadmium, nitrate, selenium, and sulphate) is not applied for comparison to BC WQGs.

[a] Long-term average BCQWG for the Protection of Aquatic Life.

[b] Short-term maximum BCQWG for the Protection of Aquatic Life.

[c] Benchmarks for Nickel are Interim screening values.

Table B.2: Water Quality for Samples Collected from Biological Stations not Aligned with Teck Water Quality Stations Downstream (RG_GC) and Upstream (RG_SC) of the Elk River, 2021

	Analyte	Units	Long-term BC Guideline	Short-term BC Guideline	RG_GC_U1 19-Apr-21	RG_GC_U2 19-Apr-21	RG_GC_U3 19-Apr-21	RG_GC_U1 25-May-21	RG_GC_U2 25-May-21
Physical Characteristics	Hardness (as CaCO3)	mg/L	-	-	184	183	181	88.7	108
	pH, Field	pH	6.5 - 9.0	6.5 - 9.0	8.42	8.40	8.37	8.13	8.14
	pH, Lab	pH	-	-	8.28	8.28	8.30	7.95	8.02
	Total Suspended Solids, Lab	mg/L	-	-	7.40	7.60	6.20	13.4	17.0
	Total Dissolved Solids	mg/L	-	-	204	218	202	99.0	125
	Dissolved Oxygen-Field	mg/L	> 8	> 5	11.2	11.1	11.1	-	10.7
	Dissolved Oxygen-Field	%	-	-	102	102	101	99.2	100
	Temperature-Field	C	-	-	8.30	8.20	8.05	8.68	-
Anions and Nutrients	Ammonia as N	mg/L	0.23 to 1.6	1.6 to 8.1	0.00860	0.00810	0.00750	0.00710	0.0630
	Bromide (Br)	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	Chloride (Cl)	mg/L	150	600	5.17	4.90	4.91	0.950	1.52
	Fluoride (F)	mg/L	-	1.3 to 1.6	0.0630	0.0620	0.0600	0.0510	0.0670
	Nitrate (as N)	mg/L	3.0	33	0.539	0.525	0.510	0.227	0.364
	Nitrite (as N)	mg/L	0.020 to 0.060	0.060 to 0.18	<0.001	<0.001	<0.001	0.00120	<0.001
	Phosphorus (P)-Total	mg/L	-	-	0.00430	0.00710	0.00420	0.00720	0.00910
	Sulphate (SO_4)	mg/L	309 to 429	-	50.8	10.0	48.9	11.0	18.1
Total Metals	Aluminum (Al)	mg/L	-	-	0.105	0.108	0.0816	0.376	0.337
	Antimony (Sb)	mg/L	0.0090	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	-	0.0050	0.000480	0.000440	0.000480	0.000420	0.000490
	Barium (Ba)	mg/L	1.0	-	0.0688	0.0689	0.0693	0.0396	0.0391
	Beryllium (Be)	mg/L	0.00013	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
	Bismuth (Bi)	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	1.2	-	0.0120	0.0110	0.0110	<0.01	<0.01
	Cadmium (Cd)	mg/L	-	-	0.00880	0.00950	0.0140	0.00920	0.0136
	Calcium (Ca)	mg/L	-	-	46.5	44.9	45.7	26.4	33.8
	Chromium (Cr)	mg/L	0.0010	-	0.000230	0.000220	0.000170	0.000480	0.000450
	Cobalt (Co)	mg/L	4.0	110	0.110	<0.1	<0.1	0.220	0.220
	Copper (Cu)	mg/L	-	-	<0.0005	0.000520	<0.0005	0.000710	0.000740
	Iron (Fe)	mg/L	-	1.0	0.156	0.122	0.113	0.389	0.418
	Lead (Pb)	mg/L	0.0060 to 0.010	0.070 to 0.18	0.000214	0.000181	0.000177	0.000335	0.000434
	Lithium (Li)	mg/L	-	-	0.00420	0.00390	0.00400	0.00140	0.00190
	Magnesium (Mg)	mg/L	-	-	15.0	14.9	14.8	7.33	9.08
	Manganese (Mn)	mg/L	1.00 to 1.4	1.5 to 2.6	0.0155	0.0148	0.0151	0.0141	0.0165
	Mercury (Hg)	mg/L	0.0000013	-	0.000000720	0.000000650	0.000000680	0.00000148	0.00000101
	Molybdenum (Mo)	mg/L	7.6	46	0.000799	0.000787	0.000790	0.000346	0.000513
	Nickel (Ni)	mg/L	-	-	<0.5	<0.5	<0.5	<0.5	0.620
	Potassium (K)	mg/L	-	-	0.810	0.808	0.811	0.579	0.561
	Selenium (Se)	mg/L	2.0	-	2.58	2.38	2.47	0.594	1.03
	Silicon (Si)-Total	mg/L	-	-	2.43	2.63	2.49	3.53	2.92
	Silver (Ag)	mg/L	0.000050 to 0.0015	0.00010 to 0.0030	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	-	-	6.38	6.40	6.38	1.58	2.05
	Strontium (Sr)	mg/L	-	-	0.186	0.183	0.180	0.0766	0.112
	Thallium (Tl)	mg/L	0.00080	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Titanium (Ti)	mg/L	-	-	0.00202	<0.0021	<0.0021	<0.492	0.00627
	Uranium (U)	mg/L	0.0085	-	0.000914	0.000903	0.000912	0.000471	0.000671
	Vanadium (V)	mg/L	-	-	0.000510	0.000530	0.000550	0.000630	0.000590
	Zinc (Zn)	mg/L	0.0075 to 0.078	0.033 to 0.10	<0.003	<0.003	<0.003	<0.003	<0.003
Dissolved Metals	Aluminum (Al)	mg/L	0.050	0.10	0.00190	0.00200	0.00130	0.00960	0.00830
	Antimony (Sb)	mg/L	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	-	-	0.000420	0.000420	0.000400	0.000250	0.000300
	Barium (Ba)	mg/L	-	-	0.0694	0.0716	0.0706	0.0356	0.0346
	Beryllium (Be)	mg/L	-	-	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
	Bismuth (Bi)	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	-	-	0.0120	0.0120	0.0120	<0.01	<0.01
	Cadmium (Cd)	mg/L	0.19 to 0.33	0.52 to 1.1	<0.005	<0.005	0.00580	<0.005	<0.005
	Calcium (Ca)	mg/L	-	-	48.4	48.4	48.1	23.9	29.1
	Chromium (Cr)	mg/L	-	-	0.000110	<0.0001	0.000120	<0.0001	<0.0001
	Cobalt (Co)	mg/L	-	-	<0.1	<0.1	<0.1	<0.1	<0.1
	Copper (Cu)	mg/L	0.00050 to 0.0083	0.0030 to 0.046	0.000280	0.000280	0.000290	0.000360	0.000350
	Iron (Fe)	mg/L	-	0.35	<0.01	<0.01	<0.01	<0.01	<0.01
	Lead (Pb)	mg/L	-	-	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Lithium (Li)	mg/L	-	-	0.00410	0.00400	0.00400	0.00100	0.00150
	Magnesium (Mg)	mg/L	-	-	15.3	15.0	14.7	7.04	8.53
	Manganese (Mn)	mg/L	-	-	0.000650	0.000560	0.000440	0.00566	0.00544
	Mercury (Hg)	mg/L	-	-	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
	Molybdenum (Mo)	mg/L	-	-	0.000829	0.000829	0.000768	0.000338	0.000480
	Nickel (Ni)	mg/L	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Potassium (K)	mg/L	-	-	0.807	0.803	0.796	0.464	0.452
	Selenium (Se)	mg/L	-	-	2.85	2.87	2.78	0.686	1.08
	Silicon (Si)	mg/L	-	-	2.34	2.33	2.40	3.03	2.40
	Silver (Ag)	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	-	-	6.55	6.43	6.34	1.68	2.16
	Strontium (Sr)	mg/L	-	-	0.190	0.182	0.181	0.0802	0.114
	Thallium (Tl)	mg/L	-	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	-	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Titanium (Ti)	mg/L	-	-	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
	Uranium (U)	mg/L	-	-	0.000883	0.000881	0.000868	0.000442	0.000585
	Vanadium (V)	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Zinc (Zn)	mg/L	-	-	<0.001	<0.001	<0.001	<0.001	<0.001

Exceeds BC Long Term Guideline.
Exceeds BC Short Term Guideline.
Notes: "-" indicates no data.

Table B.2: Water Quality for Samples Collected from Biological Stations not Aligned with Teck Water Quality Stations Downstream (RG_GC) and Upstream (RG_SC) of the Elk River, 2021

	Analyte	Units	RG_GC_U3 25-May-21	RG_GC_U1 21-Jun-21	RG_GC_U2 21-Jun-21	RG_GC_U3 21-Jun-21	RG_GC_U1 27-Aug-21	RG_GC_U3 27-Aug-21	RG_SC_U1 26-Apr-21
Physical Characteristics	Hardness (as CaCO3)	mg/L	116	108	107	111	127	113	138
	pH, Field	pH	8.13	8.44	8.09	8.04	8.47	7.79	8.36
	pH, Lab	pH	8.02	8.19	8.11	8.13	7.52	7.45	8.10
	Total Suspended Solids, Lab	mg/L	22.5	3.00	15.3	12.2	1.60	2.60	37.5
	Total Dissolved Solids	mg/L	129	140	146	147	167	138	147
	Dissolved Oxygen-Field	mg/L	10.7	10.0	9.74	9.67	8.26	6.52	11.0
	Dissolved Oxygen-Field	%	99.9	111	99.5	97.7	96.9	66.6	100
	Temperature-Field	C	8.59	16.2	12.4	11.9	18.6	12.3	7.31
Anions and Nutrients	Ammonia as N	mg/L	0.0273	<0.005	0.0184	0.0124	0.00600	<0.005	0.00960
	Bromide (Br)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chloride (Cl)	mg/L	1.53	1.76	1.17	1.24	2.37	1.61	4.35
	Fluoride (F)	mg/L	0.0670	0.0540	0.0510	0.0630	0.0890	0.0760	0.0810
	Nitrate (as N)	mg/L	0.387	0.233	0.307	0.350	0.226	0.338	0.151
	Nitrite (as N)	mg/L	0.00150	0.00240	<0.001	0.00110	0.00120	<0.001	<0.001
	Phosphorus (P)-Total	mg/L	0.0106	0.00520	0.0104	0.00850	0.0204	0.00260	0.0164
	Sulphate (SO_4)	mg/L	18.5	18.4	18.2	19.4	26.0	19.8	29.0
Total Metals	Aluminum (Al)	mg/L	0.438	0.0971	0.341	0.405	0.0181	0.0386	0.440
	Antimony (Sb)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	0.000500	0.000370	0.000440	0.000450	0.000360	0.000380	0.000640
	Barium (Ba)	mg/L	0.0396	0.0377	0.0386	0.0416	0.0411	0.0373	0.0397
	Beryllium (Be)	mg/L	<0.00002	<0.00002	0.0000200	<0.00002	<0.00002	<0.00002	0.0000210
	Bismuth (Bi)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (Cd)	mg/L	0.0144	0.00620	0.0149	0.0111	<0.005	0.00640	0.00930
	Calcium (Ca)	mg/L	34.2	31.4	31.8	34.3	32.9	31.3	38.9
	Chromium (Cr)	mg/L	0.000600	0.000680	0.000620	0.000590	<0.0001	0.000110	0.000620
	Cobalt (Co)	mg/L	0.300	<0.1	0.220	0.160	<0.1	<0.1	0.320
	Copper (Cu)	mg/L	0.000850	<0.0005	0.000680	0.000560	<0.0005	<0.0005	0.000820
	Iron (Fe)	mg/L	0.582	0.0580	0.370	0.260	0.0170	0.0450	0.623
	Lead (Pb)	mg/L	0.000537	0.000117	0.000369	0.000295	0.000265	0.000508	0.000667
	Lithium (Li)	mg/L	0.00200	0.00180	0.00210	0.00240	0.00210	0.00180	0.00210
	Magnesium (Mg)	mg/L	9.22	8.15	8.44	8.84	10.7	9.38	11.4
	Manganese (Mn)	mg/L	0.0203	0.00335	0.0146	0.0124	0.00220	0.00491	0.0269
	Mercury (Hg)	mg/L	0.00000116	0.000000620	0.00000117	0.000000970	<0.0000005	<0.0000005	0.00000144
	Molybdenum (Mo)	mg/L	0.000493	0.000577	0.000650	0.000632	0.000707	0.000611	0.000614
	Nickel (Ni)	mg/L	0.750	<0.5	0.790	<0.5	<0.5	<0.5	0.690
	Potassium (K)	mg/L	0.558	0.511	0.571	0.603	0.546	0.479	0.830
	Selenium (Se)	mg/L	1.12	1.02	1.14	1.45	1.32	1.16	0.141
	Silicon (Si)-Total	mg/L	2.95	2.58	2.74	3.10	1.89	2.46	3.17
	Silver (Ag)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	2.18	2.20	1.92	1.99	3.45	2.08	5.68
	Strontium (Sr)	mg/L	0.116	0.112	0.112	0.117	0.130	0.119	0.158
	Thallium (Tl)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Titanium (Ti)	mg/L	<0.339	0.00207	0.0105	0.0122	<0.0003	0.000480	<0.0141
	Uranium (U)	mg/L	0.000649	0.000636	0.000632	0.000690	0.000650	0.000640	0.000705
	Vanadium (V)	mg/L	0.000690	<0.0005	0.000690	0.000820	<0.0005	<0.0005	0.000840
	Zinc (Zn)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Dissolved Metals	Aluminum (Al)	mg/L	0.00790	0.00830	0.00930	0.00840	0.00440	0.00530	0.00320
	Antimony (Sb)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	0.000290	0.000320	0.000290	0.000290	0.000320	0.000290	0.000440
	Barium (Ba)	mg/L	0.0349	0.0375	0.0349	0.0372	0.0434	0.0357	0.0386
	Beryllium (Be)	mg/L	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
	Bismuth (Bi)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (Cd)	mg/L	<0.005	<0.005	<0.005	0.00570	<0.005	<0.005	<0.005
	Calcium (Ca)	mg/L	31.6	29.5	29.5	30.3	34.5	31.4	35.8
	Chromium (Cr)	mg/L	<0.0001	0.000110	0.000120	0.000110	<0.0001	<0.0001	0.000110
	Cobalt (Co)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Copper (Cu)	mg/L	0.000340	0.000310	0.000310	0.000290	0.000330	0.000360	0.000220
	Iron (Fe)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.0140
	Lead (Pb)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	0.0000530
	Lithium (Li)	mg/L	0.00160	0.00160	0.00170	0.00190	0.00230	0.00180	0.00160
	Magnesium (Mg)	mg/L	9.00	8.34	8.12	8.67	9.98	8.40	11.7
	Manganese (Mn)	mg/L	0.00572	0.000590	0.00254	0.00210	0.000200	0.000650	0.00817
	Mercury (Hg)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
	Molybdenum (Mo)	mg/L	0.000522	0.000549	0.000615	0.000642	0.000683	0.000593	0.000580
	Nickel (Ni)	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Potassium (K)	mg/L	0.456	0.494	0.462	0.474	0.562	0.492	0.721
	Selenium (Se)	mg/L	1.11	0.928	1.09	1.33	1.35	1.14	0.142
	Silicon (Si)	mg/L	2.40	2.24	2.12	2.18	1.82	2.48	2.50
	Silver (Ag)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	2.18	2.22	1.85	1.97	3.41	2.05	5.49
	Strontium (Sr)	mg/L	0.122	0.107	0.112	0.114	0.132	0.114	0.154
	Thallium (Tl)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Titanium (Ti)	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
	Uranium (U)	mg/L	0.000610	0.000620	0.000621	0.000639	0.000695	0.000646	0.000722
	Vanadium (V)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Zinc (Zn)	mg/L	<0.001	<0.001	<0.001	<0.001	0.00110	<0.001	<0.001

Exceeds BC Long Term Guideline.

Exceeds BC Short Term Guideline.

Notes: "-" indicates no data.

Table B.2: Water Quality for Samples Collected from Biological Stations not Aligned with Teck Water Quality Stations Downstream (RG_GC) and Upstream (RG_SC) of the Elk River, 2021

	Analyte	Units	RG_SC_U1 25-May-21	RG_SC_U1 21-Jun-21	RG_SC_U2 21-Jun-21	RG_SC_U3 21-Jun-21	RG_SC_U1 27-Aug-21	RG_SC_U2 27-Aug-21
Physical Characteristics	Hardness (as CaCO3)	mg/L	107	94.7	94.3	95.6	126	128
	pH, Field	pH	7.94	8.08	7.97	7.87	8.55	8.35
	pH, Lab	pH	7.92	8.10	8.09	8.09	7.54	7.50
	Total Suspended Solids, Lab	mg/L	25.8	25.2	26.0	27.9	<1	2.20
	Total Dissolved Solids	mg/L	111	135	129	126	149	151
	Dissolved Oxygen-Field	mg/L	10.8	9.98	10.0	10.0	8.82	8.58
	Dissolved Oxygen-Field	%	99.6	102	101	100	105	97.1
	Temperature-Field	C	8.38	12.1	11.5	11.4	19.4	17.0
Anions and Nutrients	Ammonia as N	mg/L	0.0233	0.00550	0.0143	<0.005	<0.005	<0.005
	Bromide (Br)	mg/L	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
	Chloride (Cl)	mg/L	2.14	1.13	1.15	1.16	2.63	3.43
	Fluoride (F)	mg/L	0.0570	0.0440	0.0440	0.0450	0.0820	0.0800
	Nitrate (as N)	mg/L	0.182	0.102	0.104	0.0970	0.0947	0.0804
	Nitrite (as N)	mg/L	<0.001	0.00360	<0.001	<0.001	<0.001	<0.001
	Phosphorus (P)-Total	mg/L	0.00830	0.0102	0.0105	0.0120	0.00230	0.00230
	Sulphate (SO_4)	mg/L	17.3	13.5	13.8	13.9	25.1	28.0
Total Metals	Aluminum (Al)	mg/L	0.283	0.537	0.877	0.574	0.0126	0.0531
	Antimony (Sb)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	0.000450	0.000430	0.000470	0.000470	0.000380	0.000450
	Barium (Ba)	mg/L	0.0283	0.0275	0.0305	0.0286	0.0382	0.0378
	Beryllium (Be)	mg/L	<0.00002	<0.00002	0.0000320	0.0000240	<0.00002	<0.00002
	Bismuth (Bi)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (Cd)	mg/L	<0.005	0.00970	0.00840	0.00860	<0.005	<0.005
	Calcium (Ca)	mg/L	33.0	29.3	30.0	30.9	32.3	34.4
	Chromium (Cr)	mg/L	0.000400	0.000610	0.00114	0.000730	<0.0001	0.000120
	Cobalt (Co)	mg/L	0.210	0.290	0.300	0.350	<0.1	<0.1
	Copper (Cu)	mg/L	0.000620	0.000770	0.000890	0.000800	<0.0005	<0.0005
	Iron (Fe)	mg/L	0.417	0.585	0.634	0.654	<0.01	0.0550
	Lead (Pb)	mg/L	0.000431	0.000501	0.000495	0.000506	0.000240	0.000183
	Lithium (Li)	mg/L	0.00130	0.00140	0.00150	0.00150	0.00180	0.00160
	Magnesium (Mg)	mg/L	8.88	7.18	7.32	7.42	10.6	11.1
	Manganese (Mn)	mg/L	0.0129	0.0164	0.0173	0.0178	0.00161	0.00397
	Mercury (Hg)	mg/L	0.000000930	0.000000950	0.00000100	0.000000880	<0.0000005	<0.0000005
	Molybdenum (Mo)	mg/L	0.000487	0.000487	0.000516	0.000541	0.000661	0.000652
	Nickel (Ni)	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Potassium (K)	mg/L	0.491	0.510	0.714	0.549	0.564	0.595
	Selenium (Se)	mg/L	0.0880	0.110	0.122	0.115	0.864	0.379
	Silicon (Si)-Total	mg/L	2.80	5.86	3.93	3.05	1.74	2.00
	Silver (Ag)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	2.75	1.72	1.76	1.79	3.36	4.33
	Strontium (Sr)	mg/L	0.122	0.110	0.115	0.116	0.132	0.143
	Thallium (Tl)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.000160
	Titanium (Ti)	mg/L	<0.246	0.00697	0.0378	0.00816	<0.0003	0.00109
	Uranium (U)	mg/L	0.000648	0.000563	0.000557	0.000555	0.000658	0.000696
	Vanadium (V)	mg/L	<0.0005	0.000700	0.00109	0.000730	<0.0005	<0.0005
	Zinc (Zn)	mg/L	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
Dissolved Metals	Aluminum (Al)	mg/L	0.00780	0.0138	0.0141	0.0136	0.00490	0.00430
	Antimony (Sb)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Arsenic (As)	mg/L	0.000320	0.000260	0.000260	0.000270	0.000340	0.000360
	Barium (Ba)	mg/L	0.0263	0.0220	0.0218	0.0226	0.0394	0.0375
	Beryllium (Be)	mg/L	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
	Bismuth (Bi)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
	Boron (B)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Cadmium (Cd)	mg/L	0.00540	<0.005	<0.005	<0.005	<0.005	<0.005
	Calcium (Ca)	mg/L	28.9	26.5	26.2	26.6	33.9	34.8
	Chromium (Cr)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Cobalt (Co)	mg/L	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	Copper (Cu)	mg/L	0.000270	0.000280	0.000280	0.000270	0.000290	0.000210
	Iron (Fe)	mg/L	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
	Lead (Pb)	mg/L	<0.00005	<0.00005	<0.00005	<0.00005	0.0000520	<0.00005
	Lithium (Li)	mg/L	<0.001	<0.001	<0.001	<0.001	0.00200	0.00170
	Magnesium (Mg)	mg/L	8.56	6.92	7.02	7.09	9.95	9.96
	Manganese (Mn)	mg/L	0.00212	0.00209	0.00194	0.00198	0.000160	0.000120
	Mercury (Hg)	mg/L	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
	Molybdenum (Mo)	mg/L	0.000484	0.000495	0.000468	0.000491	0.000696	0.000648
	Nickel (Ni)	mg/L	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Potassium (K)	mg/L	0.436	0.383	0.376	0.383	0.560	0.586
	Selenium (Se)	mg/L	0.0860	0.125	0.104	0.120	0.832	0.309
	Silicon (Si)	mg/L	2.49	2.01	2.00	1.99	1.74	1.96
	Silver (Ag)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Sodium (Na)	mg/L	2.83	1.71	1.73	1.74	3.32	4.24
	Strontium (Sr)	mg/L	0.126	0.107	0.102	0.106	0.140	0.150
	Thallium (Tl)	mg/L	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
	Tin (Sn)	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
	Titanium (Ti)	mg/L	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003	<0.0003
	Uranium (U)	mg/L	0.000579	0.000522	0.000508	0.000527	0.000664	0.000675
	Vanadium (V)	mg/L	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
	Zinc (Zn)	mg/L	0.00110	<0.001	<0.001	<0.001	<0.001	<0.001

Exceeds BC Long Term Guideline.

Exceeds BC Short Term Guideline.

Notes: "-" indicates no data.

Table B.3: In Situ Water Quality Profiles for Biological Transect Stations Downstream of the Elk River (RG_T4), Koocanusa Reservoir Monitoring Program, April 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	ORP	Turbidity
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	Mv	NTU
RG_T4-1	0.45	0	8.87	10.91	102.0	8.08	224.4	324.2	157.6	19.11
		1	8.87	10.89	101.9	8.07	224.5	324.4	157.3	20.84
		2	8.84	10.86	101.5	8.07	225.1	325.6	156.4	22.16
		3	8.76	10.86	101.4	8.07	224.5	325.4	156.0	22.90
		4	8.73	10.86	101.2	8.06	224.1	325.1	155.4	20.08
		5	8.72	10.84	101.0	8.06	223.8	324.7	155.2	18.53
		6	8.71	10.84	100.9	8.06	223.8	324.8	154.8	20.34
		7	8.70	10.82	100.7	8.06	223.1	324.0	154.6	23.45
		8	8.57	10.85	100.7	8.05	222.6	324.4	154.5	19.43
		9	8.51	10.83	100.4	8.04	227.1	331.4	154.5	21.82
		10	7.96	10.65	97.4	8.03	216.5	320.9	155.4	31.96
		11	7.69	10.73	97.5	8.04	215.5	321.9	155.2	31.66
		12	7.54	10.70	96.8	7.99	223.4	335.2	155.2	41.10
RG_T4-2	0.6	0	9.44	10.80	102.3	8.47	235.3	334.8	115.1	15.88
		1	9.39	10.84	102.6	8.46	236.7	337.3	115.2	15.32
		2	9.40	10.84	102.6	8.45	237.1	337.7	115.4	15.13
		3	9.34	10.85	102.6	8.44	237.5	338.8	115.5	16.92
		4	9.31	10.85	102.5	8.43	237.1	337.9	115.7	18.56
		5	9.23	10.82	102.1	8.42	235.4	336.5	116.2	17.12
		6	9.18	10.81	101.8	8.41	233.6	334.7	116.6	17.14
		7	9.14	10.80	101.7	8.40	232.8	333.9	116.9	18.33
		8	9.09	10.81	101.6	8.38	231.2	332.1	117.3	17.91
		9	9.00	10.78	101.1	8.37	229.2	330.1	118.0	20.34
		10	8.37	10.63	98.2	8.34	220.0	322.4	118.8	36.27
		11	7.86	10.61	96.8	8.34	216.8	322.3	119.2	37.97
RG_T4-3	0.55	0	9.59	10.48	99.7	8.43	220.2	312.1	107.2	21.16
		1	9.31	10.63	100.4	8.42	220.2	314.4	107.1	20.71
		2	9.19	10.71	100.9	8.42	220.0	315.2	106.6	18.94
		3	9.04	10.75	100.9	8.42	220.1	316.7	106.7	22.54
		4	8.82	10.84	101.3	8.42	220.3	318.9	106.6	28.21
		5	8.85	10.80	101.3	8.40	219.9	318.1	106.8	20.94
		6	8.81	10.84	101.2	8.38	219.9	317.9	107.8	27.47
		7	8.75	10.82	100.9	8.34	218.7	317.1	109.7	26.48
		8	8.57	10.84	100.7	8.31	217.8	317.4	111.5	31.39
		9	8.14	10.78	99.0	8.29	218.7	322.5	112.9	26.03
		10	7.77	10.83	98.6	8.28	217.8	324.6	113.5	29.72
		11	7.66	10.87	98.7	8.26	217.5	325.2	114.7	40.11
RG_T4-4	0.55	0	9.22	10.80	101.8	8.43	221.3	316.8	100.5	20.55
		1	9.04	10.87	102.2	8.41	220.9	317.8	101.0	23.04
		2	8.93	10.90	102.1	8.39	220.9	318.8	102.1	22.04
		3	8.84	10.91	102.0	8.37	221.1	319.8	103.0	21.97
		4	8.81	10.89	101.8	8.36	221.1	320.1	103.6	21.29
		5	8.74	10.89	101.6	8.35	220.5	319.7	103.9	28.76
		6	8.66	10.90	101.4	8.34	220.2	320.0	104.5	23.52
		7	8.59	10.87	101.0	8.33	218.3	318.1	105.1	26.45
		8	8.49	10.89	100.9	8.31	217.7	318.0	106.0	24.54
		9	8.24	10.80	99.4	8.31	220.0	323.6	107.1	26.67
		10	7.73	10.87	98.8	8.31	219.1	326.9	107.5	31.13
		11	7.69	10.90	99.1	8.29	219.0	327.2	108.9	43.06
RG_T4-5	0.55	0	9.47	10.60	100.8	8.44	219.7	312.3	104.7	23.83
		1	9.18	10.79	101.5	8.43	219.4	314.4	104.6	24.23
		2	8.93	10.82	101.2	8.43	217.9	314.4	104.6	23.48
		3	8.75	10.88	101.5	8.43	217.5	315.4	104.6	22.13
		4	8.60	10.93	101.5	8.42	217.6	316.8	105.1	22.38
		5	8.55	10.94	101.5	8.41	217.9	317.8	105.5	21.75
		6	8.48	10.93	101.3	8.39	218.1	318.7	106.5	21.13
		7	8.24	10.90	100.5	8.38	216.6	318.6	107.6	26.89
		8	8.03	10.92	100.2	8.36	214.2	317.0	108.5	29.20
		9	7.99	10.91	99.9	8.33	213.2	315.7	109.8	29.75
		10	7.94	10.92	99.8	8.31	214.5	318.2	111.3	29.32
		11	7.69	10.88	98.9	8.29	217.6	325.1	112.6	35.17
		12	7.58	10.89	98.9	8.28	217.3	325.7	113.1	29.00
		13	7.54	10.87	98.4	8.27	217.1	325.8	113.4	32.43

Note: Station depths at RG_TN were too shallow to conduct profiles so in situ measurements taken at RG_KERRRD were used for characterization.

Table B.4: In Situ Water Quality Profiles for Biological Transect Stations Upstream (RG_TN) and Downstream (RG_T4) of the Elk River, Koocanusa Reservoir Monitoring Program, June 2021

Station	Secchi Depth (m)	Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Conductivity (µS/cm)	Sp. Cond. (µS/cm)
				(mg/L)	(%)			
RG_T4-1	1.1	0	18.0	9.49	100.3	8.35	195.4	225.2
		1	17.7	9.62	101.3	8.35	193.4	224.1
		2	17.6	9.65	101.2	8.35	191.6	223.1
		3	17.5	9.64	101.1	8.35	191.2	223.1
		4	17.5	9.97	101.0	8.34	190.9	222.8
		5	17.4	9.66	101.1	8.33	190.4	222.7
		6	16.8	9.77	101.8	8.32	187.2	221.4
		7	16.5	9.82	100.9	8.32	184.2	219.9
		8	16.4	9.80	100.1	8.32	183.5	219.5
		9	16.2	9.80	100.0	8.30	182.7	219.3
		10	16.2	9.80	99.7	8.29	182.3	219.2
		11	16.0	9.78	99.4	8.26	181.4	218.9
		12	15.1	9.77	97.7	8.23	177.4	217.6
		13	14.1	9.75	95.2	8.21	172.6	217.3
		14	13.4	9.74	93.5	8.18	169.7	216.1
		15	12.9	9.76	92.2	8.16	160.0	208.8
		16	12.6	9.77	92.0	8.15	157.9	206.7
		17	12.0	9.77	91.0	8.14	155.0	204.9
		18	12.0	9.73	90.3	8.13	155.0	207.1
		19	11.8	9.71	89.8	8.12	155	206.8
		20	11.8	9.71	89.8	8.12	154.3	206.1
		21	11.8	9.71	89.8	8.12	154.2	206.0
		22	11.8	9.70	89.7	8.12	154.1	205.9
		23	11.8	9.69	89.6	8.11	154.0	205.7
RG_T4-2	1.1	0	18.6	9.53	102.2	8.34	198.7	226.0
		1	17.7	9.63	101.5	8.35	194.4	225.0
		2	17.6	9.62	100.1	8.35	191.8	223.1
		3	17.3	9.68	101.8	8.34	190.5	222.5
		4	17.2	9.77	101.5	8.35	188.0	221.1
		5	17.1	9.78	101.5	8.36	187.8	220.9
		6	16.9	9.78	101.4	8.31	187.0	220.5
		7	16.3	9.82	100.3	8.30	183.6	219.4
		8	16.1	9.80	99.6	8.29	182.8	222.0
		9	15.3	9.82	98.6	8.26	181.3	221.0
		10	15.0	9.81	97.9	8.24	180.0	220.9
		11	14.4	9.88	96.8	8.21	173.6	216.6
		12	13.8	9.85	95.2	8.20	163.2	207.8
		13	13.7	9.85	95.1	8.18	163.1	207.7
		14	12.9	9.90	94.4	8.16	162.8	207.8
		15	12.4	9.89	92.6	8.15	153.2	200.8
		16	12.3	9.88	92.4	8.15	146.3	193.1
		17	12.3	9.87	92.2	8.15	145.7	192.3
		18	12.1	9.84	91.7	8.15	145.1	191.7
		19	12.0	9.80	91.1	8.14	147.2	195.8
		20	11.9	9.78	90.7	8.15	147.3	196.2
		21	11.9	9.78	90.6	8.15	147.2	196.1
		22	11.9	9.77	90.6	8.15	147.2	196.0
		23	11.9	9.76	90.5	8.14	146.9	195.7
		24	11.9	9.76	90.5	8.14	146.7	195.5
		25	11.9	9.75	90.4	8.13	146.8	195.6
		26	11.9	9.74	90.3	8.13	146.6	195.4
		27	11.9	9.72	90.1	8.14	146.7	195.5
RG_TN-1	0.5	0	19.7	9.61	105.4	8.2	192	212.4
		1	15.5	9.85	99.1	8.20	164.3	198.4
		2	15.3	9.78	97.8	8.18	159.5	165.6
		3	14.8	9.74	96.7	8.14	156.4	193.1
		4	14.2	9.73	95.3	8.15	151.3	190.5
		5	14.0	9.74	94.6	8.14	149.9	189.8
		6	13.8	9.74	94.4	8.14	148.8	189.4
		7	13.8	9.74	94.3	8.13	148.6	189.0
		8	13.3	9.78	94.0	8.13	147.6	188.9
		9	13.2	9.79	93.4	8.13	146	188.8
		10	13.1	9.79	93.1	8.13	145.7	188.7
		11	13.0	9.80	92.9	8.12	145.3	188.6
		12	11.9	9.75	92.0	8.10	143.7	188.8
		13	11.6	9.69	89.0	8.07	140.9	188.7
		14	11.6	9.59	88.1	8.10	140.4	188.8
		14.7	11.8	9.53	88.0	8.13	141.3	189.1
RG_TN-2	0.6	0	19.3	9.57	104.5	8.21	186.7	209.4
		1	16.5	9.85	100.7	8.20	166.9	199.2
		2	15.00	9.74	98.1	8.19	156.8	193.2
		3	14.3	9.78	95.6	8.14	153.7	191.6
		4	14.2	9.75	94.9	8.16	150.6	189.9
		5	14.0	9.76	94.8	8.15	150.2	189.7
		6	14.0	9.75	94.7	8.15	149.9	189.6
		7	13.7	9.75	94.7	8.13	148.9	189.2
		8	13.6	9.77	94.2	8.13	147.6	189.0
		9	13.4	9.78	94.1	8.13	147.3	189.0
		10	13.2	9.80	94.0	8.11	146.6	188.8
		11	13.0	9.81	93.2	8.11	145.5	188.7
		12	12.1	9.80	92.9	8.12	145.5	188.6
		13	11.8	9.83	91.2	8.16	140.9	188.9

Table B.5: In Situ Water Quality Profiles for Biological Transect Stations Downstream of the Elk River (RG_T4), Koocanusa Reservoir Monitoring Program, August 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	ORP
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	Mv
RG_T4-1	5.6	0	19.7	8.67	94.9	8.39	230.9	256.9	124.9
		1	19.7	8.67	94.8	8.41	230.9	256.8	127.0
		2	19.7	8.67	94.8	8.40	230.9	256.9	129.8
		3	19.7	8.67	94.8	8.47	230.8	256.8	131.4
		4	19.7	8.66	94.7	8.42	230.6	256.7	133.2
		5	19.7	8.66	94.7	8.42	230.6	256.7	135.1
		6	19.7	8.65	94.6	8.41	230.6	256.7	137.2
		7	19.7	8.64	94.5	8.41	230.6	256.7	138.6
		8	19.7	8.63	94.4	8.40	230.6	256.8	141.5
		9	19.7	8.62	94.2	8.41	230.6	256.8	142.5
		10	19.7	8.61	94.1	8.40	230.7	256.9	144.6
		11	19.6	8.60	94.0	8.41	230.6	256.9	147.0
		12	19.6	8.60	94.0	8.40	230.5	256.9	150.7
		13	19.6	8.60	93.9	8.39	230.5	256.9	152.5
		14	19.6	8.57	93.6	8.36	231.6	258.3	154.5
		15	19.4	8.34	90.7	8.27	238.8	267.3	158.4
		16	19.1	8.20	88.8	8.23	245.4	276.4	160.7
		17	18.9	8.13	87.6	8.21	247.7	280.5	162.3
		18	17.6	7.90	82.4	8.13	255.0	299.2	166.8
		19	16.3	7.57	77.5	8.05	250.5	302.7	170.3
		20	15.8	7.26	73.4	7.98	237.9	290.2	172.6
		21	15.2	7.07	70.5	7.93	229.8	283.6	174.1
		22	14.2	6.83	66.7	7.80	204.0	259.1	176.8
		23	13.3	6.59	63.2	7.73	188.5	243.9	179.8
		24	12.5	6.67	62.5	7.71	179.7	236.2	181.5
		25	12.2	6.73	62.8	7.70	178.0	235.6	182.8
		26	12.1	6.72	62.5	7.69	177.1	235.2	183.8
		27	11.8	6.29	58.4	7.66	177.8	237.8	185.4
RG_T4-2	6.15	0	20.2	8.68	96.0	8.45	234.1	257.6	133.1
		1	19.9	8.77	96.3	8.45	232.3	257.2	137.3
		2	19.8	8.79	96.3	8.45	231.4	257.1	140.0
		3	19.7	8.78	96.1	8.46	231.2	257.1	141.6
		4	19.7	8.76	95.9	8.46	231.0	257.0	143.9
		5	19.7	8.74	95.6	8.46	231.0	257.0	145.7
		6	19.7	8.72	95.5	8.45	231.0	257.0	147.4
		7	19.7	8.70	95.2	8.45	230.9	257.0	148.7
		8	19.7	8.69	95.0	8.45	230.9	257.0	149.9
		9	19.7	8.68	95.0	8.45	230.9	257.0	151.3
		10	19.7	8.67	94.8	8.45	230.9	257.1	152.5
		11	19.7	8.64	94.5	8.45	231.1	257.3	153.8
		12	19.7	8.61	94.1	8.44	231.7	258.1	155.5
		13	19.6	8.58	93.7	8.42	232.2	258.7	157.8
		14	19.6	8.56	93.5	8.42	232.7	259.4	158.7
		15	19.5	8.25	89.4	8.31	241.9	271.9	163.5
		16	19.0	8.14	87.7	8.25	247.0	279.3	167.1
		17	18.9	8.13	87.4	8.24	249.1	282.2	168.3
		18	18.4	8.12	86.5	8.23	253.5	290.2	170.0
		19	17.7	8.00	84.1	8.20	257.8	299.6	172.7
		20	15.9	7.27	73.4	8.04	243.9	296.4	179.0
		21	15.6	7.18	72.1	8.03	243.3	295.9	180.5
		22	14.5	6.90	67.9	7.88	215.4	269.8	184.3
		23	13.2	6.84	65.3	7.78	184.5	238.5	187.2
		24	12.7	6.84	64.4	7.75	181.2	236.9	189.4
		25	12.3	6.72	62.7	7.71	178.4	236.1	191.8
		26	12.0	6.36	59.0	7.69	178.1	237.4	192.6
RG_T4-3	6.2	0	20.7	8.63	96.4	8.43	236.8	257.8	152.1
		1	20.0	8.71	95.9	8.45	232.5	257.0	159.6
		2	20.0	8.73	95.9	8.45	232.1	257.0	162.9
		3	19.8	8.76	96.1	8.46	231.4	256.8	164.3
		4	19.7	8.78	96.1	8.46	231.0	256.8	165.5
		5	19.7	8.76	95.9	8.46	231.1	257.1	167.0
		6	19.7	8.75	95.7	8.46	231.1	257.3	167.8
		7	19.6	8.70	95.1	8.45	231.2	257.5	169.2
		8	19.6	8.68	94.8	8.44	231.4	257.8	170.3
		9	19.6	8.66	94.5	8.44	231.6	258.0	171.4
		10	19.6	8.65	94.4	8.44	231.9	258.1	172.4
		11	19.6	8.63	94.2	8.44	231.9	258.5	173.2
		12	19.6	8.63	94.2	8.44	231.9	258.6	174.0
		13	19.6	8.64	94.3	8.44	231.8	258.6	174.8
		14	19.6	8.62	94.1	8.44	231.9	258.8	175.5
		15	19.4	8.53	92.8	8.40	232.8	260.9	177.4
		16	19.3	8.42	91.5	8.37	236.5	265.3	178.8
		17	19.2	8.13	87.9	8.24	247.3	279.2	183.3
		18	18.3	8.03	85.4	8.18	250.3	287.6	186.3
		19	17.9	7.92	83.4	8.15	249.0	290.1	188.0
		20	16.5	7.54	77.3	8.08	247.7	296.7	191.5
		21	15.8	7.34	74.2	8.05	246.6	299.0	193.6
		22	15.0	7.11	70.7	7.91	219.6	273.4	197.4
		23	13.9	6.75	65.4	7.81	200.1	255.4	200.1
		24	13.0	6.87	65.1	7.77	184.4	239.6	202.3
		25	12.4	6.64	62.6	7.71	179.0	236.8	205.2
		26	12.2	6.26	58.4	7.70	179.2	237.3	205.6

Table B.5: In Situ Water Quality Profiles for Biological Transect Stations Downstream of the Elk River (RG_T4), Koocanusa Reservoir Monitoring Program, August 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	ORP
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	Mv
RG_T4-4	6.25	0	19.6	8.81	96.1	8.45	230.3	257.0	89.5
		1	19.6	8.80	96.0	8.46	230.4	257.0	96.5
		2	19.6	8.79	95.9	8.46	230.6	257.1	104.8
		3	19.6	8.78	95.9	8.46	230.5	257.1	108.6
		4	19.6	8.78	95.8	8.46	230.5	257.1	112.4
		5	19.6	8.78	95.8	8.46	230.5	257.1	115.9
		6	19.6	8.77	95.7	8.46	230.5	257.1	118.7
		7	19.6	8.77	95.7	8.46	230.5	257.1	121.5
		8	19.6	8.77	95.6	8.46	230.5	257.1	125.4
		9	19.6	8.76	95.6	8.46	230.5	257.1	128.2
		10	19.6	8.76	95.6	8.46	230.5	257.2	130.9
		11	19.6	8.75	95.5	8.46	230.5	257.1	132.8
		12	19.6	8.75	95.5	8.46	230.5	257.1	134.8
		13	19.6	8.73	95.3	8.45	230.9	257.8	137.0
		14	19.0	8.09	87.2	8.26	244.7	276.6	147.4
		15	18.7	8.14	87.2	8.25	244.8	278.5	150.3
		16	18.3	8.13	86.5	8.23	247.3	283.5	152.9
		17	18.2	8.19	86.9	8.27	249.9	287.2	153.9
		18	17.5	8.15	85.3	8.24	251.2	293.3	156.8
		19	15.9	7.53	76.4	8.13	252.4	305.5	162.2
		20	15.5	7.30	73.3	8.09	247.3	302.3	165.6
		21	14.3	6.66	65.1	7.89	217.0	274.1	170.3
		22	13.8	6.38	61.7	7.83	206.3	262.5	173.0
		23	13.5	6.23	59.8	7.79	198.3	255.1	174.6
		24	13.1	6.12	58.1	7.75	199.2	249.7	176.6
		25	12.7	6.06	57.1	7.74	184.8	242.7	177.7
		26	12.3	5.98	56.0	7.72	181.9	240.1	178.7
RG_T4-5	6.25	0	19.9	8.80	96.7	8.47	233.7	258.8	158.7
		1	19.8	8.81	96.6	8.47	233.0	258.6	161.0
		2	19.8	8.80	96.4	8.46	232.7	258.6	162.9
		3	19.7	8.78	96.1	8.46	232.6	258.6	164.4
		4	19.7	8.77	95.9	8.46	232.2	258.4	166.0
		5	19.7	8.78	96.0	8.47	232.0	258.4	167.1
		6	19.6	8.78	95.9	8.47	231.6	258.1	168.3
		7	19.6	8.76	95.7	8.46	231.2	257.7	169.9
		8	19.6	8.74	95.5	8.46	230.8	257.4	171.1
		9	19.6	8.74	95.4	8.46	230.7	257.3	172.0
		10	19.6	8.74	95.4	8.46	230.6	257.2	173.0
		11	19.6	8.74	95.4	8.46	230.6	257.2	173.9
		12	19.4	8.41	91.1	8.38	234.8	263.6	177.7
		13	18.8	8.21	85.2	8.26	244.3	277.5	182.1
		14	18.6	8.20	87.7	8.25	245.2	279.4	183.9
		15	18.5	8.20	87.6	8.26	246.4	281.5	184.6
		16	18.0	8.32	88.0	8.31	250.0	288.5	185.4
		17	17.7	8.13	85.4	8.24	249.9	290.7	188.4
		18	16.6	7.90	81.1	8.19	256.3	305.4	191.0
		19	16.3	7.73	78.6	8.16	254.5	305.7	192.6
		20	16.0	7.43	75.1	8.09	248.5	301.1	194.9
		21	15.2	7.12	70.9	8.01	236.1	291.1	197.1
		22	14.6	6.75	66.5	7.92	225.3	280.5	199.7
		23	13.2	6.27	60.0	7.77	200.2	259.7	203.4
		24	12.4	6.08	57.0	7.73	183.1	241.2	205.5
		25	12.3	5.98	56.0	7.70	181.6	239.6	207.0
		26	12.1	5.86	54.5	7.69	180.4	239.8	207.9
		27	11.9	5.77	53.5	7.68	179.5	239.3	208.9

Table B.6: In Situ Water Quality Profiles for Biological Transect Stations Upstream of the Elk River (RG_TN), Koocanusa Reservoir Monitoring Program, August 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	ORP
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	Mv
RG_TN-1	3.75	0	19.3	8.86	96.1	8.44	234.0	262.7	132.3
		1	19.3	8.86	96.1	8.44	234.0	262.7	136.9
		2	19.3	8.86	96.1	8.44	234.0	262.7	140.4
		3	19.3	8.85	96.0	8.43	234.1	262.8	143.8
		4	19.3	8.83	95.9	8.43	234.3	262.9	146.8
		5	19.3	8.83	95.8	8.43	234.3	263.1	149.2
		6	19.3	8.83	95.8	8.43	234.3	262.9	152.3
		7	19.3	8.83	95.8	8.43	234.3	263.0	162.7
		8	19.3	8.81	95.5	8.42	234.5	263.3	164.8
		9	19.3	8.79	95.3	8.42	234.4	263.3	165.9
		10	19.3	8.78	95.2	8.42	234.4	263.3	167.0
		11	19.2	8.75	94.8	8.41	234.4	263.7	168.7
		12	19.0	8.65	93.3	8.33	233.2	266.4	172.0
		13	16.4	8.56	88.2	8.11	230.1	277.4	178.3
		14	15.9	8.26	83.7	8.06	229.3	277.7	180.7
		15	15.9	8.18	82.8	8.06	229.4	277.9	181.5
		16	15.9	8.12	82.1	8.06	229.4	277.9	183.2
RG_TN-2	4.3	0	19.3	8.85	96.1	8.40	234.0	262.6	178.2
		1	19.3	8.85	96.1	8.41	234.0	262.7	179.0
		2	19.3	8.85	96.0	8.41	234.0	262.7	179.8
		3	19.3	8.86	96.1	8.42	234.0	262.6	180.0
		4	19.3	8.85	96.0	8.42	233.9	262.6	180.7
		5	19.3	8.86	96.1	8.42	233.9	262.7	182.1
		6	19.3	8.85	96.1	8.42	234.0	262.6	182.8
		7	19.3	8.85	96.0	8.43	234.0	262.6	183.1
		8	19.3	8.85	96.0	8.42	234.0	262.6	183.7
		9	19.3	8.84	95.9	8.42	234.0	262.8	184.4
		10	19.2	8.79	95.2	8.40	234.0	263.2	185.7
		11	19.2	8.77	94.9	8.40	234.0	263.5	186.4
		12	19.0	8.72	93.8	8.34	233.0	265.1	188.5
		13	16.3	8.38	85.0	8.10	229.5	276.8	195.3
		14	16.0	8.25	83.5	8.06	229.3	277.3	197.8
		15	15.9	8.20	82.9	8.05	229.4	277.7	197.6
RG_TN-3	4.8	0	19.3	8.87	96.3	8.42	234.2	262.7	186.3
		1	19.3	8.87	96.3	8.43	234.2	262.7	187.1
		2	19.3	8.87	96.3	8.43	234.2	262.7	187.6
		3	19.3	8.86	96.2	8.43	234.2	262.7	188.4
		4	19.3	8.86	96.2	8.43	234.0	262.7	189.0
		5	19.3	8.86	96.2	8.43	234.2	262.8	189.8
		6	19.3	8.85	96.1	8.43	234.2	262.7	190.3
		7	19.3	8.85	96.1	8.43	234.2	262.8	191.1
		8	19.3	8.85	96.1	8.43	234.2	262.8	191.5
		9	19.3	8.84	96.0	8.43	234.2	262.8	191.9
		10	19.3	8.84	95.9	8.42	234.2	262.8	192.4
		11	19.3	8.83	95.8	8.42	234.3	263.0	192.9
		12	18.7	8.65	92.9	8.36	233.9	265.5	195.2
		13	16.4	8.29	84.0	8.12	229.8	277.4	200.7
		14	15.9	8.22	83.1	8.06	229.4	277.9	204.6
		15	15.9	8.18	82.7	8.05	229.4	277.9	205.4
		16	15.9	8.15	82.4	8.05	229.4	277.9	205.7
		17	15.9	8.12	82.1	8.05	229.6	278.2	205.6
RG_TN-4	4.8	0	19.3	8.88	96.5	8.44	234.2	262.6	169.1
		1	19.3	8.88	96.4	8.43	234.3	262.6	173.0
		2	19.3	8.88	96.4	8.43	234.3	262.6	175.4
		3	19.3	8.88	96.4	8.44	234.3	262.6	177.1
		4	19.3	8.88	96.4	8.43	234.3	262.7	179.4
		5	19.3	8.88	96.4	8.43	234.3	262.7	180.7
		6	19.3	8.87	96.4	8.43	234.3	262.7	182.2
		7	19.3	8.87	96.4	8.43	234.3	262.6	183.6
		8	19.3	8.86	96.2	8.43	234.2	262.7	185.0
		9	19.3	8.86	96.1	8.43	234.2	262.6	187.3
		10	19.3	8.85	96.1	8.42	234.2	262.7	188.3
		11	19.3	8.83	95.9	8.42	234.3	262.8	189.3
		12	19.0	8.70	93.9	8.40	234.1	264.2	191.3
		13	16.0	8.35	84.7	8.12	229.9	277.4	196.3
		14	15.8	8.24	83.2	8.07	229.3	278.0	201.8
		15	15.8	8.20	82.9	8.05	229.2	278.0	203.3
		16	15.8	8.17	82.5	8.05	229.2	278.1	202.6
RG_TN-5	4.3	0	19.4	8.85	96.2	8.44	234.3	262.6	164.7
		1	19.4	8.88	96.5	8.44	234.4	262.6	171.0
		2	19.4	8.88	96.5	8.43	234.4	262.6	173.7
		3	19.4	8.88	96.5	8.44	234.3	262.6	176.3
		4	19.4	8.88	96.5	8.43	234.3	262.6	178.7
		5	19.4	8.88	96.5	8.43	234.3	262.6	188.9
		6	19.4	8.88	96.5	8.43	234.3	262.6	190.3
		7	19.4	8.87	96.4	8.42	234.3	262.6	191.2
		8	19.3	8.87	96.3	8.43	234.3	262.7	191.9
		9	19.3	8.86	96.2	8.43	234.3	262.7	192.7
		10	19.3	8.85	96.1	8.43	234.2	262.7	194.1
		11	19.2	8.82	95.6	8.41	234.1	262.9	195.6
		12	19.1	8.72	93.8	8.39	233.0	263.9	196.9
		13	17.1	8.56	88.5	8.21	230.4	270.9	200.9
		14	15.9	8.29	83.8	8.08	229.4	277.9	206.9
		15	15.8	8.23	83.2	8.06	229.2	277.9	208.4
		16	15.8	8.20	82.8	8.06	229.3	278.0	207.9

Table B.7: In Situ Water Quality Profiles for Biological Stations, Koocanusa Reservoir Monitoring Program, August 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	Turbidity
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	NTU
RG_SC	4.00	0	19.5	8.82	104.9	8.57	220.2	246.2	2.8
		1	19.5	8.81	104.8	8.55	219.5	245.4	2.7
		2	19.4	8.81	104.7	8.56	219.1	245.1	2.8
		3	19.4	8.80	104.6	8.56	218.2	244.6	2.6
		4	19.4	8.80	104.7	8.57	219.0	245.0	2.6
		5	19.4	8.82	104.8	8.55	219.2	245.2	2.7
		6	19.4	8.81	104.7	8.56	218.3	244.3	2.7
		7	19.4	8.83	104.9	8.56	219.0	245.2	2.6
		8	19.4	8.83	105.0	8.53	218.4	244.5	2.5
		9	19.4	8.83	104.8	8.56	218.4	244.6	2.7
		10	19.3	8.82	104.6	8.56	218.4	244.9	2.9
		11	19.3	8.82	104.6	8.54	218.4	245.0	2.6
		12	18.8	8.70	102.0	8.46	218.7	248.1	3.7
		13	18.2	8.67	100.4	8.44	218.5	251.1	5.0
		14	17.4	8.59	98.2	8.38	217.8	254.7	6.9
		15	17.2	8.59	97.6	8.37	217.7	255.7	7.1
		16	15.8	8.48	93.5	8.26	216.9	263.2	14.6
		17	15.5	8.49	93.0	8.24	216.8	264.8	13.4
		18	15.4	8.49	92.8	8.24	216.8	265.7	12.0
		19	15.4	8.48	92.6	8.21	216.8	265.8	28.6
RG_KERRRD	4.50	0	19.7	8.72	104.5	8.38	-	246.5	2.7
		1	19.7	8.71	104.5	8.37	-	246.0	2.6
		2	19.7	8.70	104.3	8.38	-	245.3	2.6
		3	19.7	8.71	104.4	8.37	-	245.9	2.5
		4	19.7	8.71	104.3	8.39	-	245.4	2.6
		5	19.7	8.70	104.2	8.39	-	245.3	2.6
		6	19.6	8.72	104.4	8.40	-	245.5	2.9
		7	19.6	8.71	104.2	8.40	-	245.4	2.6
		8	19.6	8.72	104.3	8.40	-	245.4	2.5
		9	19.6	8.70	104.1	8.39	-	245.4	2.5
		10	19.6	8.69	104.0	8.40	-	245.4	2.6
		11	19.6	8.71	104.2	8.42	-	245.3	2.5
		12	19.4	8.64	102.9	8.36	-	247.2	2.9
		13	18.3	8.28	96.5	8.18	-	258.0	4.9
		14	17.5	7.89	90.3	8.10	-	263.0	6.0
		15	16.9	7.71	87.2	8.06	-	265.5	10.3
		16	16.6	7.61	85.5	8.04	-	266.5	11.7
		17	16.4	7.37	82.6	8.01	-	267.2	15.1
		18	16.2	6.83	76.1	7.94	-	263.7	10.6
		19	15.9	6.27	69.4	7.87	-	259.0	12.9
		20	15.5	5.15	56.6	7.78	-	253.3	13.5
RG_DSELK	4.00	0	19.6	8.71	103.9	8.59	220.0	245.4	2.5
		1	19.6	8.72	103.9	8.59	220.0	245.4	2.4
		2	19.6	8.71	103.9	8.58	220.0	245.2	2.6
		3	19.6	8.71	103.8	8.60	219.9	245.4	2.2
		4	19.6	8.72	104.0	8.59	220.0	245.4	2.3
		5	19.6	8.71	104.0	8.59	220.0	245.4	2.5
		6	19.6	8.72	104.0	8.57	220.0	245.3	2.6
		7	19.6	8.72	104.0	8.59	220.0	245.4	2.5
		8	19.6	8.71	103.9	8.58	220.2	245.6	2.2
		9	19.6	8.70	103.7	8.58	220.2	245.6	2.5
		10	19.6	8.69	103.7	8.59	220.2	245.7	2.6
		11	19.5	8.69	103.5	8.58	220.4	246.1	2.7
		12	19.4	8.68	103.3	8.54	223.8	250.4	2.7
		13	19.2	8.63	102.2	8.53	223.9	253.7	2.7
		14	18.1	8.33	96.4	8.39	226.3	260.4	3.5
		15	17.3	8.11	92.0	8.24	225.2	263.9	6.2
		16	16.9	7.74	87.4	8.20	224.9	265.9	8.0
		17	16.7	7.55	84.8	8.18	225.2	267.8	7.8
		18	16.4	7.43	83.0	8.14	227.9	272.9	16.8
		19	16.1	7.11	79.0	8.12	230.3	277.2	19.6
		20	15.9	6.90	76.3	8.11	230.7	279.2	31.2
		21	14.5	6.36	68.2	8.00	204.4	255.7	12.4
		22	13.6	6.21	65.4	7.94	180.1	229.9	8.3
		23	13.0	5.94	61.5	7.85	174.6	226.5	6.8
		24	12.7	5.70	58.8	7.81	174.4	227.9	10.0
		25	12.6	5.53	56.8	7.77	174.0	228.2	12.9

Table B.7: In Situ Water Quality Profiles for Biological Stations, Koocanusa Reservoir Monitoring Program, August 2021

Station	Secchi	Depth	Temp	DO		pH	Cond	Sp. Cond	Turbidity
	m	m	°C	mg/L	% sat		µS/cm	µS/cm	NTU
RG_GRASSMERE	5.25	0	20.0	8.72	105.3	-	220.2	243.2	2.6
		1	20.1	8.70	105.1	-	220.0	243.0	2.3
		2	20.0	8.72	105.1	-	219.4	242.8	2.3
		3	19.9	8.72	105.1	-	219.3	242.8	2.3
		4	19.9	8.72	105.0	-	219.2	242.9	2.3
		5	19.9	8.71	104.8	-	219.1	242.9	2.3
		6	19.9	8.69	104.6	-	219.2	243.0	2.6
		7	19.9	8.69	104.6	-	219.1	242.9	2.6
		8	19.9	8.70	104.6	-	219.1	243.0	2.4
		9	19.8	8.66	104.1	-	219.2	243.1	2.5
		10	19.8	8.65	104.0	-	219.8	243.8	2.6
		11	19.8	8.65	104.0	-	219.9	244.0	2.7
		12	19.6	8.47	101.3	-	227.9	254.3	2.7
		13	19.5	8.38	100.0	-	229.4	256.4	2.7
		14	19.3	8.35	99.3	-	231.5	260.0	3.1
		15	19.1	8.37	99.1	-	232.9	262.3	3.3
		16	18.9	8.32	98.1	-	230.1	260.6	3.6
		17	18.7	8.28	97.2	-	231.8	263.6	3.7
		18	18.5	8.20	96.0	-	229.8	262.2	4.1
		19	18.5	8.18	95.7	-	231.5	264.3	4.2
		20	17.7	8.08	92.9	-	236.1	275.0	7.7
		21	16.8	7.53	85.1	-	228.0	270.3	8.4
		22	16.4	7.37	82.5	-	227.1	271.9	10.1
		23	14.4	6.82	73.2	-	195.0	244.6	13.1
		24	13.4	6.44	67.4	-	176.1	226.2	7.8
		25	12.7	6.05	62.5	-	169.0	221.2	8.1
		26	12.5	6.02	61.8	-	167.7	220.6	10.3
		27	12.2	5.94	60.6	-	167.3	221.6	12.6
		28	11.8	6.09	61.6	-	165.0	220.8	9.0
		29	11.6	6.13	61.7	-	164.8	221.3	11.7
RG_GC	4.75	0	19.5	8.71	103.8	8.60	214.7	239.8	2.3
		1	19.6	8.71	103.9	8.61	215.1	240.1	2.4
		2	19.6	8.70	103.8	8.62	214.9	239.7	2.6
		3	19.6	8.70	103.8	8.62	214.9	239.7	2.5
		4	19.6	8.70	103.8	8.61	215.0	239.8	2.4
		5	19.6	8.69	103.7	8.62	214.9	239.7	2.7
		6	19.6	8.68	103.6	8.61	215.1	239.9	2.8
		7	19.6	8.68	103.5	8.61	215.0	239.7	2.6
		8	19.6	8.68	103.6	8.61	215.0	239.7	2.9
		9	19.6	8.69	103.7	8.60	215.2	240.0	2.5
		10	19.5	8.64	103.0	8.59	216.0	241.1	2.7
		11	19.5	8.59	102.4	8.57	217.0	242.5	2.7
		12	19.0	8.36	98.7	8.47	229.4	259.1	2.9
		13	18.7	8.27	97.0	8.44	232.3	263.9	2.9
		14	18.5	8.23	96.1	8.43	232.7	265.7	4.2
		15	17.6	8.01	91.5	8.29	232.5	270.8	4.6
		16	17.1	7.51	85.1	8.24	232.5	273.9	3.8
		17	17.0	7.50	85.0	8.23	232.4	274.1	3.8
		18	16.7	7.41	83.3	8.21	232.5	276.1	5.0
		19	16.6	7.39	83.0	8.20	232.7	276.8	4.5
		20	16.6	7.34	82.3	8.20	232.8	277.2	4.6
		21	16.4	7.26	81.1	8.18	233.4	279.1	4.7
		22	15.0	6.96	75.4	8.00	196.4	243.8	5.0
		23	13.4	6.54	68.5	7.88	174.0	223.4	5.4
		24	13.3	6.55	68.5	7.87	172.7	222.7	4.5
		25	12.9	6.67	68.9	7.83	169.3	219.9	5.0
		26	12.4	6.68	68.4	7.81	165.4	217.7	6.9
		27	12.0	6.64	67.4	7.78	164.4	218.2	12.2
		28	11.7	6.53	65.8	7.75	164.6	220.6	10.1
		29	11.6	6.36	63.9	7.72	164.8	221.6	11.4
		30	11.1	6.20	61.6	7.69	165.7	225.6	17.0

Note: "-" denotes YSI sensor was not functioning, or no data exists.

Table B.8: In Situ Water Quality Profiles for the Biological Monitoring Stations, Koocanusa Reservoir Monitoring Program, April 2021

Station	Depth (m)	Temperature (°C)	Dissolved Oxygen		pH	Specific Conduct	ORP mV	Turbidity
			(mg/L)	(%)				
RG_SC	0	7.3	10.96	100.0	8.36	248.1	187.9	51.3
	1	7.3	10.96	100.0	8.37	251.2	187.7	56.6
	2	7.3	10.95	99.9	8.35	254.7	187.9	54.5
	3	7.3	10.96	99.9	8.35	257.7	188.1	59.1
RG_KERRRD	0	7.9	11.21	103.8	8.46	28.2	179.3	40.8
	1	7.8	11.23	103.8	8.46	28.9	179.5	54.3
	2	7.6	11.21	103.2	8.46	208.2	179.8	56.9
	3	7.5	11.24	103.2	8.45	274.5	180.0	41.2
	4	7.4	11.27	103.2	8.44	275.1	180.4	48.3
	5	7.4	11.26	103.1	8.44	275.3	180.5	48.0
RG_DSELK	0	9.8	10.90	103.7	8.44	345.7	222.0	31.3
	1	9.6	10.91	103.4	8.44	345.4	221.7	33.6
	2	9.3	10.92	102.8	8.44	345.7	222.3	42.2
	3	8.9	10.97	102.2	8.44	346.1	222.0	32.4
	4	8.7	10.96	101.7	8.43	345.6	222.3	35.5
	5	8.4	10.99	101.2	8.42	347.2	222.7	44.9
	6	8.1	11.02	100.6	8.41	348.9	222.8	38.7
	7	8.0	11.07	100.8	8.39	349.5	223.1	34.2
	8	7.9	11.09	100.7	8.38	350.5	223.6	44.5
RG_GRASMERE	0	8.7	10.94	102.7	8.43	310.9	177.1	26.0
	1	8.7	10.94	103.0	8.42	311.4	176.8	22.6
	2	8.6	10.94	102.4	8.42	311.7	177.2	24.6
	3	8.5	10.95	102.3	8.42	313.8	177.4	23.8
	4	8.4	10.95	102.0	8.42	314.9	177.9	24.1
	5	8.1	10.90	101.0	8.42	313.4	178.2	27.8
	6	7.9	10.88	100.1	8.42	314.1	178.6	27.1
	7	7.7	10.93	100.0	8.42	313.2	178.8	27.7
	8	7.6	10.95	100.0	8.41	314.4	179.5	26.6
	9	7.5	10.94	99.7	8.39	315.6	180.6	29.8
	10	7.4	10.91	99.2	8.38	317.4	181.7	35.0
	11	7.4	10.88	98.9	8.35	324.0	182.8	30.3
RG_GC	0	8.3	11.16	102.1	8.43	361.2	174.3	15.0
	1	8.4	11.16	102.2	8.43	361.6	174.2	12.2
	2	8.3	11.15	102.0	8.42	361.1	174.1	13.3
	3	8.3	11.15	101.9	8.42	360.2	174.4	13.9
	4	8.3	11.14	101.8	8.41	360.0	174.6	13.5
	5	8.2	11.14	101.6	8.41	359.1	174.8	13.1
	6	8.2	11.14	101.6	8.40	358.3	174.9	12.7
	7	8.2	11.14	101.5	8.40	359.0	175.3	15.7
	8	8.1	11.13	101.4	8.39	356.4	175.4	12.5
	9	8.1	11.13	101.2	8.39	355.5	175.6	12.8
	10	8.1	11.12	101.1	8.38	355.7	176.0	11.1
	11	8.0	11.10	100.9	8.38	358.1	176.3	13.2
	12	7.9	11.05	100.1	8.36	361.3	176.7	13.5
	13	7.8	11.03	99.8	8.35	361.9	176.9	9.3
	14	7.8	11.00	99.4	8.35	361.2	177.3	10.8

Table B.9: In Situ Water Quality Profiles for Biological Stations, Koocanusa Reservoir Monitoring Program, May 2021

Station	Depth	Temp	DO		pH	Sp. Cond	ORP	Turbidity
	m	°C	mg/L	% sat		µS/cm	Mv	NTU
RG_SC	0	8.4	10.77	99.7	7.95	208.9	225.0	77.6
	1	8.4	10.76	99.6	7.94	208.8	225.4	80.7
	2	8.4	10.74	99.5	7.94	208.7	225.3	76.8
	3	8.4	10.74	99.5	7.94	208.6	225.5	80.1
	4	8.4	10.74	99.5	7.93	208.6	225.9	85.4
	5	8.4	10.75	99.6	7.92	208.7	226.3	92.3
	6	8.4	10.74	99.5	7.92	208.7	226.5	109.3
RG_KERRRD	0	8.5	10.75	99.9	7.70	211.3	250.5	-
	1	8.5	10.74	99.7	7.69	211.5	251.9	-
	2	8.4	10.75	99.8	7.70	211.7	251.3	-
	3	8.4	10.72	99.5	7.70	211.5	250.5	-
	4	8.5	10.71	99.4	7.70	211.5	250.9	-
	5	8.4	10.73	99.6	7.70	211.5	250.1	-
	6	8.4	10.71	99.4	7.70	211.5	249.8	-
RG_DSELK	0	9.4	10.63	100.9	8.15	212.5	153.3	-
	1	9.2	10.62	100.3	8.15	214.7	153.2	-
	2	8.9	10.68	100.2	8.15	222.6	155.1	-
	3	8.8	10.71	100.2	8.15	224.0	156.3	-
	4	8.6	10.73	100.0	8.14	226.9	157.5	-
	5	8.6	10.75	100.1	8.13	226.6	158.4	-
	6	8.5	10.75	99.9	8.11	231.3	160.2	-
	7	8.5	10.75	99.8	8.10	234.0	161.8	-
	8	8.4	10.78	100.0	8.09	235.9	163.0	-
	9	8.4	10.78	99.9	8.08	238.1	164.4	-
	10	8.4	10.77	99.8	8.07	238.0	164.9	-
	11	8.4	10.77	99.8	8.07	238.2	165.2	-
RG_GRASMERE	0	8.9	10.68	100.3	8.17	222.5	212.4	-
	1	9.0	10.66	100.2	8.16	222.0	211.9	-
	2	8.8	10.65	99.8	8.17	223.4	211.6	-
	3	8.7	10.68	99.7	8.18	226.7	211.6	-
	4	8.5	10.69	99.4	8.18	233.8	212.1	-
	5	8.4	10.69	99.2	8.18	237.2	212.4	-
	6	8.3	10.70	99.0	8.18	241.8	212.5	-
	7	8.2	10.75	99.2	8.18	242.9	213.0	-
	8	8.2	10.75	99.2	8.17	243.9	213.3	-
	9	8.2	10.74	99.0	8.17	245.5	213.7	-
	10	8.1	10.75	99.1	8.16	249.8	214.3	-
	11	8.1	10.77	99.2	8.16	248.7	214.4	-
	12	8.1	10.76	99.0	8.16	252.3	214.5	-
RG_GC	0	8.9	10.63	99.8	8.14	158.7	223.7	61.3
	1	8.9	10.64	99.9	8.13	159.2	223.9	65.1
	2	8.8	10.65	99.7	8.13	161.0	224.1	62.1
	3	8.7	10.62	99.1	8.13	173.5	224.3	65.1
	4	8.7	10.64	99.3	8.13	199.5	225.2	74.8
	5	8.7	10.65	99.5	8.14	209.5	225.8	82.1
	6	8.7	10.69	99.8	8.14	211.9	225.8	95.6
	7	8.7	10.70	100.0	8.14	211.4	225.9	85.2
	8	8.7	10.70	100.0	8.14	210.7	225.8	87.3
	9	8.7	10.71	100.0	8.14	211.0	226.1	84.7
	10	8.7	10.72	100.1	8.13	211.9	226.2	82.4
	11	8.7	10.71	99.9	8.13	213.1	226.2	83.6
	12	8.6	10.73	100.1	8.13	214.3	226.3	89.6
	13	8.6	10.73	100.0	8.13	214.3	226.3	93.5
	14	8.6	10.73	99.9	8.13	213.4	226.3	94.0
	15	8.6	10.73	99.9	8.12	213.0	226.6	132.2
	16	8.5	10.65	98.9	8.11	211.7	226.6	152.3
	17	8.5	10.62	98.5	8.10	212.7	226.5	152.7

Note: "-" denotes YSI sensor was not functioning, or no data exists.

Table B.10: In Situ Water Quality Profiles for Biological Stations, Koocanusa Reservoir Monitoring Program, June 2021

Station	Depth m	Temp °C	DO mg/L	DO % sat	pH	Sp. Cond µS/cm	ORP Mv	Turbidity NTU
RG_SC	0	15.5	9.86	108.2	8.10	176.8	199.5	68.0
	1	14.0	9.83	104.6	8.12	175.1	199.9	72.4
	2	12.7	9.86	101.8	8.13	174.3	201.3	90.0
	3	12.1	9.98	101.8	8.08	175.9	204.7	112.3
	4	11.9	9.99	101.3	8.06	176.2	206.5	118.4
	5	11.7	10.00	100.9	8.03	176.8	208.5	104.3
	6	11.6	10.01	100.8	8.02	177.3	209.9	87.9
	7	11.6	10.00	100.7	7.99	177.3	211.8	88.0
	8	11.5	10.03	100.8	7.97	177.8	213.3	104.8
	9	11.5	10.00	100.6	7.96	177.6	213.7	92.4
	10	11.5	10.02	100.6	7.93	178.0	215.9	89.4
	11	11.5	10.03	100.6	7.91	178.4	217.1	96.3
	12	11.4	10.03	100.4	7.86	179.1	220.4	86.7
	13	11.3	10.00	100.1	7.85	179.3	221.2	107.8
	14	11.3	10.00	100.0	7.85	179.6	221.7	92.1
	15	11.2	10.02	100.0	7.84	179.7	222.4	114.4
	16	11.3	9.98	99.8	7.83	179.3	222.9	97.7
RG_KERRRD	1	12.2	10.07	102.0	7.82	176.2	197.5	-
	2	12.1	10.03	101.6	7.81	175.2	196.8	-
	3	12.0	10.02	101.2	7.82	174.5	197.4	-
	4	12.0	10.03	101.2	7.84	174.5	199.1	-
	5	11.9	10.02	101.0	7.82	174.5	200.0	-
	6	11.9	10.01	100.8	7.83	174.1	203.1	-
	7	11.9	10.02	100.9	7.82	174.2	203.2	-
	8	11.9	10.02	100.8	7.82	174.3	204.2	-
	9	11.9	10.01	100.8	7.82	174.2	205.2	-
	10	11.9	10.00	100.8	7.81	174.6	207.0	-
	11	11.8	10.01	100.7	7.81	174.3	207.2	-
	12	11.9	10.01	100.7	7.81	174.6	207.6	-
	13	11.8	9.99	100.5	7.81	175.0	208.3	-
	14	11.8	10.00	100.6	7.81	175.1	208.8	-
	15	11.8	10.02	100.7	7.81	175.1	210.6	-
	16	11.8	9.99	100.4	7.80	175.1	210.9	-
	17	11.8	9.99	100.4	7.80	174.8	211.9	-
RG_DSELK	0	18.2	10.23	118.6	8.46	207.3	188.3	11.7
	1	18.2	10.23	118.7	8.46	204.9	186.6	12.5
	2	15.8	10.29	113.9	8.49	188.5	187.7	51.2
	3	14.2	10.12	107.8	8.32	182.4	191.0	55.4
	4	13.8	10.06	106.2	8.28	181.6	193.2	60.8
	5	13.8	10.02	105.9	8.27	181.4	194.1	75.3
	6	13.5	9.97	104.6	8.25	180.5	195.6	68.7
	7	13.2	9.97	104.0	8.21	179.7	198.3	71.0
	8	12.8	9.99	103.3	8.16	176.7	201.3	88.1
	9	12.5	9.98	102.5	8.14	175.5	202.9	110.7
	10	12.5	9.99	102.4	8.13	184.2	204.2	83.4
	11	12.5	10.01	102.7	8.14	195.8	205.2	74.6
	12	12.5	9.99	102.5	8.14	228.2	207.2	67.8
	13	12.3	10.05	102.6	8.13	234.6	208.0	79.2
	14	12.0	10.05	102.0	8.11	208.9	208.2	93.1
	15	12.0	10.04	101.8	8.10	207.0	208.6	90.3
	16	11.9	10.03	101.5	8.08	201.3	209.8	107.6
	17	11.8	10.03	101.4	8.07	201.8	210.8	111.8
	18	11.8	10.04	101.5	8.06	202.2	211.3	107.8
	19	11.8	9.98	100.9	8.03	209.2	214.0	101.7
	20	11.8	9.98	100.8	8.01	220.0	215.3	106.5

Table B.10: In Situ Water Quality Profiles for Biological Stations, Koocanusa Reservoir Monitoring Program, June 2021

Station	Depth m	Temp °C	DO mg/L	DO % sat	pH	Sp. Cond µS/cm	ORP Mv	Turbidity NTU
RG_USGOLD	0	17.8	10.02	115.2	8.45	212.0	206.3	5.3
	1	17.8	9.93	114.1	8.49	210.3	204.5	7.4
	2	16.6	9.93	111.5	8.46	205.6	205.5	9.0
	3	15.6	9.94	109.2	8.35	209.5	207.3	10.1
	4	15.1	9.84	106.7	8.30	211.2	209.5	14.8
	5	14.5	9.79	104.9	8.26	210.8	211.5	17.2
	6	14.1	9.78	103.9	8.24	210.5	212.0	21.5
	7	13.9	9.74	103.0	8.22	206.6	212.8	32.3
	8	13.6	9.72	102.1	8.21	203.4	213.8	31.3
	9	13.4	9.69	101.6	8.19	201.9	214.7	36.3
	10	13.2	9.70	100.9	8.17	201.9	216.1	52.2
	11	12.8	9.72	100.4	8.16	198.6	216.8	60.2
	12	12.5	9.77	100.1	8.05	198.4	223.9	66.9
	13	12.3	9.78	99.8	8.03	200.4	225.7	74.3
	14	12.3	9.76	99.6	8.02	201.3	226.7	70.7
	15	12.3	9.78	99.7	7.99	206.4	228.2	77.9
	16	12.3	9.78	99.6	7.99	209.2	228.9	66.0
	17	12.3	9.77	99.6	7.98	210.2	229.6	67.7
	18	12.2	9.78	99.6	7.96	211.3	230.7	68.9
	19	12.3	9.78	99.5	7.95	211.3	231.8	71.5
	20	12.2	9.77	99.5	7.93	210.6	232.9	76.0
	21	12.2	9.75	99.1	7.92	212.0	233.8	73.4
	22	12.1	9.73	98.8	7.90	219.8	234.8	61.9
	23	12.0	9.73	98.5	7.89	223.1	235.4	58.7
	24	11.8	9.73	98.2	7.87	221.6	236.1	49.4
	25	11.6	9.72	97.6	7.86	222.1	236.6	76.6
	26	11.6	9.61	96.4	7.85	222.2	237.1	149.4
RG_GC	0	17.6	9.93	113.6	8.47	213.5	185.7	3.1
	1	17.1	9.89	111.8	8.48	210.9	185.6	4.1
	2	16.6	9.96	111.6	8.49	211.4	185.4	5.3
	3	16.1	10.00	110.8	8.42	211.2	188.2	7.4
	4	15.6	9.90	108.4	8.36	207.6	189.7	9.9
	5	15.1	9.80	106.3	8.31	205.8	191.0	12.1
	6	14.7	9.69	104.2	8.27	206.2	193.8	14.4
	7	14.1	9.57	101.5	8.24	197.5	194.4	36.6
	8	13.2	9.65	100.5	8.20	200.5	196.6	44.9
	9	12.8	9.70	100.0	8.18	204.2	198.3	50.4
	10	12.8	9.67	99.7	8.16	206.1	200.0	51.2
	11	12.6	9.72	99.7	8.14	207.3	202.2	55.4
	12	12.6	9.71	99.6	8.10	207.0	205.9	60.8
	13	12.5	9.73	99.5	8.09	207.3	208.6	54.1
	14	12.4	9.75	99.6	8.09	206.8	209.7	62.1
	15	12.4	9.72	99.4	8.08	207.3	210.7	72.7
	16	12.4	9.74	99.4	8.08	207.6	211.0	77.3
	17	12.4	9.74	99.4	8.08	207.7	211.2	61.6
	18	12.4	9.74	99.4	8.08	209.0	211.8	57.9
	19	12.4	9.74	99.4	8.07	209.2	211.9	66.3
	20	12.4	9.72	99.4	8.06	210.9	213.3	53.1
	21	12.4	9.72	99.2	8.06	211.4	213.6	51.2
	22	12.2	9.69	98.5	8.04	217.5	214.6	47.4
	23	12.0	9.69	98.0	8.04	218.8	215.0	48.6
	24	11.9	9.67	97.7	8.04	219.0	215.3	49.3
	25	11.8	9.67	97.4	8.03	219.0	215.7	55.7
	26	11.5	9.64	96.4	8.02	218.7	216.3	55.9
	27	11.3	9.39	93.6	7.99	219.4	218.1	68.2

Note: "-" denotes YSI sensor was not functioning, or no data exists.

APPENDIX C
SEDIMENT
QUALITY

Table C.1: Profundal Sediment Quality Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2021

Analyte		Units	BC Sediment		Upstream of Elk River (RG_TN)				
			Lower SQG	Upper SQG	TN-1	TN-2	TN-3	TN-4	TN-5
					26-Aug-21	26-Aug-21	26-Aug-21	26-Aug-21	26-Aug-21
Physical Tests	Moisture	%	-	-	41.4	41.0	41.6	40.3	41.8
	% Gravel (>2 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (1.00 mm - 0.50 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.50 mm - 0.25 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.25 mm - 0.125 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.125 mm - 0.063 mm)	%	-	-	1.60	3.70	<1	<1	1.30
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	15.4	17.1	15.4	16.8	18.0
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	61.7	59.4	61.6	61.5	61.0
	% Clay (<4 µm)	%	-	-	21.0	19.5	22.1	21.0	19.6
	Texture	-	-	-	Silt	Silt	Silt	Silt	Silt
Organic Carbon	Total Organic Carbon	%	-	-	1.20	1.20	1.20	1.30	1.20
Metals	Aluminum (Al)	mg/kg	-	-	12,800	12,600	12,800	12,600	13,600
	Antimony (Sb)	mg/kg	-	-	0.260	0.230	0.230	0.230	0.240
	Arsenic (As)	mg/kg	5.9	17	5.13	4.75	4.78	4.68	5.10
	Barium (Ba)	mg/kg	-	-	79.0	74.1	77.2	74.3	81.2
	Beryllium (Be)	mg/kg	-	-	0.360	0.350	0.350	0.340	0.370
	Bismuth (Bi)	mg/kg	-	-	<0.2	<0.2	<0.2	<0.2	<0.2
	Boron (B)	mg/kg	-	-	<5	<5	<5	<5	<5
	Cadmium (Cd)	mg/kg	0.60	3.5	0.176	0.167	0.175	0.172	0.185
	Calcium (Ca)	mg/kg	-	-	113,000	113,000	113,000	120,000	129,000
	Chromium (Cr)	mg/kg	37.3	90	17.7	17.4	17.2	17.3	18.8
	Cobalt (Co)	mg/kg	-	-	8.95	8.66	8.68	8.66	9.44
	Copper (Cu)	mg/kg	35.7	197	14.5	14.0	13.8	14.0	15.3
	Iron (Fe)	mg/kg	21,200	43,766	22,400	21,800	21,800	21,900	23,800
	Lead (Pb)	mg/kg	35	91.3	12.6	12.6	12.1	12.2	13.2
	Lithium (Li)	mg/kg	-	-	25.4	23.3	23.0	24.1	26.3
	Magnesium (Mg)	mg/kg	-	-	23,000	23,400	22,600	23,000	25,500
	Manganese (Mn)	mg/kg	460	1,100	490	437	433	432	502
	Mercury (Hg)	mg/kg	0.17	0.49	0.0304	0.0307	0.0221	0.0232	0.0221
	Molybdenum (Mo)	mg/kg	25	23,000	0.590	0.590	0.570	0.590	0.630
	Nickel (Ni)	mg/kg	16	75	19.5	19.0	19.2	19.1	20.9
	Phosphorus (P)	mg/kg	-	-	458	498	443	466	541
	Potassium (K)	mg/kg	-	-	790	790	760	780	740
	Selenium (Se)	mg/kg	2.0	-	<0.2	<0.2	<0.2	<0.2	<0.2
	Silver (Ag)	mg/kg	0.50	-	<0.1	<0.1	<0.1	<0.1	<0.1
	Sodium (Na)	mg/kg	-	-	81.0	80.0	76.0	108	80.0
	Strontium (Sr)	mg/kg	-	-	276	270	271	284	306
	Sulfur (S)	mg/kg	-	-	<1,000	<1,000	<1,000	<1,000	<1,000
	Thallium (Tl)	mg/kg	-	-	0.0730	0.0760	0.0730	0.0730	0.0750
	Tin (Sn)	mg/kg	-	-	<2	<2	3.70	<2	<2
	Titanium (Ti)	mg/kg	-	-	72.3	86.7	65.4	82.8	71.7
	Tungsten (W)	mg/kg	-	-	<0.5	<0.5	<0.5	<0.5	<0.5
	Uranium (U)	mg/kg	-	-	0.582	0.598	0.576	0.594	0.627
	Vanadium (V)	mg/kg	-	-	12.8	12.7	12.3	12.3	13.3
	Zinc (Zn)	mg/kg	123	315	64.7	65.7	64.0	63.0	70.3
	Zirconium (Zr)	mg/kg	-	-	1.40	1.30	1.30	1.50	1.60
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.00671	0.089	<0.005	<0.005	<0.005	<0.005	<0.005
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	<0.005	<0.005	<0.005
	Acridine	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Anthracene	mg/kg	0.0469	0.245	<0.004	<0.004	<0.004	<0.004	<0.004
	Benz(a)anthracene	mg/kg	0.0317	0.385	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(a)pyrene	mg/kg	0.0319	0.782	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(b,j)fluoranthene	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(b,j,k)fluoranthene	mg/kg	-	-	<0.015	<0.015	<0.015	<0.015	<0.015
	Benzo(e)pyrene	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(k)fluoranthene	mg/kg	0.24	13.4	<0.01	<0.01	<0.01	<0.01	<0.01
	Chrysene	mg/kg	0.0571	0.862	<0.01	<0.01	<0.01	<0.01	<0.01
	Dibenz(a,h)anthracene	mg/kg	0.00622	0.135	<0.005	<0.005	<0.005	<0.005	<0.005
	Fluoranthene	mg/kg	0.11	2.355	<0.01	<0.01	<0.01	<0.01	<0.01
	Fluorene	mg/kg	0.0212	0.144	<0.01	<0.01	<0.01	<0.01	<0.01
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.01	<0.01	<0.01
	1-Methylnaphthalene	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Methylnaphthalene	mg/kg	0.0202	0.201	<0.01	<0.01	<0.01	<0.01	<0.01
	Naphthalene	mg/kg	0.0346	0.391	<0.01	<0.01	<0.01	<0.01	<0.01
	Perylene	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Phenanthrene	mg/kg	0.0419	0.515	<0.01	<0.01	<0.01	<0.01	<0.01
	Pyrene	mg/kg	0.053	0.875	<0.01	<0.01	<0.01	<0.01	<0.01
	Quinoline	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	d10-Acenaphthene	%	-	-	89.1	93.9	87.0	83.8	93.9
	d12-Chrysene	%	-	-	86.3	91.8	89.3	83.5	91.1
	d8-Naphthalene	%	-	-	85.7	88.7	85.1	83.0	88.2
	d10-Phenanthrene	%	-	-	89.6	93.2	87.5	85.2	93.3
	IACR (Coarse)	%	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	IACR (Fine)	%	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	IACR (CCME)	mg/kg	-	-	<0.15	<0.15	<0.15	<0.15	<0.15
	B(a)P Total Potency Equivalent_	mg/kg	-	-	<0.02	<0.02	<0.02	<0.02	<0.02

Value > Lower Working Sediment Quality Guideline (WSQG) and Canadian Sediment Quality Guideline (CCME).

Value > Upper Working Sediment Quality Guideline (WSQG) and Canadian Sediment Quality Guideline (CCME).

Notes: "-" = no data. All WSQG and CCME Guidelines are the same except for the Iron, Manganese, Molybdenum, Nikel, Selenium and Silver there is no CCME guideline for these paramters.

Table C.1: Profundal Sediment Quality Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, August 2021

Analyte		Units	BC Sediment		Downstream of Elk River (RG_T4)				
			Lower SQG	Upper SQG	T4-1	T4-2	T4-3	T4-4	T4-5
					24-Aug-21	24-Aug-21	24-Aug-21	25-Aug-21	25-Aug-21
Physical Tests	Moisture	%	-	-	46.5	46.5	45.4	42.1	42.2
	% Gravel (>2 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (2.00 mm - 1.00 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (1.00 mm - 0.50 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.50 mm - 0.25 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.25 mm - 0.125 mm)	%	-	-	<1	<1	<1	<1	<1
	% Sand (0.125 mm - 0.063 mm)	%	-	-	<1	<1	<1	<1	<1
	% Silt (0.063 mm - 0.0312 mm)	%	-	-	7.10	4.20	6.70	5.70	4.50
	% Silt (0.0312 mm - 0.004 mm)	%	-	-	58.2	57.1	60.3	60.1	61.4
	% Clay (<4 µm)	%	-	-	34.6	38.4	32.4	33.7	34.0
	Texture	-	-	-	Silt loam	Silt loam	Silt loam	Silt loam	Silt loam
Organic Carbon	Total Organic Carbon	%	-	-	1.34	1.28	1.35	1.30	1.13
Metals	Aluminum (Al)	mg/kg	-	-	33,900	34,600	12,200	12,300	12,700
	Antimony (Sb)	mg/kg	-	-	0.970	1.05	0.370	0.360	0.350
	Arsenic (As)	mg/kg	5.9	17	16.6	19.1	6.22	6.17	6.09
	Barium (Ba)	mg/kg	-	-	428	463	157	157	151
	Beryllium (Be)	mg/kg	-	-	1.36	1.44	0.500	0.480	0.480
	Bismuth (Bi)	mg/kg	-	-	0.530	0.580	0.200	0.200	0.200
	Boron (B)	mg/kg	-	-	<13	12.8	<5	<5	<5
	Cadmium (Cd)	mg/kg	0.60	3.5	1.25	1.40	0.462	0.461	0.424
	Calcium (Ca)	mg/kg	-	-	244,000	249,000	96,000	99,500	105,000
	Chromium (Cr)	mg/kg	37.3	90	45.5	47.1	17.2	17.1	17.5
	Cobalt (Co)	mg/kg	-	-	21.7	23.4	8.48	8.47	8.79
	Copper (Cu)	mg/kg	35.7	197	38.9	41.7	15.6	15.0	15.2
	Iron (Fe)	mg/kg	21,200	43,766	53,500	56,200	21,000	21,000	21,600
	Lead (Pb)	mg/kg	35	91.3	32.2	33.9	12.4	12.0	12.5
	Lithium (Li)	mg/kg	-	-	57.2	57.9	21.8	21.0	22.0
	Magnesium (Mg)	mg/kg	-	-	50,600	50,600	20,200	20,300	20,600
	Manganese (Mn)	mg/kg	460	1,100	1,630	1,930	618	625	604
	Mercury (Hg)	mg/kg	0.17	0.49	0.0337	0.0364	0.0353	0.0330	0.0310
	Molybdenum (Mo)	mg/kg	25	23,000	2.23	2.41	0.860	0.890	0.860
	Nickel (Ni)	mg/kg	16	75	51.3	53.6	20.2	20.2	20.3
	Phosphorus (P)	mg/kg	-	-	1,630	1,800	639	632	599
	Potassium (K)	mg/kg	-	-	3,810	4,280	1,220	1,220	1,150
	Selenium (Se)	mg/kg	2.0	-	2.04	2.28	0.740	0.720	0.580
	Silver (Ag)	mg/kg	0.50	-	<0.25	0.260	<0.1	<0.1	<0.1
	Sodium (Na)	mg/kg	-	-	250	289	92.0	91.0	88.0
	Strontium (Sr)	mg/kg	-	-	480	483	196	208	211
	Sulfur (S)	mg/kg	-	-	<2,500	1,400	<1,000	<1,000	<1,000
	Thallium (Tl)	mg/kg	-	-	0.380	0.408	0.135	0.129	0.121
	Tin (Sn)	mg/kg	-	-	<5	4.00	<2	<2	<2
	Titanium (Ti)	mg/kg	-	-	137	127	34.4	39.7	38.6
	Tungsten (W)	mg/kg	-	-	<1.3	<0.5	<0.5	<0.5	<0.5
	Uranium (U)	mg/kg	-	-	1.70	1.74	0.640	0.625	0.621
	Vanadium (V)	mg/kg	-	-	50.4	53.8	17.9	17.6	16.8
	Zinc (Zn)	mg/kg	123	315	193	207	74.3	73.2	73.9
	Zirconium (Zr)	mg/kg	-	-	2.90	3.00	1.10	1.10	1.00
Polycyclic Aromatic Hydrocarbons	Acenaphthene	mg/kg	0.00671	0.089	<0.005	<0.005	<0.005	<0.005	<0.005
	Acenaphthylene	mg/kg	0.0059	0.13	<0.005	<0.005	<0.005	<0.005	<0.005
	Acridine	mg/kg	-	-	<0.01	<0.01	<0.01	<0.01	<0.01
	Anthracene	mg/kg	0.0469	0.245	<0.004	<0.004	0.00530	<0.004	<0.004
	Benz(a)anthracene	mg/kg	0.0317	0.385	<0.01	0.0100	0.0120	<0.01	<0.01
	Benzo(a)pyrene	mg/kg	0.0319	0.782	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(b,j)fluoranthene	mg/kg	-	-	0.0120	0.0150	0.0140	0.0130	<0.01
	Benzo(b,j,k)fluoranthene	mg/kg	-	-	<0.015	0.0150	<0.015	<0.015	<0.015
	Benzo(e)pyrene	mg/kg	-	-	0.0140	0.0130	0.0140	0.0110	0.0100
	Benzo(g,h,i)perylene	mg/kg	0.17	3.2	<0.01	<0.01	<0.01	<0.01	<0.01
	Benzo(k)fluoranthene	mg/kg	0.24	13.4	<0.01	<0.01	<0.01	<0.01	<0.01
	Chrysene	mg/kg	0.0571	0.862	0.0250	0.0270	0.0260	0.0210	0.0190
	Dibenz(a,h)anthracene	mg/kg	0.00622	0.135	<0.005	<0.005	<0.005	<0.005	<0.005
	Fluoranthene	mg/kg	0.11	2.355	0.0160	0.0200	0.0170	0.0130	0.0140
	Fluorene	mg/kg	0.0212	0.144	<0.01	<0.01	<0.01	<0.01	<0.01
	Indeno(1,2,3-c,d)pyrene	mg/kg	0.20	3.2	<0.01	<0.01	<0.01	<0.01	<0.01
	1-Methylnaphthalene	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	2-Methylnaphthalene	mg/kg	0.0202	0.201	0.0440	0.0440	0.0440	0.0390	0.0330
	Naphthalene	mg/kg	0.0346	0.391	0.0190	0.0180	0.0170	0.0150	0.0160
	Perylene	mg/kg	-	-	0.0150	0.0120	0.0130	0.0110	<0.01
	Phenanthrene	mg/kg	0.0419	0.515	0.0490	0.0520	0.0520	0.0460	0.0390
	Pyrene	mg/kg	0.053	0.875	0.0140	0.0170	0.0180	0.0130	0.0130
	Quinoline	mg/kg	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	d10-Acenaphthene	%	-	-	93.1	89.4	92.0	93.1	92.1
	d12-Chrysene	%	-	-	92.3	90.3	93.9	89.8	87.5
	d8-Naphthalene	%	-	-	89.2	88.2	91.1	87.2	88.2
	d10-Phenanthrene	%	-	-	91.1	91.5	93.0	92.1	88.0
	IACR (Coarse)	%	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	IACR (Fine)	%	-	-	<0.05	<0.05	<0.05	<0.05	<0.05
	IACR (CCME)	mg/kg	-	-	0.160	0.200	0.190	0.160	<0.15
	B(a)P Total Potency Equivalent_	mg/kg	-	-	<0.02	<0.02	<0.02	<0.02	<0.02

Value > Lower Working Sediment Quality Guideline (WSQG) and Canadian Sediment Quality Guideline (CCME).

Value > Upper Working Sediment Quality Guideline (WSQG) and Canadian Sediment Quality Guideline (CCME).

Notes: "-" = no data. All WSQG and CCME Guidelines are the same except for the Iron, Manganese, Molybdenum, Nikel, Selenium and Silver there is no CCME guideline for these paramters.

APPENDIX D
ZOOPLANTKON

Table D.1: Zooplankton Community Endpoints Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Year	Station	Replicate	Density (ind/L)	Biomass (µg/L)	Richness (# Taxa)	Cladocera (ind/L)	Copepoda (ind/L)	Rotifera (ind/L)	Cladocera (% ind)	Copepoda (% ind)	Rotifera (% ind)	Cladocera (µg/L)	Copepoda (µg/L)	Rotifera (µg/L)	Cladocera (% biomass)	Copepoda (% biomass)	Rotifera (% biomass)
2019	RG_TN	1	12.0	377	15.0	2.07	7.68	2.28	17.2	63.8	18.9	294	81.9	0.715	78.1	21.7	0.190
		2	8.98	166	10.0	0.797	6.67	1.52	8.87	74.2	16.9	92.1	73.3	0.531	55.5	44.2	0.320
		3	11.4	153	13.0	0.719	7.38	3.26	6.33	65	28.7	72.4	79.1	1.10	47.4	51.9	0.718
		4	16.5	398	16.0	1.83	12.0	2.71	11.1	72.5	16.4	229	168	0.849	57.4	42.3	0.213
		5	18.8	319	15.0	1.98	12.6	4.23	10.5	67.0	22.5	157	160	1.42	49.3	50.3	0.444
	RG_T4	1	13.6	182	14.0	1.01	8.70	3.93	7.44	63.8	28.8	113	68.1	1.02	62.1	37.3	0.560
		2	16.4	276	14.0	1.35	8.17	6.87	8.24	49.8	41.9	195	79.6	1.43	70.6	28.8	0.517
		3	18.6	216	14.0	0.634	13.9	4.05	3.41	74.8	21.8	99.0	116	0.984	45.8	53.7	0.455
		4	20.8	258	12.0	0.718	14.7	5.40	3.45	70.6	26.0	90.9	166	0.933	35.2	64.4	0.362
		5	24.1	467	10.0	1.51	14.3	8.35	6.25	59.2	34.6	356	110	1.61	76.2	23.5	0.346
2020	RG_TN	1	6.07	46.1	12.0	0.642	1.34	4.08	10.6	22.1	67.3	25.5	19.9	0.680	55.3	43.3	1.48
		2	5.05	46.0	13.0	0.510	2.03	2.51	10.1	40.2	49.7	18.7	26.9	0.441	40.6	58.4	0.958
		3	10.5	56.9	13.0	0.438	2.95	7.08	4.18	28.2	67.7	35.0	20.7	1.19	61.5	36.4	2.09
		4	18.7	226	15.0	1.61	5.20	11.9	8.61	27.8	63.6	187	36.2	2.27	83	16.0	1.01
		5	24.2	151	12.0	0.988	4.07	19.1	4.08	16.8	79.1	104	44	3.41	68.7	29.1	2.26
	RG_T4	1	17.7	159	14.0	0.684	9.60	7.45	3.86	54.1	42	62.1	95.4	1.32	39.1	60.1	0.831
		2	11.0	102	12.0	0.606	5.69	4.68	5.52	51.9	42.6	56.0	45.1	1.09	54.8	44.1	1.06
		3	15.8	150	14.0	1.00	9.86	4.90	6.35	62.5	31.1	55.3	94	1.07	36.8	62.5	0.711
		4	16.6	92.2	12.0	0.523	10.7	5.33	3.15	64.7	32.1	14.2	77.0	0.952	15.4	83.6	1.03
		5	15.6	163	12.0	0.732	10.5	4.40	4.69	67.2	28.2	94.8	67.0	0.867	58.3	41.2	0.533
2021	RG_TN	1	5.93	59.7	12.0	0.213	4.22	1.50	3.59	71.1	25.3	15.1	44.1	0.541	25.3	73.8	0.905
		2	1.61	49.1	12.0	0.207	1.05	0.353	12.9	65.2	21.9	13.2	35.7	0.108	27.0	72.8	0.221
		3	1.18	24.5	9.00	0.125	0.969	0.0830	10.6	82.4	7.05	3.20	21.3	0.0178	13.1	86.9	0.0726
		4	3.40	63.1	12.0	0.366	2.59	0.441	10.8	76.2	13.0	7.47	55.4	0.160	11.8	87.9	0.254
		5	0.954	16.9	9.00	0.0662	0.447	0.441	6.94	46.8	46.2	5.31	11.5	0.0945	31.4	68.0	0.559
	RG_T4	1	4.54	68.4	11.0	0.330	3.69	0.523	7.27	81.2	11.5	11.7	56.5	0.209	17.1	82.6	0.306
		2	1.45	17.9	11.0	0.0869	0.783	0.575	6.01	54.2	39.8	7.72	10.0	0.182	43.1	55.9	1.01
		3	1.28	23.9	11.0	0.233	0.395	0.651	18.2	30.9	50.9	13.6	10.1	0.160	57.0	42.3	0.668
		4	2.91	36.9	12.0	0.145	1.68	1.09	4.99	57.7	37.3	9.59	26.8	0.456	26.0	72.7	1.24
		5	1.52	8.99	12.0	0.186	0.601	0.732	12.2	39.6	48.2	3.91	4.79	0.290	43.5	53.3	3.22

Table D.2: Summary Statistics for Seasonal Zooplankton Community Endpoints Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2019 to 2021

Endpoint	Year	Station	N	Mean	Standard Deviation	Standard Error	Minimum	Median	Maximum
Density (ind/L)	2019	RG_TN	5	13.5	4.02	1.80	8.98	12.0	18.8
		RG_T4	5	18.7	4.02	1.80	13.6	18.6	24.1
	2020	RG_TN	5	12.9	8.30	3.71	5.05	10.5	24.2
		RG_T4	5	15.3	2.58	1.15	11.0	15.8	17.7
	2021	RG_TN	5	2.61	2.09	0.934	0.954	1.61	5.93
		RG_T4	5	2.34	1.39	0.623	1.28	1.52	4.54
Biomass (µg/L)	2019	RG_TN	5	282	116	52	153	319	398
		RG_T4	5	280	111	49.5	182	258	467
	2020	RG_TN	5	105	80.6	36.1	46.0	56.9	226
		RG_T4	5	133	33.4	14.9	92.2	150	163
	2021	RG_TN	5	42.7	20.9	9.33	16.9	49.1	63.1
		RG_T4	5	31.2	23.1	10.3	8.99	23.9	68.4
Richness (# Taxa)	2019	RG_TN	5	13.8	2.39	1.07	10.0	15.0	16.0
		RG_T4	5	12.8	1.79	0.800	10.0	14.0	14.0
	2020	RG_TN	5	13.0	1.22	0.548	12.0	13.0	15.0
		RG_T4	5	12.8	1.10	0.490	12.0	12.0	14.0
	2021	RG_TN	5	10.8	1.64	0.735	9.00	12.0	12.0
		RG_T4	5	11.4	0.548	0.245	11.0	11.0	12.0
Cladocera (ind/L)	2019	RG_TN	5	1.48	0.665	0.298	0.719	1.83	2.07
		RG_T4	5	1.05	0.382	0.171	0.634	1.01	1.51
	2020	RG_TN	5	0.838	0.481	0.215	0.438	0.642	1.61
		RG_T4	5	0.709	0.181	0.0810	0.523	0.684	1.00
	2021	RG_TN	5	0.195	0.113	0.0506	0.0662	0.207	0.366
		RG_T4	5	0.196	0.0921	0.0412	0.0869	0.186	0.330
Copepoda (ind/L)	2019	RG_TN	5	9.27	2.80	1.25	6.67	7.68	12.6
		RG_T4	5	11.9	3.22	1.44	8.17	13.9	14.7
	2020	RG_TN	5	3.12	1.55	0.693	1.34	2.95	5.20
		RG_T4	5	9.27	2.06	0.920	5.69	9.86	10.7
	2021	RG_TN	5	1.85	1.55	0.691	0.447	1.05	4.22
		RG_T4	5	1.43	1.35	0.606	0.395	0.783	3.69
Rotifera (ind/L)	2019	RG_TN	5	2.80	1.02	0.457	1.52	2.71	4.23
		RG_T4	5	5.72	1.89	0.846	3.93	5.40	8.35
	2020	RG_TN	5	8.94	6.73	3.01	2.51	7.08	19.1
		RG_T4	5	5.35	1.22	0.546	4.40	4.90	7.45
	2021	RG_TN	5	0.564	0.544	0.243	0.0830	0.441	1.50
		RG_T4	5	0.713	0.223	0.0996	0.523	0.651	1.09
Cladocera (% ind)	2019	RG_TN	5	10.8	4.04	1.81	6.33	10.5	17.2
		RG_T4	5	5.76	2.24	1.00	3.41	6.25	8.24
	2020	RG_TN	5	7.51	3.17	1.42	4.08	8.61	10.6
		RG_T4	5	4.71	1.27	0.569	3.15	4.69	6.35
	2021	RG_TN	5	8.95	3.69	1.65	3.59	10.6	12.9
		RG_T4	5	9.75	5.50	2.46	4.99	7.27	18.2
Copepoda (% ind)	2019	RG_TN	5	68.5	4.61	2.06	63.8	67.0	74.2
		RG_T4	5	63.6	9.79	4.38	49.8	63.8	74.8
	2020	RG_TN	5	27.0	8.72	3.90	16.8	27.8	40.2
		RG_T4	5	60.1	6.72	3.01	51.9	62.5	67.2
	2021	RG_TN	5	68.3	13.6	6.08	46.8	71.1	82.4
		RG_T4	5	52.7	19.3	8.63	30.9	54.2	81.2
Rotifera (% ind)	2019	RG_TN	5	20.7	5.06	2.26	16.4	18.9	28.7
		RG_T4	5	30.6	7.85	3.51	21.8	28.8	41.9
	2020	RG_TN	5	65.5	10.6	4.72	49.7	67.3	79.1
		RG_T4	5	35.2	6.66	2.98	28.2	32.1	42.6
	2021	RG_TN	5	22.7	15.0	6.71	7.05	21.9	46.2
		RG_T4	5	37.5	15.6	6.98	11.5	39.8	50.9
Cladocera (µg/L)	2019	RG_TN	5	169	93.0	41.6	72.4	157	294
		RG_T4	5	171	111	49.8	90.9	113	356
	2020	RG_TN	5	74.1	71.9	32.2	18.7	35.0	187
		RG_T4	5	56.5	28.7	12.8	14.2	56.0	94.8
	2021	RG_TN	5	8.86	5.11	2.29	3.20	7.47	15.1
		RG_T4	5	9.31	3.75	1.68	3.91	9.59	13.6
Copepoda (µg/L)	2019	RG_TN	5	113	47.4	21.2	73.3	81.9	168
		RG_T4	5	108	38.2	17.1	68.1	110	166
	2020	RG_TN	5	29.5	10.4	4.64	19.9	26.9	44
		RG_T4	5	75.7	20.8	9.31	45.1	77.0	95.4
	2021	RG_TN	5	33.6	17.5	7.85	11.5	35.7	55.4
		RG_T4	5	21.7	21.2	9.48	4.79	10.1	56.5
Rotifera (µg/L)	2019	RG_TN	5	0.921	0.345	0.154	0.531	0.849	1.42
		RG_T4	5	1.20	0.305	0.136	0.933	1.02	1.61
	2020	RG_TN	5	1.60	1.23	0.552	0.441	1.19	3.41
		RG_T4	5	1.06	0.171	0.0765	0.867	1.07	1.32
	2021	RG_TN	5	0.184	0.206	0.0920	0.0178	0.108	0.541
		RG_T4	5	0.259	0.121	0.0539	0.160	0.209	0.456
Cladocera (% biomass)	2019	RG_TN	5	57.5	12.2	5.46	47.4	55.5	78.1
		RG_T4	5	58.0	17.1	7.66	35.2	62.1	76.2
	2020	RG_TN	5	61.8	15.7	7.02	40.6	61.5	83
		RG_T4	5	40.9	17.1	7.64	15.4	39.1	58.3
	2021	RG_TN	5	21.7	8.75	3.92	11.8	25.3	31.4
		RG_T4	5	37.4	15.8	7.06	17.1	43.1	57.0
Copepoda (% biomass)	2019	RG_TN	5	42.1	12.1	5.39	21.7	44.2	51.9
		RG_T4	5	41.5	17.1	7.67	23.5	37.3	64.4
	2020	RG_TN	5	36.6	15.8	7.07	16.0	36.4	58.4
		RG_T4	5	58.3	17.0	7.59	41.2	60.1	83.6
	2021	RG_TN	5	77.9	8.95	4.00	68.0	73.8	87.9
		RG_T4	5	61.4	16.1	7.21	42.3	55.9	82.6
Rotifera (% biomass)	2019	RG_TN	5	0.377	0.215	0.0964	0.190	0.320	0.718
		RG_T4	5	0.448	0.0940	0.0420	0.346	0.455	0.560
	2020	RG_TN	5	1.56	0.601	0.269	0.958	1.48	2.26
		RG_T4	5	0.834	0.222	0.0994	0.533	0.831	1.06
	2021	RG_TN	5	0.402	0.332	0.149	0.0726	0.254	0.905
		RG_T4	5	1.29	1.14	0.509	0.306	1.01	3.22

Table D.3: Zooplankton Density (no. of organisms/L) Organized by Major Groups, Koocanusa Reservoir Monitoring Program, August 2021

Group	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)				
	TN-1	TN-2	TN-3	TN-4	TN-5	T4-1	T4-2	T4-3	T4-4	T4-5
Cladocera	0.213	0.207	0.125	0.366	0.066	0.330	0.0869	0.233	0.145	0.186
Copepoda	4.22	1.05	0.969	2.59	0.447	3.69	0.783	0.395	1.68	0.601
Rotifera	1.50	0.353	0.083	0.441	0.441	0.523	0.575	0.651	1.09	0.732
Total number of organisms/L	**5.93**	**1.61**	**1.18**	**3.40**	**0.954**	**4.54**	**1.45**	**1.28**	**2.91**	**1.52**
Total number of groups	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Table D.4: Zooplankton Biomass (μg/L) Organized by Major Groups, Koocanusa Reservoir Monitoring Program, August 2021

Group	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)				
	TN-1	**TN-2**	**TN-3**	**TN-4**	**TN-5**	**T4-1**	**T4-2**	**T4-3**	**T4-4**	**T4-5**
Cladocera	15.1	13.2	3.20	7.47	5.31	11.7	7.72	13.6	9.59	3.91
Copepoda	44.1	35.7	21.3	55.4	11.5	56.5	10.0	10.1	26.8	4.79
Rotifera	0.541	0.108	0.0178	0.160	0.0945	0.209	0.182	0.160	0.456	0.290
Total number of organisms/L	**59.7**	**49.1**	**24.5**	**63.1**	**16.9**	**68.4**	**17.9**	**23.9**	**36.9**	**8.99**
Total number of groups	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**3**

Table D.5: Zooplankton Community Density Data (no. organisms/L), Koocanusa Reservoir Monitoring Program, August 2021

Taxa Group	Species	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)				
		TN-1	TN-2	TN-3	TN-4	TN-5	T4-1	T4-2	T4-3	T4-4	T4-5
Cladocera	*Bosmina longirostris*	0	0.0232	0	0.0232	0	0.0523	0.0150	0.0543	0	0
	Chydorus sps	0	0	0	0	0	0	0	0	0	0.0137
	Daphnia galeata	0.120	0.115	0.110	0.227	0.0198	0.0686	0.0582	0.122	0.102	0.0673
	Diaphanosoma leuchtenbergianum	0.0926	0.0463	0.0145	0.116	0.0463	0.209	0.0137	0.0570	0.0428	0.105
	Holopedium gibberum	0	0.0232	0	0	0	0	0	0	0	0
Copepoda	*Calanoid nauplius*	1.85	0	0.415	0.618	0.176	0.314	0.0523	0.0543	0.217	0.105
	Cyclopoid nauplius	0.618	0.176	0.0830	0.353	0.0882	1.15	0.470	0.0543	0.434	0.261
	Cyclops bicuspidatus	0.618	0.111	0.332	0.618	0.0485	1.73	0.161	0.163	0.760	0.225
	Cyclops vernalis	0	0.353	0	0.265	0	0	0	0	0.0543	0
	Diaptomus pallidus	0.540	0.169	0.0228	0.187	0.0606	0.244	0.0176	0.0713	0.128	0.00261
	Diaptomus tyrrelli	0.380	0.0276	0.00415	0.00662	0.0132	0.0660	0.0222	0.0143	0.0285	0.00392
	Epischura nevadensis	0.212	0.211	0.112	0.545	0.0595	0.189	0.0601	0.0380	0.0556	0.00261
Rotifera	*Conochilus sps*	0	0	0	0	0	0	0	0	0.109	0
	Kellicottia sps	0.618	0.265	0.0830	0.265	0.441	0.261	0.418	0.597	0.489	0.314
	Keratella sps	0.176	0	0	0	0	0	0	0	0	0.0523
	Monostyla sps	0.0882	0	0	0	0	0	0	0	0	0
	Polyarthra sps	0.618	0.0882	0	0.176	0	0.261	0.157	0.0543	0.489	0.366
Total Number of Organisms/L:		5.93	1.61	1.18	3.40	0.953	4.54	1.45	1.28	2.91	1.52
Total Number of Taxa:		12	12	9	12	9	11	11	11	12	12

Table D.6: Zooplankton Community Biomss Data (µg/L), Koocanusa Reservoir Monitoring Program, August 2021

Taxa Group	Species	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)				
		TN-1	TN-2	TN-3	TN-4	TN-5	T4-1	T4-2	T4-3	T4-4	T4-5
Cladocera	*Bosmina longirostris*	0	0.382	0	0.382	0	0.0840	0.0436	0.0872	0	0
	Chydorus sps	0	0	0	0	0	0	0	0	0	0.145
	Daphnia galeata	12.8	11.2	2.84	4.22	4.16	6.42	7.33	12.1	8.54	1.18
	Diaphanosoma leuchtenbergianum	2.29	1.15	0.360	2.87	1.15	5.18	0.340	1.41	1.06	2.59
	Holopedium gibberum	0	0.480	0	0	0	0	0	0	0	0
Copepoda	*Calanoid nauplius*	5.42	0	1.22	1.81	0.517	0.918	0.153	0.159	0.636	0.306
	Cyclopoid nauplius	1.70	0.485	0.228	0.969	0.242	3.16	1.29	0.149	1.19	0.718
	Cyclops bicuspidatus	3.28	1.76	5.95	8.26	0.907	17.2	1.47	1.76	10.3	2.70
	Cyclops vernalis	0	1.95	0	1.46	0	0	0	0	0.300	0
	Diaptomus pallidus	10.5	7.30	1.33	7.14	2.67	12.2	0.430	2.96	4.12	0.133
	Diaptomus tyrrelli	5.74	2.39	0.310	0.590	1.11	5.49	1.53	0.859	2.13	0.233
	Epischura nevadensis	17.5	21.9	12.3	35.2	6.05	17.6	5.13	4.25	8.17	0.699
Rotifera	*Conochilus sps*	0	0	0	0	0	0	0	0	0.0651	0
	Kellicottia sps	0.132	0.0567	0.0178	0.0567	0.0945	0.0560	0.0896	0.128	0.105	0.0672
	Keratella sps	0.0277	0	0	0	0	0	0	0	0	0.00821
	Monostyla sps	0.0189	0	0	0	0	0	0	0	0	0
	Polyarthra sps	0.362	0.0517	0	0.103	0	0.153	0.0919	0.0318	0.286	0.214
Total Number of Organisms/L:		59.8	49.1	24.6	63.1	16.9	68.5	17.9	23.9	36.9	8.99
Total Number of Taxa:		12	12	9	12	9	11	11	11	12	12

Table D.7: Relative Density (%) of Zooplankton Taxa, Koocanusa Reservoir Monitoring Program, August 2021

Species	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)					Summary Statistics									
											Minimum		Median		Maximum		Mean		Standard Deviation	
	TN-1	TN-2	TN-3	TN-4	TN-5	T4-1	T4-2	T4-3	T4-4	T4-5	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4
Bosmina longirostris	0	1.44	0	0.681	0	1.15	1.04	4.24	0	0	0	0	0	1.04	1.44	4.24	0.424	1.29	0.640	1.74
Calanoid nauplius	31.2	0	35.3	18.2	18.5	6.91	3.62	4.24	7.46	6.89	0	3.62	18.5	6.89	35.3	7.46	20.6	5.82	13.8	1.76
Chydorus sps	0	0	0	0	0	0	0	0	0	0.904	0	0	0	0	0	0.904	0	0.181	0	0.404
Conochilus sps	0	0	0	0	0	0	0	0	3.73	0	0	0	0	0	0	3.73	0	0.746	0	1.67
Cyclopoid nauplius	10.4	11.0	7.05	10.4	9.25	25.3	32.5	4.24	14.9	17.2	7.05	4.24	10.4	17.2	11.0	32.5	9.61	18.9	1.56	10.7
Cyclops bicuspidatus	10.4	6.93	28.2	18.2	5.09	38.0	11.1	12.7	26.1	14.8	5.09	11.1	10.4	14.8	28.2	38.0	13.8	20.6	9.51	11.4
Cyclops vernalis	0	21.9	0	7.79	0	0	0	0	1.87	0	0	0	0	0	21.9	1.87	5.95	0.373	9.56	0.835
Daphnia galeata	2.03	7.13	9.35	6.68	2.08	1.51	4.02	9.54	3.52	4.43	2.03	1.51	6.68	4.02	9.35	9.54	5.45	4.61	3.26	2.98
Diaphanosoma leuchtenbergianum	1.56	2.88	1.23	3.41	4.86	4.60	0.949	4.45	1.47	6.89	1.23	0.949	2.88	4.45	4.86	6.89	2.79	3.67	1.46	2.45
Diaptomus pallidus	9.11	10.5	1.94	5.52	6.36	5.38	1.22	5.57	4.41	0.172	1.94	0.172	6.36	4.41	10.5	5.57	6.68	3.35	3.33	2.49
Diaptomus tyrrelli	6.41	1.71	0.353	0.195	1.39	1.45	1.54	1.11	0.980	0.258	0.195	0.258	1.39	1.11	6.41	1.54	2.01	1.07	2.54	0.508
Epischura nevadensis	3.57	13.1	9.52	16.0	6.24	4.17	4.16	2.97	1.91	0.172	3.57	0.172	9.52	2.97	16.0	4.17	9.69	2.68	5.03	1.69
Holopedium gibberum	0	1.44	0	0	0	0	0	0	0	0	0	0	0	0	1.44	0	0.288	0	0.644	0
Kellicottia sps	10.4	16.5	7.05	7.79	46.2	5.76	28.9	46.7	16.8	20.7	7.05	5.76	10.4	20.7	46.2	46.7	17.6	23.8	16.4	15.3
Keratella sps	2.97	0	0	0	0	0	0	0	0	3.44	0	0	0	0	2.97	3.44	0.595	0.689	1.33	1.54
Monostyla sps	1.49	0	0	0	0	0	0	0	0	0	0	0	0	0	1.49	0	0.297	0	0.665	0
Polyarthra sps	10.4	5.49	0	5.19	0	5.76	10.8	4.24	16.8	24.1	0	4.24	5.19	10.8	10.4	24.1	4.22	12.3	4.37	8.21

Table D.8: Relative Biomass (%) of Zooplankton Taxa, Koocanusa Reservoir Monitoring Program, August 2021

Species	Upstream of Elk River (RG_TN)					Downstream of Elk River (RG_T4)					Summary Statistics									
											Minimum		Median		Maximum		Mean		Standard Deviation	
	TN-1	TN-2	TN-3	TN-4	TN-5	T4-1	T4-2	T4-3	T4-4	T4-5	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4	RG_TN	RG_T4
Bosmina longirostris	0	0.779	0	0.606	0	0.123	0.244	0.365	0	0	0.606	0.123	0.693	0.244	0.779	0.365	0.693	0.244	0.122	0.121
Calanoid nauplius	9.08	0	4.96	2.87	3.06	1.34	0.855	0.664	1.72	3.40	2.87	0.664	4.01	1.34	9.08	3.40	4.99	1.60	2.89	1.09
Chydorus sps	0	0	0	0	0	0	0	0	0	1.62	-	1.62	-	1.62	-	1.62	-	1.62	-	-
Conochilus sps	0	0	0	0	0	0	0	0	0.177	0	-	0.177	-	0.177	-	0.177	-	0.177	-	-
Cyclopoid nauplius	2.84	0.987	0.930	1.54	1.43	4.62	7.22	0.623	3.23	7.99	0.930	0.623	1.43	4.62	2.84	7.99	1.55	4.74	0.771	3.00
Cyclops bicuspidatus	5.49	3.59	24.3	13.1	5.36	25.1	8.20	7.34	27.9	30.0	3.59	7.34	5.49	25.1	24.3	30.0	10.4	19.7	8.60	11.0
Cyclops vernalis	0	3.97	0	2.32	0	0	0	0	0.812	0	2.32	0.812	3.14	0.812	3.97	0.812	3.14	0.812	1.17	-
Daphnia galeata	21.4	22.9	11.6	6.70	24.6	9.39	41.0	50.8	23.1	13.1	6.70	9.39	21.4	23.1	24.6	50.8	17.4	27.5	7.86	17.9
Diaphanosoma leuchtenbergianum	3.84	2.34	1.47	4.54	6.78	7.57	1.90	5.90	2.87	28.8	1.47	1.90	3.84	5.90	6.78	28.8	3.79	9.40	2.06	11.1
Diaptomus pallidus	17.6	14.9	5.42	11.3	15.8	17.8	2.40	12.3	11.2	1.48	5.42	1.48	14.9	11.2	17.6	17.8	13.0	9.05	4.81	6.96
Diaptomus tyrrelli	9.61	4.88	1.27	0.935	6.57	8.02	8.54	3.59	5.77	2.59	0.935	2.59	4.88	5.77	9.61	8.54	4.65	5.70	3.66	2.63
Epischura nevadensis	29.2	44.5	50.0	55.8	35.8	25.7	28.6	17.7	22.2	7.78	29.2	7.78	44.5	22.2	55.8	28.6	43.1	20.4	10.7	8.14
Holopedium gibberum	0	0.977	0	0	0	0	0	0	0	0	0.977	-	0.977	-	0.977	-	0.977	-	-	-
Kellicottia sps	0.222	0.116	0.0726	0.0899	0.559	0.0819	0.501	0.535	0.284	0.747	0.0726	0.0819	0.116	0.501	0.559	0.747	0.212	0.430	0.203	0.255
Keratella sps	0.0464	0	0	0	0	0	0	0	0	0.0914	0.0464	0.0914	0.0464	0.0914	0.0464	0.0914	0.0464	0.0914	-	-
Monostyla sps	0.0316	0	0	0	0	0	0	0	0	0	0.0316	-	0.0316	-	0.0316	-	0.0316	-	-	-
Polyarthra sps	0.606	0.105	0	0.164	0	0.224	0.514	0.133	0.776	2.38	0.105	0.133	0.164	0.514	0.606	2.38	0.292	0.806	0.274	0.918

Note: "-" no data available

Table D.9: Non-metic Multidimensional Scaling Analysis Station Scores Using Zooplankton Abundances at the Lowest Practical Level of Taxonomic Resolution, Koocanusa Reservoir Monitoring Program, August 2021

Station		Replicate	MDS1	MDS2	MDS3
Upstream of Elk River	RG_TN	1	-0.623	-0.234	0.0600
		2	0.156	0.279	0.404
		3	0.150	0.445	-0.351
		4	-0.313	0.201	0.171
		5	0.642	-0.0467	-0.0894
Downstream of Elk River	RG_T4	1	-0.496	0.165	-0.137
		2	0.169	-0.277	-0.0494
		3	0.440	-0.0759	0.160
		4	-0.204	-0.120	-0.0752
		5	0.0787	-0.336	-0.0930

Table D.10: Spearman Correlations of Zooplankton Taxa and Non-metic Multidimensional Scaling (NMDS) Axis Scores, Koocanusa Reservoir Monitoring Program, August 2021

Group	Taxa	NMDS1		NMDS2		NMDS3	
		P-value	r_s	P-value	r_s	P-value	r_s
Cladocera	*Bosmina longirostris*	0.817	0.0843	0.424	0.285	0.202	0.441
	Chydorus sps	0.873	-0.0580	0.122	-0.522	0.416	-0.290
	Daphnia galeata	0.313	-0.358	0.296	0.370	0.073	0.600
	Diaphanosoma leuchtenbergianum	0.093	-0.559	1.000	0	0.854	0.0669
	Holopedium gibberum	0.631	0.174	0.244	0.406	0.122	0.522
Copepoda	*Calanoid nauplius*	0.024	-0.721	0.632	0.176	0.470	-0.261
	Cyclopoid nauplius	0.024	-0.721	0.313	-0.358	0.865	-0.0667
	Cyclops bicuspidatus	0.004	-0.855	0.919	0.0424	0.470	-0.261
	Cyclops vernalis	0.696	-0.142	0.239	0.410	0.049	0.634
	Diaptomus pallidus	0.049	-0.648	0.387	0.309	0.279	0.382
	Diaptomus tyrrelli	0.232	-0.418	0.785	-0.103	0.514	0.236
	Epischura nevadensis	0.133	-0.515	0.133	0.515	0.296	0.370
Rotifera	*Conochilus sps*	0.631	-0.174	0.631	-0.174	0.873	-0.0580
	Kellicottia sps	0.733	0.127	0.054	-0.636	0.296	0.370
	Keratella sps	0.173	-0.467	0.074	-0.588	0.887	-0.0519
	Polyarthra sps	0.006	-0.796	0.089	-0.565	0.841	0.0729

$r_s \geq 0.6$ or ≤ -0.6

significant correlation (p-value < 0.1).

APPENDIX E
BENTHIC INVERTEBRATES

Table E.1: Raw Data for Benthic Invertebrate Communities, Koocanusa Reservoir Monitoring Program, August 2021

Taxa	RG_T4 (Downstream of Elk River)					RG_TN (Upstream of Elk River)				
	1	**2**	**3**	**4**	**5**	**1**	**2**	**3**	**4**	**5**
P. Nemata	2	2	8	1	2	2	1	1	-	4
P. Platyhelminthes										
Cl. Turbellaria										
indeterminate	-	-	-	1	-	-	-	-	-	-
P. Annelida										
Cl. Oligochaeta										
F. Naididae										
S.F. Naidinae										
Dero digitata	-	-	-	-	-	-	-	-	7	-
S.F. Tubificinae										
Aulodrilus limnobius	57	40	11	48	45	25	11	10	7	-
Aulodrilus pluriseta	-	-	-	-	-	6	-	40	-	-
Limnodrilus hoffmeisteri	41	40	35	19	11	-	-	-	-	-
Limnodrilus udekemianus	-	-	-	-	-	19	28	5	7	16
immatures with hair chaetae	57	122	127	127	113	108	78	55	63	72
immatures without hair chaetae	49	94	115	58	102	-	11	15	4	8
P. Arthropoda										
Cl. Arachnida										
F. Lebertidae										
Lebertia	-	-	-	1	-	-	-	-	-	-
F. Limnesiidae										
Limnesia	-	-	-	-	-	-	-	-	-	-
Cl. Ostracoda										
F. Candonidae										
Candona	18	16	24	22	27	12	3	12	19	16
F. Cyprididae										
Isocypris	-	-	10	5	5	3	1	-	1	4
F. Cytherideidae										
Cytherissa lacustris	58	24	20	26	12	-	1	8	-	4
F. Limnocytheridae										
Limnocythere	-	-	-	-	-	-	1	1	1	-
Cl. Insecta										
O. Diptera										
F. Chironomidae										
chironomid pupae	**2**	**4**	**6**	**4**	**3**	-	-	-	-	-
S.F. Chironominae										
Chironomus	38	22	18	6	8	2	-	8	25	32
Harnischia	-	-	4	3	-	3	2	1	3	-
Microchironomus	-	-	-	-	-	-	-	-	2	-
Phaenopsectra	-	-	-	-	-	-	-	1	-	-
Tanytarsus	6	-	10	7	9	1	1	-	1	-
S.F. Prodiamesinae										
Protanypus	-	-	-	-	1	-	-	-	-	-
S.F. Orthocladiinae										
Heterotrissocladius	8	16	46	16	13	-	-	-	-	-
S.F. Tanypodinae										
Procladius	6	8	38	33	49	12	13	13	36	32
P. Mollusca										
Cl. Bivalvia										
F. Sphaeriidae										
Pisidium (Cyclocalyx)	4	4	28	16	27	-	-	-	-	-
TOTAL NUMBER OF ORGANISMS	346	392	500	393	427	193	151	170	176	188
TOTAL NUMBER OF TAXA [a]	12	11	14	16	14	11	12	13	13	9

[a] Bold entries excluded from taxa count

Table E.2: Benthic Invertebrate Community Endpoints for Areas Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2016 to 2021

Year	Area	Replicate	Richness (# Taxa)	Density (ind/m²)	Shannon's Diversity	Nematoda (%)	Oligochaeta (%)	Ostracoda (%)	Chironomidae (%)	Bivalvia (%)	Nematoda (ind/m²)	Oligochaeta (ind/m²)	Ostracoda (ind/m²)	Chironomidae (ind/m²)	Bivalvia (ind/m²)
2016	RG_TN	1	10.0	1,601	1.41	0	66.1	7.53	26.3	0	0	1,059	121	422	0
		2	11.0	1,300	1.74	0	47.0	19.9	32.5	0	0	611	258	422	0
		3	13.0	2,247	2.08	1.92	42.1	8.05	44.1	3.83	43.0	947	181	990	86.1
		4	10.0	990	1.69	0	39.1	13.0	46.1	0.870	0	387	129	456	8.61
		5	9.00	6,251	1.38	0.275	69.4	14.9	14.6	0.826	17.2	4,339	930	913	51.7
	RG_T4	2	12.0	3,582	1.58	1.20	38.0	40.6	18.0	2.16	43.0	1,360	1,455	646	77.5
		3	9.00	3,797	1.24	0.907	24.0	56.2	18.8	0	34.4	913	2,135	715	0
		4	10.0	4,279	1.35	0	40.9	43.5	14.9	0.805	0	1,748	1,860	637	34.4
		5	9.00	2,256	1.15	0	69.1	16.8	13.4	0.763	0	1,558	379	301	17.2
		6	9.00	2,118	1.26	0	77.6	9.76	11.4	1.22	0	1,644	207	241	25.8
2018	RG_TN	1	9.00	1,825	1.80	1.89	26.4	5.66	60.4	5.66	34.4	482	103	1,102	103
		2	11.0	2,118	2.03	1.63	51.2	7.32	39.8	0	34.4	1,085	155	844	0
		3	10.0	1,860	2.02	3.70	59.3	5.56	31.5	0	68.9	1,102	103	585	0
		4	10.0	2,238	1.71	0.769	76.2	4.23	18.1	0.769	17.2	1,705	94.7	405	17.2
		5	11.0	2,600	1.57	1.32	61.6	5.96	31.1	0	34.4	1,601	155	809	0
	RG_T4	1	9.00	499	1.55	1.72	41.4	3.45	53.5	0	8.61	207	17.2	267	0
		2	12.0	654	1.75	1.32	23.7	1.32	67.1	5.26	8.61	155	8.61	439	34.4
		3	7.00	3,650	1.55	1.89	67.9	0	30.2	0	68.9	2,480	0	1,102	0
		4	8.00	3,134	1.03	0	72.5	3.30	23.1	1.10	0	2,273	103	723	34.4
		5	7.00	1,016	1.21	0	49.1	3.39	46.6	0.847	0	499	34.4	474	8.61
2021	RG_TN	1	10.0	1,662	1.48	1.04	81.9	7.77	9.33	0	17.2	1,360	129	155	0
		2	8.00	1,300	1.28	0.662	84.8	3.97	10.6	0	8.61	1,102	51.7	138	0
		3	10.0	1,464	1.67	0.588	73.5	12.3	13.5	0	8.61	1,076	181	198	0
		4	10.0	1,515	1.76	0	50.0	11.9	38.1	0	0	758	181	577	0
		5	6.00	1,619	1.52	2.13	51.1	12.8	34.0	0	34.4	827	207	551	0
	RG_T4	1	10.0	2,979	1.81	0.578	59.0	22.0	17.3	1.16	17.2	1,756	654	517	34.4
		2	9.00	3,375	1.49	0.510	75.5	10.2	12.8	1.02	17.2	2,548	344	430	34.4
		3	11.0	4,305	1.76	1.60	57.6	10.8	24.4	5.60	68.9	2,480	465	1,050	241
		4	13.0	3,384	1.74	0.254	64.1	13.5	17.6	4.07	8.61	2,170	456	594	138
		5	11.0	3,676	1.65	0.468	63.5	10.3	19.4	6.32	17.2	2,333	379	715	232

Table E.3: Benthic Invertebrate Community Endpoint Summary Statistics for Areas Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2016 to 2021

Endpoint	Year	Area	N	Mean	Minimum	Median	Maximum	Standard Deviation
Richness (# Taxa)	2016	RG_TN	5	10.6	9.00	10.0	13.0	1.52
		RG_T4	5	9.80	9.00	9.00	12.0	1.30
	2018	RG_TN	5	10.2	9.00	10.0	11.0	0.837
		RG_T4	5	8.60	7.00	8.00	12.0	2.07
	2021	RG_TN	5	8.80	6.00	10.0	10.0	1.79
		RG_T4	5	10.8	9.00	11.0	13.0	1.48
Density (ind/m²)	2016	RG_TN	5	2,478	990	1,601	6,251	2,160
		RG_T4	5	3,206	2,118	3,582	4,279	965
	2018	RG_TN	5	2,128	1,825	2,118	2,600	316
		RG_T4	5	1,791	499	1,016	3,650	1,485
	2021	RG_TN	5	1,512	1,300	1,515	1,662	142
		RG_T4	5	3,544	2,979	3,384	4,305	492
Shannon's Diversity	2016	RG_TN	5	1.66	1.38	1.69	2.08	0.289
		RG_T4	5	1.32	1.15	1.26	1.58	0.164
	2018	RG_TN	5	1.83	1.57	1.80	2.03	0.201
		RG_T4	5	1.42	1.03	1.55	1.75	0.288
	2021	RG_TN	5	1.54	1.28	1.52	1.76	0.184
		RG_T4	5	1.69	1.49	1.74	1.81	0.124
Nematoda (%)	2016	RG_TN	5	0.438	0	0	1.92	0.835
		RG_T4	5	0.422	0	0	1.20	0.587
	2018	RG_TN	5	1.86	0.769	1.63	3.70	1.11
		RG_T4	5	0.985	0	1.32	1.89	0.923
	2021	RG_TN	5	0.883	0	0.662	2.13	0.789
		RG_T4	5	0.682	0.254	0.510	1.60	0.527
Oligochaeta (%)	2016	RG_TN	5	52.8	39.1	47.0	69.4	14.0
		RG_T4	5	49.9	24.0	40.9	77.6	22.5
	2018	RG_TN	5	54.9	26.4	59.3	76.2	18.3
		RG_T4	5	50.9	23.7	49.1	72.5	19.9
	2021	RG_TN	5	68.2	50.0	73.5	84.8	16.7
		RG_T4	5	63.9	57.6	63.5	75.5	7.06
Ostracoda (%)	2016	RG_TN	5	12.7	7.53	13.0	19.9	5.11
		RG_T4	5	33.4	9.76	40.6	56.2	19.4
	2018	RG_TN	5	5.74	4.23	5.66	7.32	1.10
		RG_T4	5	2.29	0	3.30	3.45	1.56
	2021	RG_TN	5	9.76	3.97	11.9	12.8	3.80
		RG_T4	5	13.3	10.2	10.8	22.0	5.00
Chironomidae (%)	2016	RG_TN	5	32.7	14.6	32.5	46.1	13.0
		RG_T4	5	15.3	11.4	14.9	18.8	3.13
	2018	RG_TN	5	36.2	18.1	31.5	60.4	15.6
		RG_T4	5	44.1	23.1	46.6	67.1	17.7
	2021	RG_TN	5	21.1	9.33	13.5	38.1	13.8
		RG_T4	5	18.3	12.8	17.6	24.4	4.20
Bivalvia (%)	2016	RG_TN	5	1.11	0	0.826	3.83	1.58
		RG_T4	5	0.990	0	0.805	2.16	0.790
	2018	RG_TN	5	1.29	0	0	5.66	2.47
		RG_T4	5	1.44	0	0.847	5.26	2.19
	2021	RG_TN	5	0	0	0	0	0
		RG_T4	5	3.63	1.02	4.07	6.32	2.46
Nematoda (ind/m²)	2016	RG_TN	5	12.1	0	0	43.0	18.9
		RG_T4	5	15.5	0	0	43.0	21.4
	2018	RG_TN	5	37.9	17.2	34.4	68.9	18.9
		RG_T4	5	17.2	0	8.61	68.9	29.2
	2021	RG_TN	5	13.8	0	8.61	34.4	13.1
		RG_T4	5	25.8	8.61	17.2	68.9	24.4
Oligochaeta (ind/m²)	2016	RG_TN	5	1,469	387	947	4,339	1,627
		RG_T4	5	1,445	913	1,558	1,748	330
	2018	RG_TN	5	1,195	482	1,102	1,705	488
		RG_T4	5	1,123	155	499	2,480	1,154
	2021	RG_TN	5	1,025	758	1,076	1,360	241
		RG_T4	5	2,257	1,756	2,333	2,548	316
Ostracoda (ind/m²)	2016	RG_TN	5	324	121	181	930	343
		RG_T4	5	1,207	207	1,455	2,135	871
	2018	RG_TN	5	122	94.7	103	155	30.1
		RG_T4	5	32.7	0	17.2	103	41.5
	2021	RG_TN	5	150	51.7	181	207	61.7
		RG_T4	5	460	344	456	654	120
Chironomidae (ind/m²)	2016	RG_TN	5	641	422	456	990	285
		RG_T4	5	508	241	637	715	219
	2018	RG_TN	5	749	405	809	1,102	266
		RG_T4	5	601	267	474	1,102	324
	2021	RG_TN	5	324	138	198	577	221
		RG_T4	5	661	430	594	1,050	241
Bivalvia (ind/m²)	2016	RG_TN	5	29.3	0	8.61	86.1	38.3
		RG_T4	5	31.0	0	25.8	77.5	28.9
	2018	RG_TN	5	24.1	0	0	103	44.9
		RG_T4	5	15.5	0	8.61	34.4	17.6
	2021	RG_TN	5	0	0	0	0	0
		RG_T4	5	136	34.4	138	241	101

Table E.4: Non-metic Multidimensional Scaling Analysis Station Scores Using Benthic Invertebrate Community Abundances at the Lowest Practical Level of Taxonomic Resolution, Koocanusa Reservoir Monitoring Program, August 2021

Station		Replicate	MDS1	MDS2
Upstream of the Elk River	RG_TN	1	0.189	0.0140
		2	0.310	-0.126
		3	0.350	0.302
		4	0.641	0.131
		5	0.235	-0.552
Downstream of the Elk River	RG_T4	1	-0.468	-0.0790
		2	-0.419	-0.172
		3	-0.191	0.0912
		4	-0.274	0.310
		5	-0.373	0.0811

Table E.5: Spearman Correlations of Benthic Invertebrate Taxa and Non-metic Multidimensional Scaling (NMDS) Axis Scores, Koocanusa Reservoir Monitoring Program, August 2021

Group	Taxa	NMDS1		NMDS2	
		P-value	r_s	P-value	r_s
Arachnida	Arachnida	0.631	-0.174	0.122	0.522
Bivalvia	Pisidiidae	0.024	-0.701	0.504	0.240
Chironomidae	Chironomus	0.448	-0.273	0.407	-0.297
	Harnischia	0.301	0.364	0.049	0.634
	Heterotrissocladius	0.020	-0.718	0.735	0.123
	Microchironomus	0.122	0.522	0.416	0.290
	Phaenopsectra	0.244	0.406	0.244	0.406
	Procladius	0.455	0.267	0.185	0.456
	Protanypus	0.416	-0.290	0.873	0.0580
	Tanytarsus	0.280	-0.379	0.231	0.416
Nematoda	Nematoda	0.153	-0.488	0.147	-0.494
Oligochaeta	Aulodrilus pluriseta	0.290	0.372	0.409	0.294
	Dero	0.122	0.522	0.416	0.290
	Limnodrilus hoffmeisteri	<0.001	-0.886	0.873	-0.0582
	Limnodrilus udekemianus	0.016	0.731	0.415	-0.291
	Tubificinae	0.021	-0.733	0.865	-0.0667
Ostracoda	Ostracoda	0.014	-0.742	0.688	0.146
Xenacoelomorpha	Xenacoelomorpha	0.631	-0.174	0.122	0.522

$r_s \geq 0.6$ or ≤ -0.6

significant correlation (p-value < 0.1).

APPENDIX F
FISH

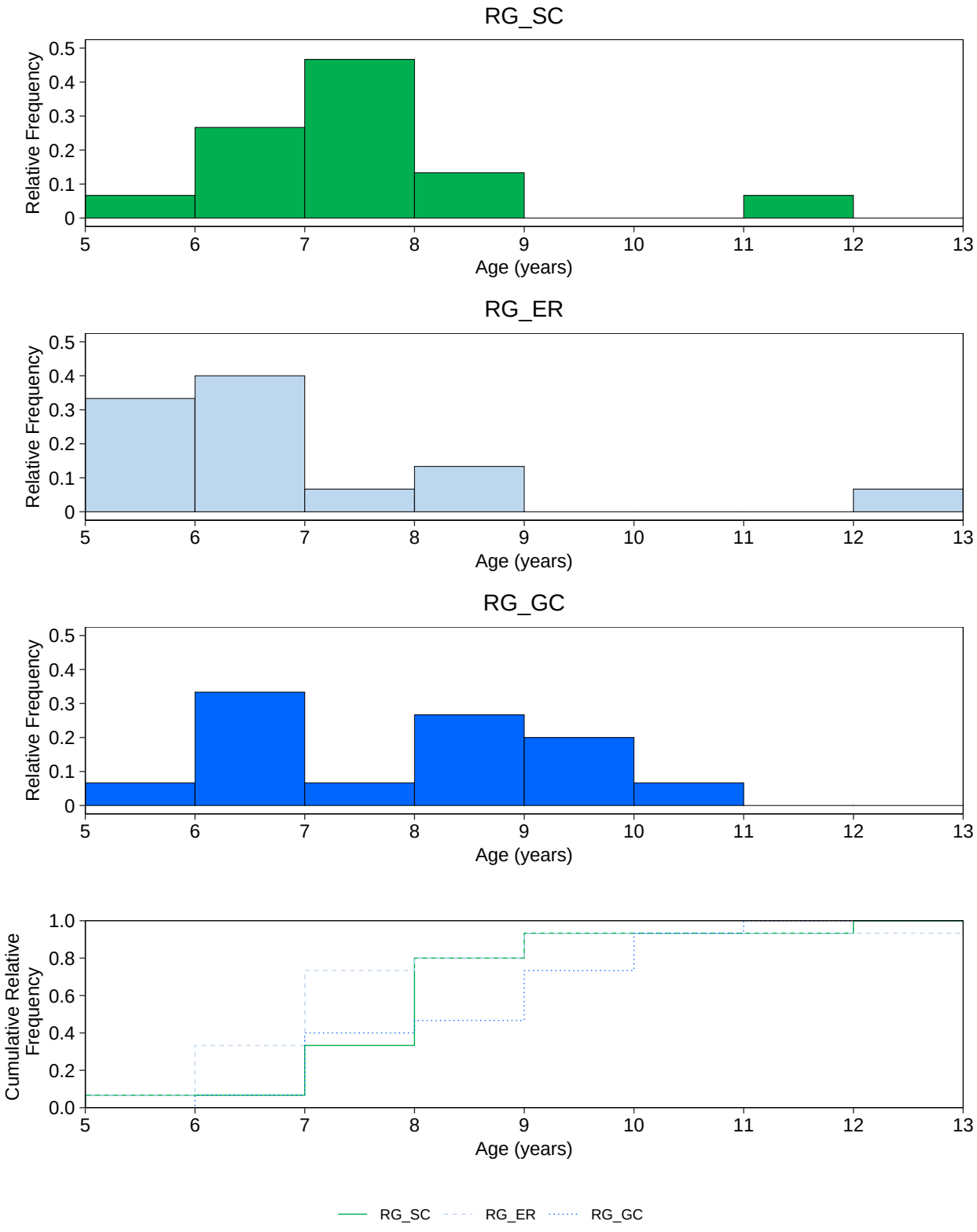

Figure F.1: Age Distributions of Female Peamouth Chub, April 2021

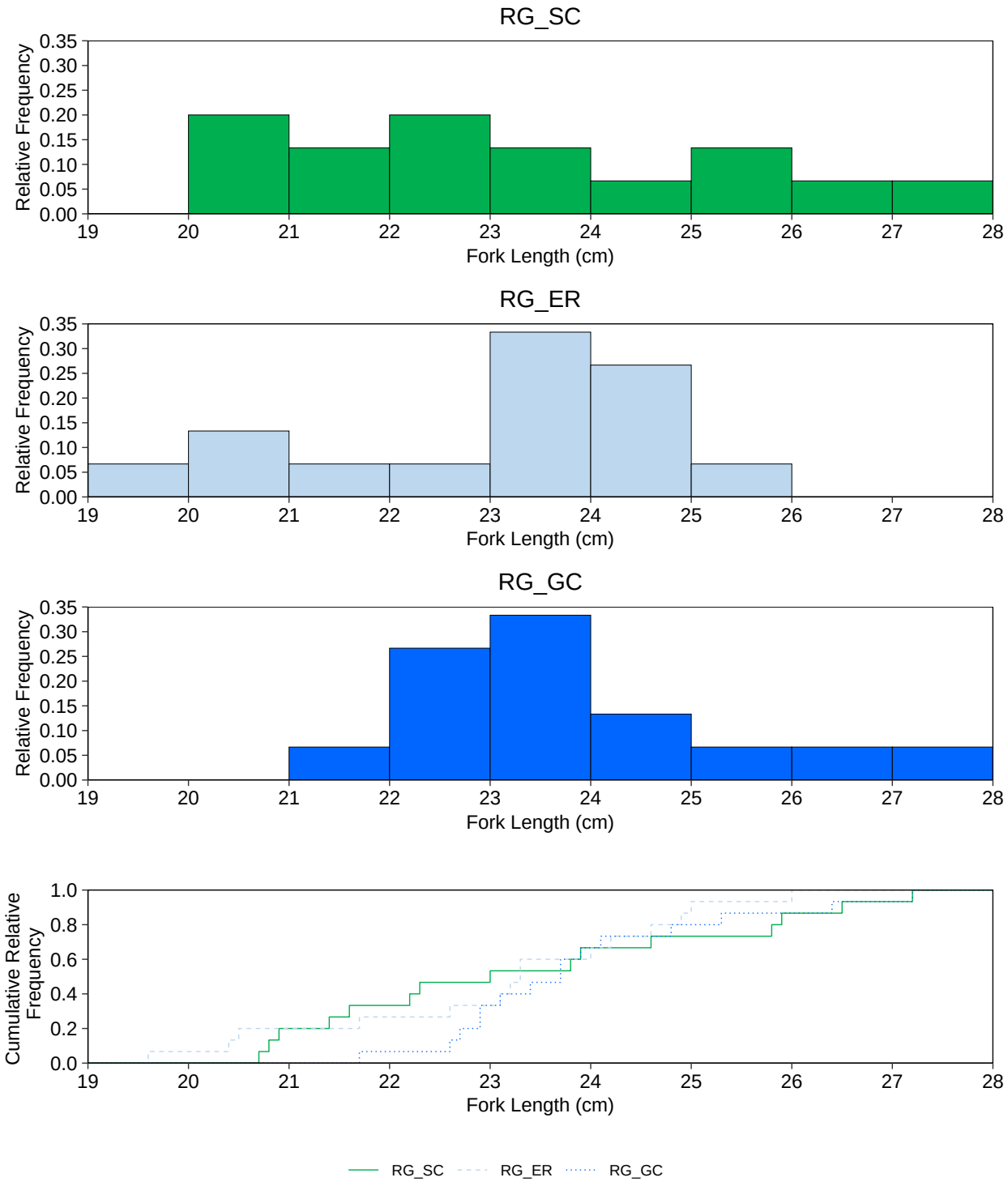

Figure F.2: Total Length Distributions of Female Peamouth Chub, April 2021

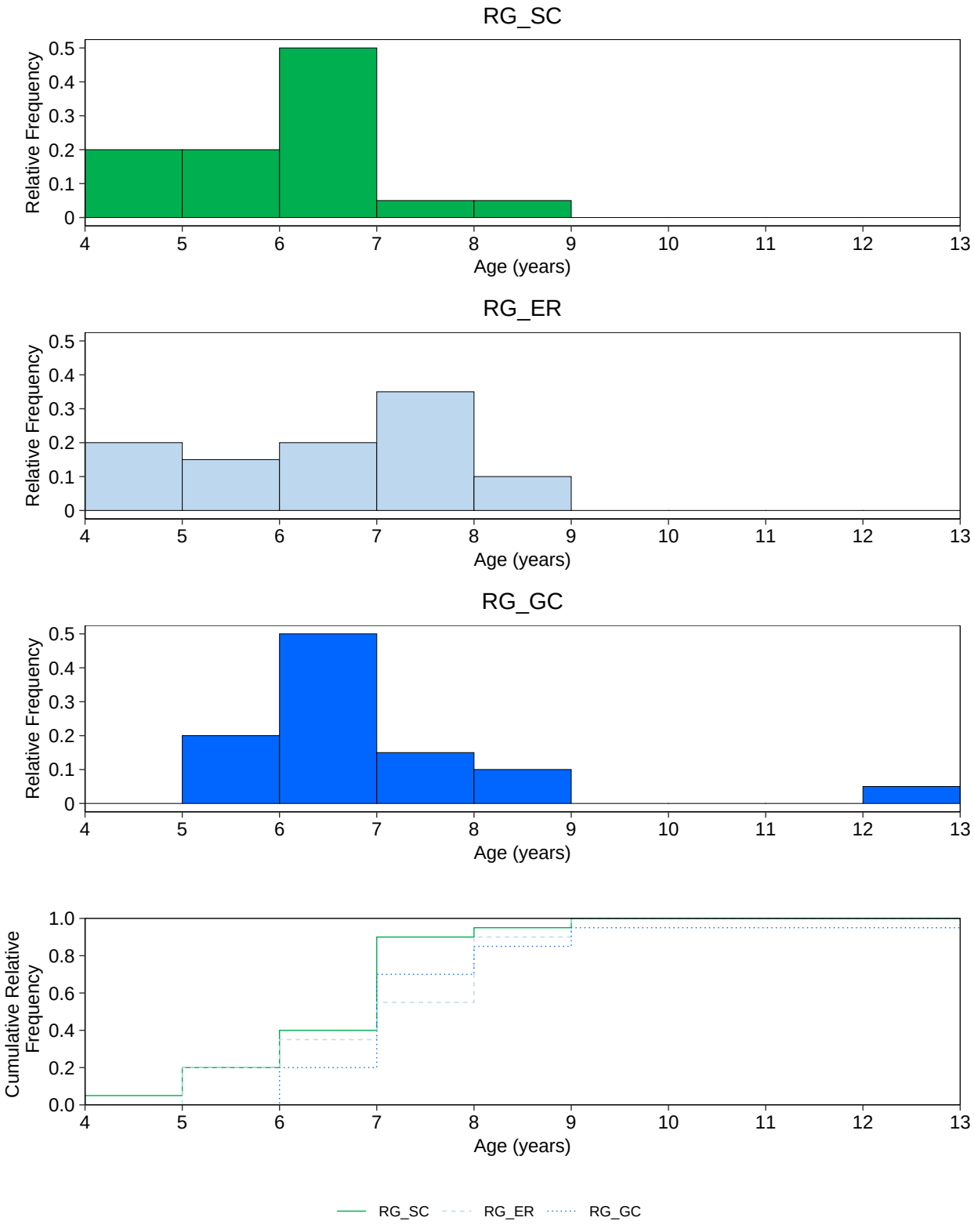

Figure F.3: Age Distributions of Male Peamouth Chub, April 2021

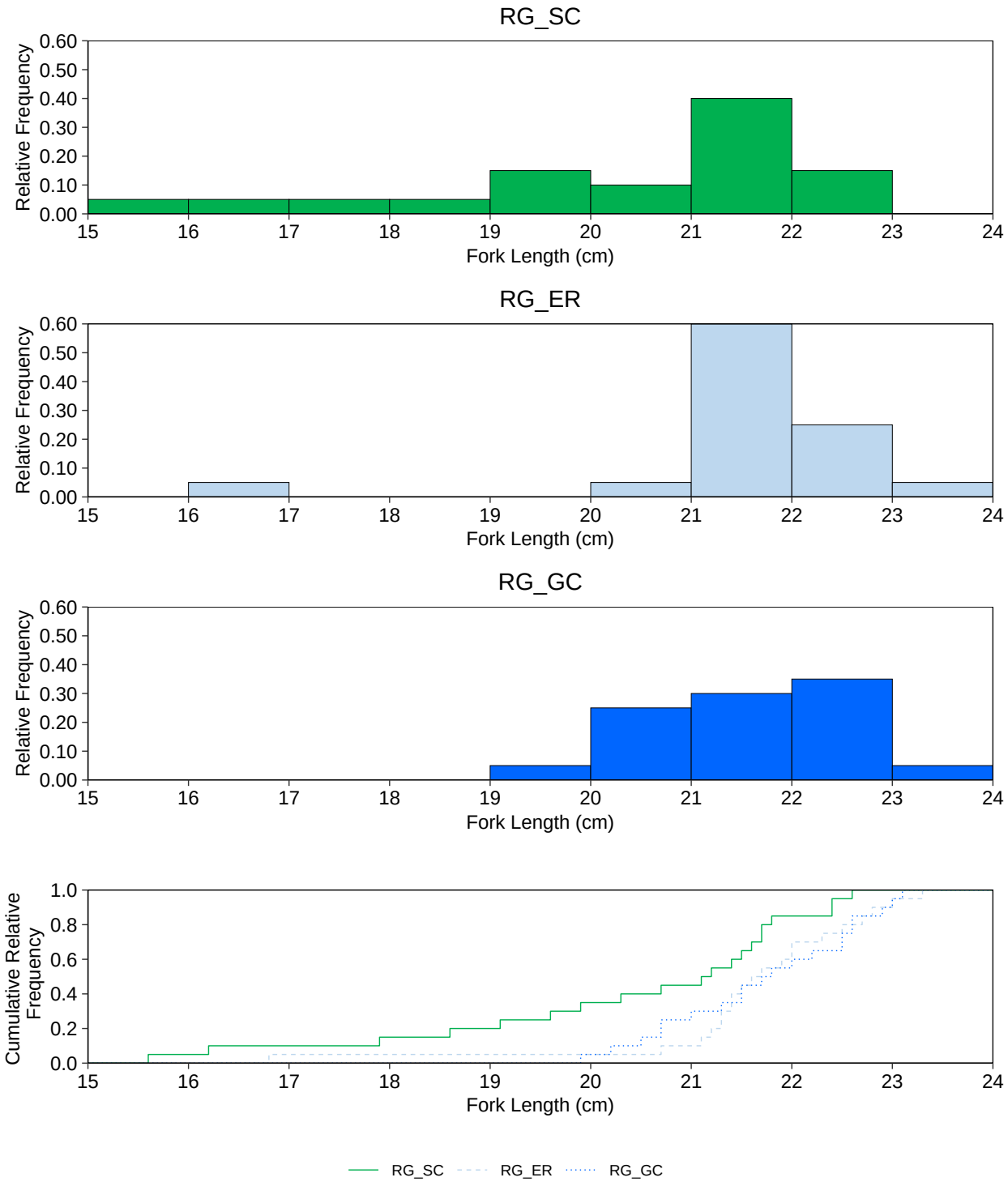

Figure F.4: Total Length Distributions of Male Peamouth Chub, April 2021

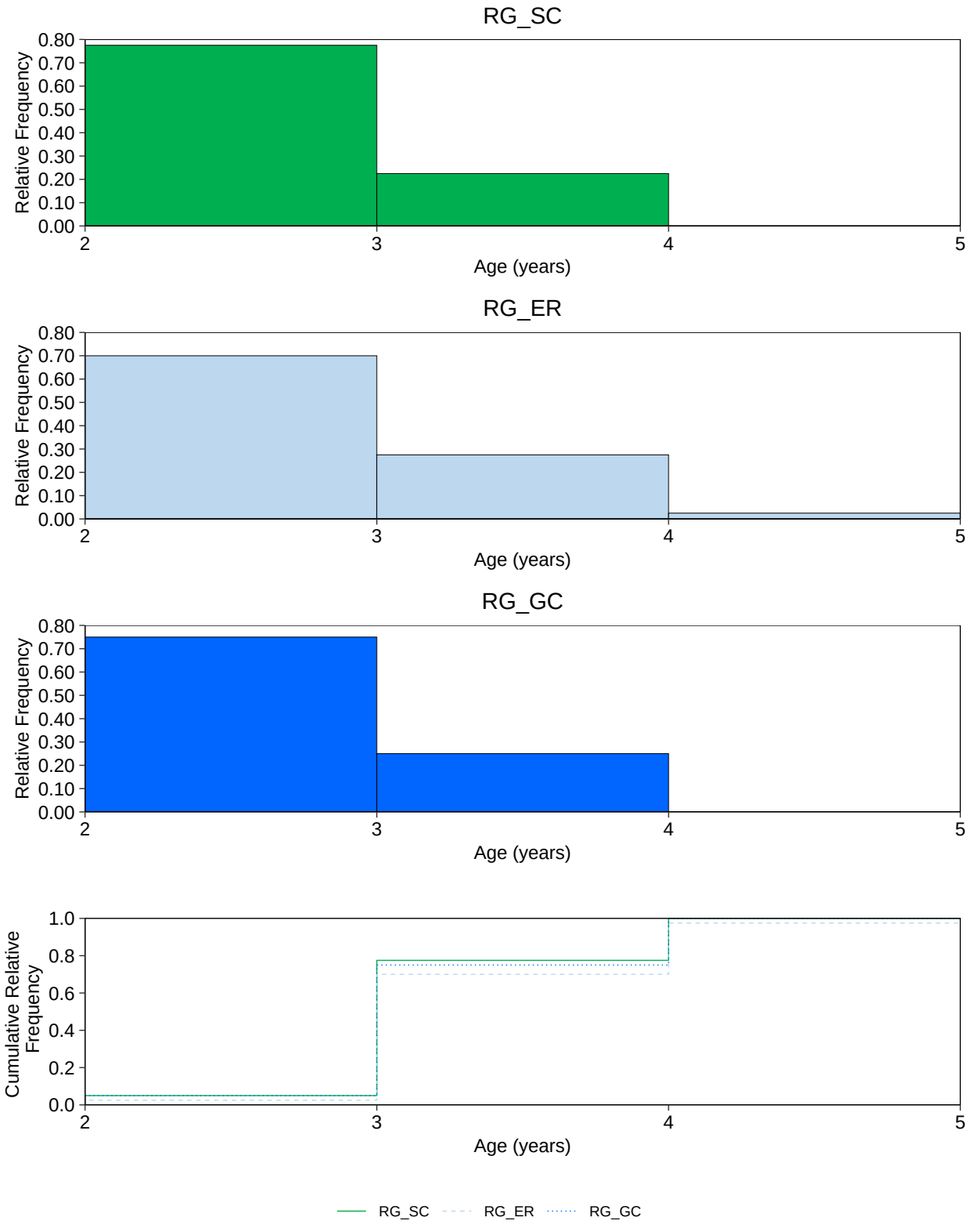

Figure F.5: Age Distributions of Female Redside Shiner, April 2021

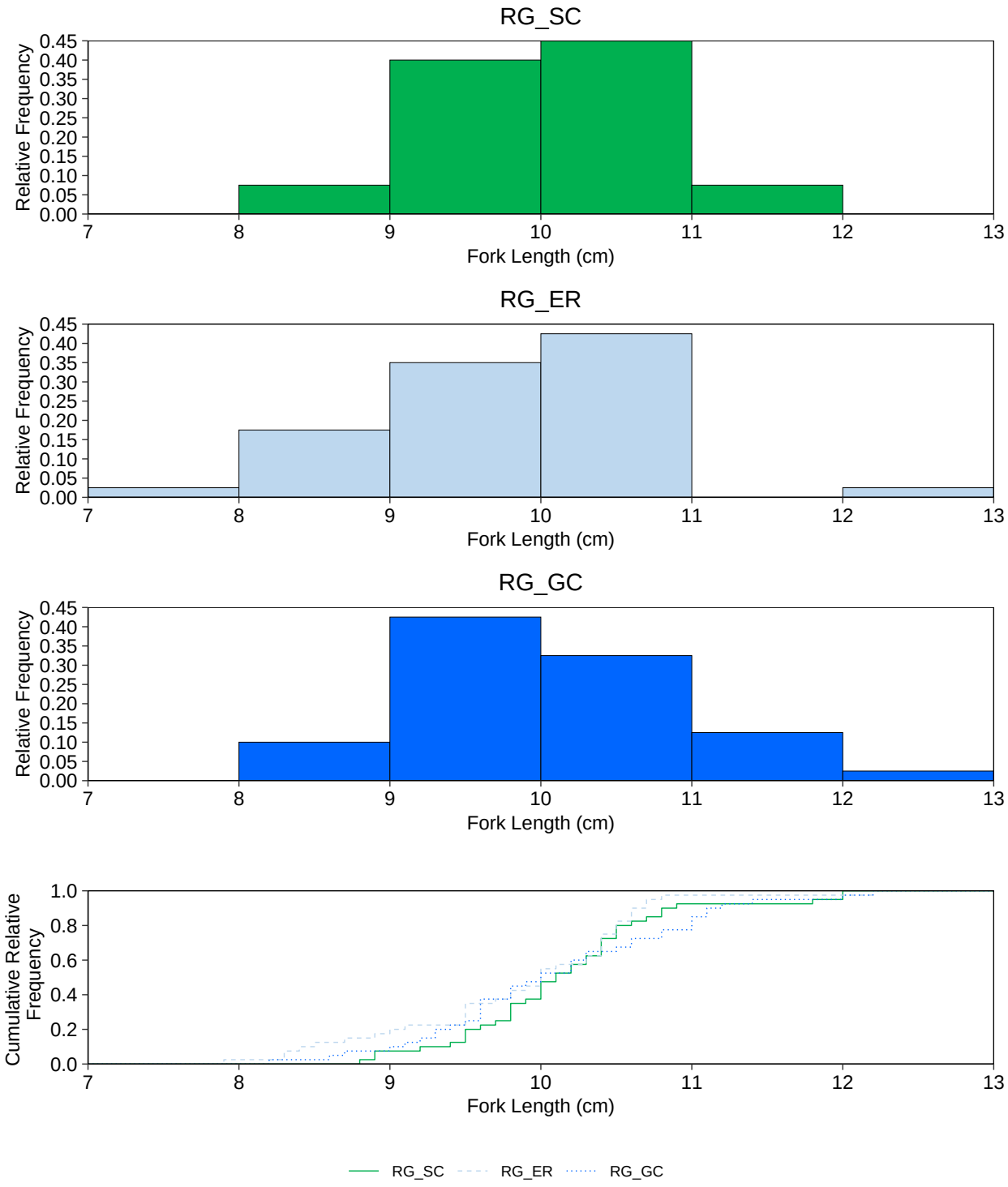

Figure F.6: Total Length Distributions of Female Redside Shiner, April 2021

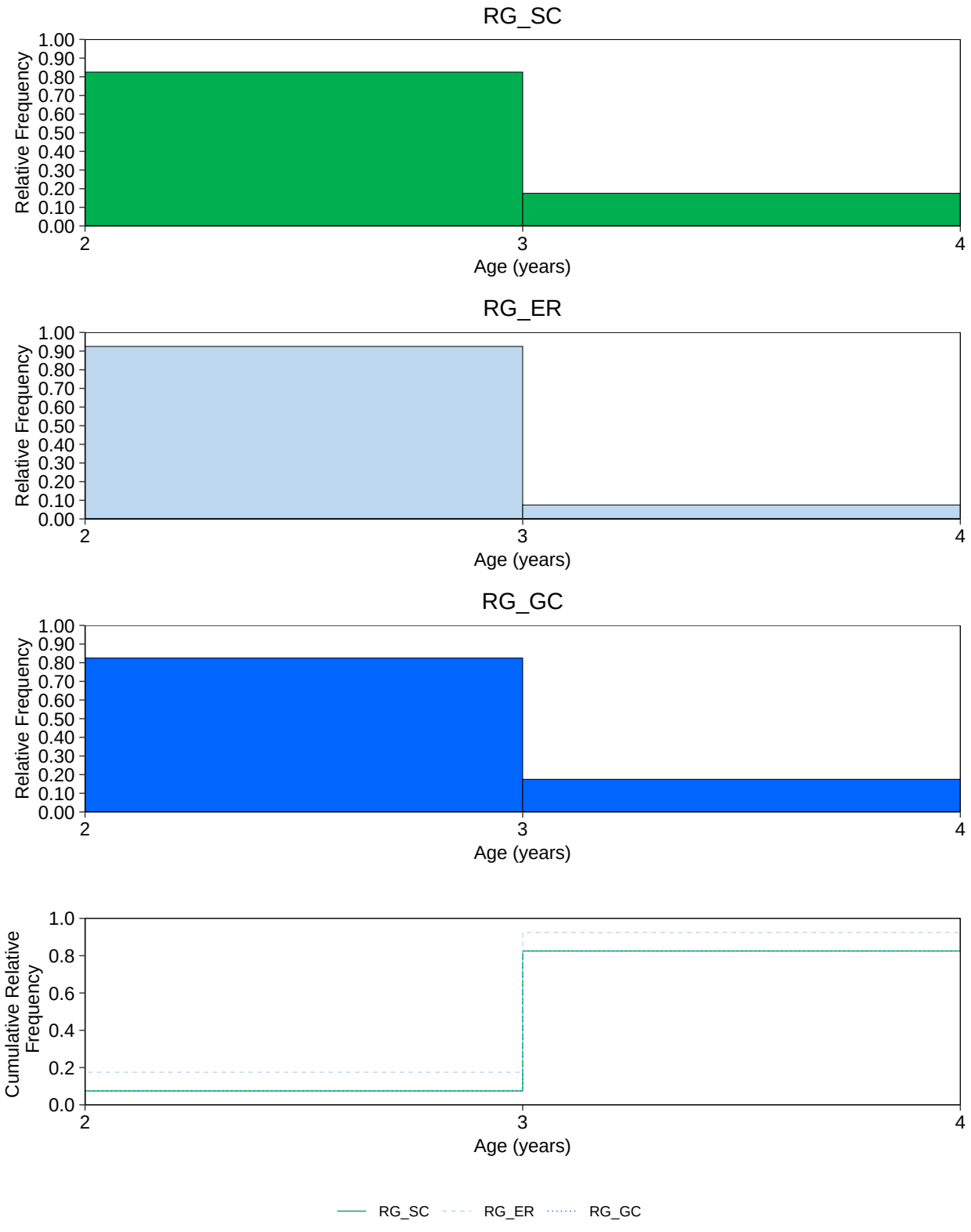

Figure F.7: Age Distributions of Male Redside Shiner, April 2021

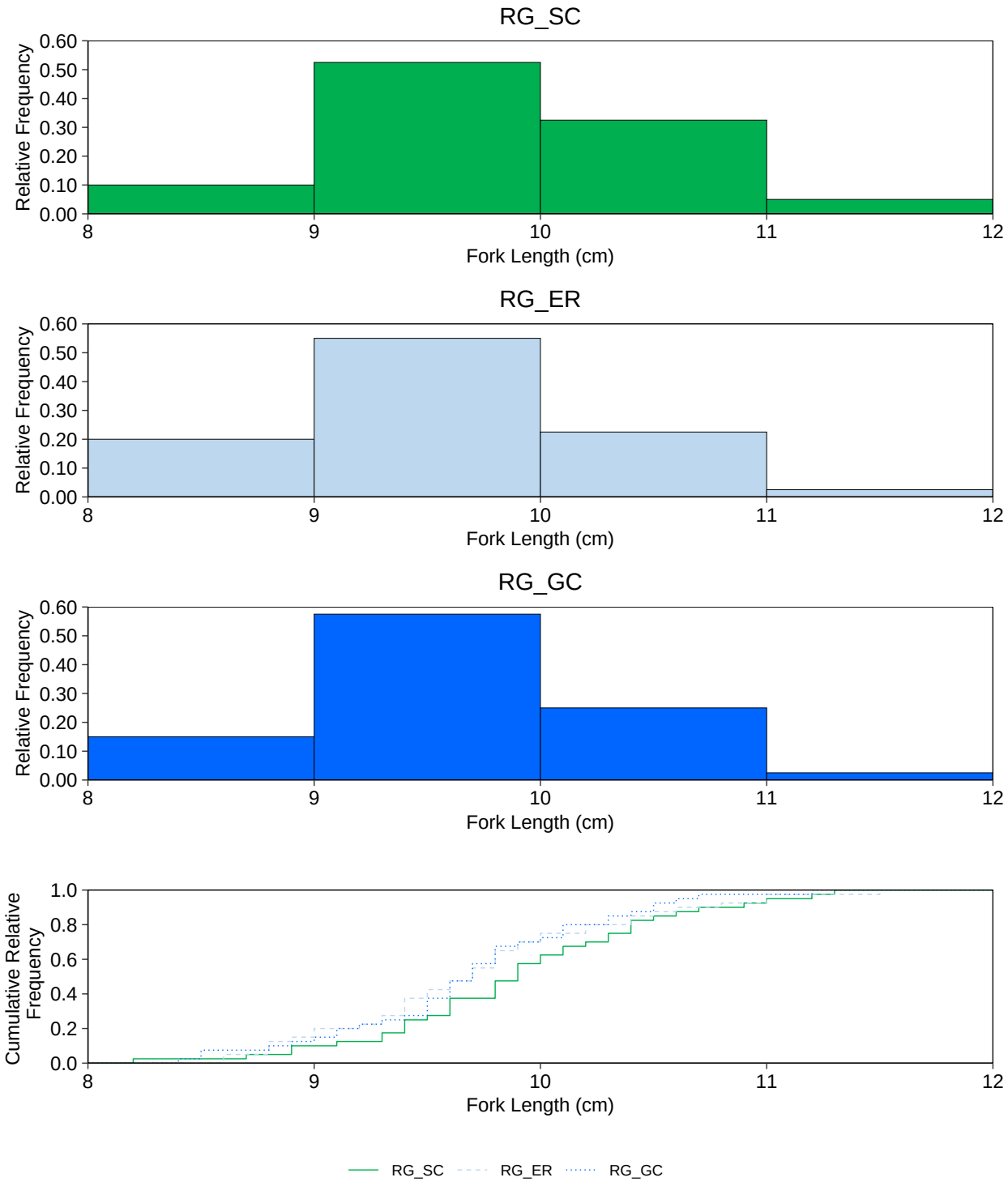

Figure F.8: Total Length Distributions of Male Redside Shiner, April 2021

Table F.1: Gill Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Kokanee			Mountain Whitefish		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Sand Creek	RG_SC-GN-01	624603	546775	19-Apr-21	19-Apr-21	14:00	14:25	0.42	1.0	1	75	1.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-02	624326	5461059	19-Apr-21	19-Apr-21	14:15	14:35	0.33	1.0	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-03	624606	5460776	19-Apr-21	19-Apr-21	14:32	15:00	0.47	1.0	1	75	1.5	0	0	0.0	1	0	2.1	0	0	0.0	0	0	0.0
	RG_SC-GN-04	624360	5461047	19-Apr-21	19-Apr-21	14:50	15:12	0.37	0.8	1	75	1.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-05	624187	5460998	19-Apr-21	19-Apr-21	15:00	15:30	0.50	1.0	2	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-06	624389	5460888	19-Apr-21	19-Apr-21	15:10	15:37	0.45	1.0	1	75	1.5	0	0	0.0	1	0	2.2	0	0	0.0	0	0	0.0
	RG_SC-GN-07	624279	5461081	19-Apr-21	19-Apr-21	15:21	15:45	0.40	0.5	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-08	624147	5461003	19-Apr-21	19-Apr-21	15:33	15:50	0.28	0.5	1	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-09	623642	5461270	20-Apr-21	20-Apr-21	10:45	11:00	0.25	0.0	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-10	623304	5461318	20-Apr-21	20-Apr-21	11:22	12:05	0.72	2.0	2	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-11	623458	5461331	20-Apr-21	20-Apr-21	12:00	13:30	1.50	0.0	0.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	0.7
	RG_SC-GN-12	623221	5461340	20-Apr-21	20-Apr-21	12:11	13:15	1.07	2.0	2	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-13	625725	5458538	20-Apr-21	20-Apr-21	14:52	16:00	1.13	0.5	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	2	0	1.8
	RG_SC-GN-14	625773	5458502	20-Apr-21	20-Apr-21	15:00	16:20	1.33	1.0	2	50	3	3	0	2.3	0	0	0.0	0	0	0.0	2	0	1.5
	RG_SC-GN-15	625758	5458453	20-Apr-21	20-Apr-21	9:15	9:50	0.58	2.0	2	50	3	0	0	0.0	2	0	3.4	0	0	0.0	1	0	1.7
	RG_SC-GN-16	625761	5458403	20-Apr-21	20-Apr-21	9:38	10:10	0.53	2.0	2.5	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-17	625758	5458512	20-Apr-21	20-Apr-21	9:43	10:36	0.88	0.5	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-18	625761	5458458	20-Apr-21	20-Apr-21	10:00	10:40	0.67	2.0	2.5	50	3	0	0	0.0	2	0	3.0	0	0	0.0	1	0	1.5
	RG_SC-GN-19	625841	5458403	20-Apr-21	20-Apr-21	10:25	11:00	0.58	2.0	3	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-20	625676	5458579	20-Apr-21	20-Apr-21	10:38	11:06	0.47	0.5	1	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-21	625738	5458482	21-Apr-21	21-Apr-21	10:55	11:15	0.33	2.0	2	50	3	0	0	0.0	2	0	6.0	0	0	0.0	0	0	0.0
	RG_SC-GN-22	625769	5458401	21-Apr-21	21-Apr-21	11:00	11:20	0.33	2.0	3	50	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-23	625777	5458499	21-Apr-21	21-Apr-21	13:37	14:07	0.50	2.0	2	50	3	1	0	2.0	3	0	6.0	1	0	2.0	0	0	0.0
	RG_SC-GN-24	625717	5458494	21-Apr-21	21-Apr-21	13:42	14:25	0.72	2.0	3	50	3	0	0	0.0	1	0	1.4	0	0	0.0	1	0	1.4
	RG_SC-GN-25	625819	5458485	21-Apr-21	21-Apr-21	13:46	14:40	0.90	0.5	1	75	1	0	0	0.0	1	0	1.1	0	0	0.0	14	0	15.6
	RG_SC-GN-26	625335	5460407	22-Apr-21	22-Apr-21	13:10	13:30	0.33	1.0	3	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-27	625566	5460332	22-Apr-21	22-Apr-21	13:40	14:35	0.92	0.2	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**17.0**					**4**	**0**	0.24	**13**	**0**	**0.77**	**1**	**0**	**0.06**	**22**	**0**	**1.3**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.1: Gill Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Sand Creek	RG_SC-GN-01	0	0	0.0	5	5	12.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-02	0	0	0.0	0	0	0.0	0	0	0.0	1	1	3.0	0	0	0.0
	RG_SC-GN-03	0	0	0.0	1	1	2.1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-04	0	0	0.0	0	0	0.0	0	0	0.0	5	5	13.6	0	0	0.0
	RG_SC-GN-05	0	0	0.0	5	5	10.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-06	0	0	0.0	3	3	6.7	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-07	0	0	0.0	0	0	0.0	0	0	0.0	4	4	10.0	0	0	0.0
	RG_SC-GN-08	0	0	0.0	1	1	3.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-09	0	0	0.0	1	0	4.0	0	0	0.0	5	5	20.0	0	0	0.0
	RG_SC-GN-10	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-11	0	0	0.0	6	1	4.0	0	0	0.0	7	7	4.7	0	0	0.0
	RG_SC-GN-12	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-13	0	0	0.0	5	1	4.4	0	0	0.0	14	14	12.4	0	0	0.0
	RG_SC-GN-14	5	0	3.8	2	2	1.5	0	0	0.0	0	0	0.0	1	1	0.8
	RG_SC-GN-15	1	0	1.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-16	0	0	0.0	13	13	24.4	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-17	0	0	0.0	2	0	2.3	0	0	0.0	2	2	2.3	0	0	0.0
	RG_SC-GN-18	2	0	3.0	1	1	1.5	0	0	0.0	0	0	0.0	1	1	1.5
	RG_SC-GN-19	0	0	0.0	5	5	8.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-20	0	0	0.0	1	0	2.1	0	0	0.0	3	3	6.4	0	0	0.0
	RG_SC-GN-21	2	0	6.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-22	1	0	3.0	1	1	3.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-23	3	0	6.0	9	9	18.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-24	3	0	4.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-25	1	0	1.1	11	0	12.2	0	0	0.0	6	6	6.7	0	0	0.0
	RG_SC-GN-26	0	0	0.0	1	0	3.0	0	0	0.0	8	6	24.0	0	0	0.0
	RG_SC-GN-27	0	0	0.0	6	0	6.5	1	0	1.1	31	24	33.8	0	0	0.0
		18	**0**	**1.1**	**79**	**48**	**4.7**	**1**	**0**	**0.1**	**86**	**77**	**5.1**	**2**	**2**	**0.12**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Kokanee			Largescale Sucker		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-01	627480	5447171	19-Apr-21	19-Apr-21	16:35	16:50	0.25	1.0	3	75	2	0	0	0.0	1	0	4.0	0	0	0.0
	RG_ER-GN-02	626995	5446900	19-Apr-21	19-Apr-21	17:24	17:57	0.55	1.0	5	75	2	0	0	0.0	0	0	0.0	0	0	0
	RG_ER-GN-03	626925	5446665	20-Apr-21	20-Apr-21	14:16	14:35	0.32	0.0	5	75	1	0	0	0.0	0	0	0.0	0	0	0
	RG_ER-GN-04	626925	5446665	20-Apr-21	20-Apr-21	14:45	15:01	0.27	0.0	5.0	75	1	0	0	0.0	0	0	0.0	0	0	0
	RG_ER-GN-05	626925	5446665	20-Apr-21	20-Apr-21	13:10	13:25	0.25	0.0	5.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-06	626964	5446813	20-Apr-21	20-Apr-21	13:31	15:39	2.13	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-07	626952	5446780	21-Apr-21	21-Apr-21	9:03	9:18	0.25	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-08	626946	5446665	21-Apr-21	21-Apr-21	9:13	9:29	0.27	1.0	5.0	50	2	1	0	3.8	0	0	0.0	0	0	0.0
	RG_ER-GN-09	626946	5446665	21-Apr-21	21-Apr-21	9:42	9:59	0.28	1.0	5.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-10	626948	5446769	21-Apr-21	21-Apr-21	9:48	10:11	0.38	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-11	627027	5446698	21-Apr-21	21-Apr-21	10:09	10:25	0.27	1.0	6.0	75	2	0	0	0.0	1	0	3.8	0	0	0.0
	RG_ER-GN-12	626931	5446714	21-Apr-21	21-Apr-21	10:18	10:37	0.32	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-13	626931	5446714	21-Apr-21	21-Apr-21	10:42	10:59	0.28	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-14	627225	5447509	21-Apr-21	21-Apr-21	11:10	11:32	0.37	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-15	627957	5447569	21-Apr-21	21-Apr-21	11:30	11:48	0.30	1.0	5.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-16	627225	5447509	21-Apr-21	21-Apr-21	11:41	12:04	0.38	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-17	627854	5447501	21-Apr-21	21-Apr-21	12:02	12:20	0.30	1.0	5.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-18	628590	5447779	23-Apr-21	23-Apr-21	13:00	13:20	0.33	1.0	2.0	50	2	0	0	0.0	0	0	0.0	1	0	3.0
	RG_ER-GN-19	628684	5447965	23-Apr-21	23-Apr-21	13:05	13:30	0.42	1.0	2.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-20	628631	5447944	23-Apr-21	23-Apr-21	13:30	13:45	0.25	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-21	628684	5447965	23-Apr-21	23-Apr-21	13:40	13:55	0.25	1.0	2.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-22	626976	5446678	23-Apr-21	23-Apr-21	14:27	14:55	0.47	1.5	2.5	50	2	0	0	0.0	0	0	0.0	1	0	2.1
	RG_ER-GN-23	626949	5446736	23-Apr-21	23-Apr-21	14:35	14:55	0.33	1.0	2.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-24	626927	5446678	25-Apr-21	25-Apr-21	9:05	9:25	0.33	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-25	627494	5447149	25-Apr-21	25-Apr-21	9:45	10:15	0.50	1.0	2.0	50	2	0	0	0.0	0	0	0.0	2	0	4.0
	RG_ER-GN-26	627788	5447550	25-Apr-21	25-Apr-21	10:30	10:55	0.42	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-27	627788	547570	25-Apr-21	25-Apr-21	10:35	11:00	0.42	1.0	2.0	50	2	1	0	2.4	0	0	0.0	2	0	4.8
	RG_ER-GN-28	629175	5447888	25-Apr-21	25-Apr-21	10:42	11:20	0.63	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-29	627897	5447853	25-Apr-21	25-Apr-21	11:15	11:38	0.38	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-30	629175	5448088	25-Apr-21	25-Apr-21	11:30	12:00	0.50	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-31	629245	5448088	25-Apr-21	25-Apr-21	11:32	12:02	0.50	1.0	2.0	50	1	0	0	0.0	0	0	0.0	4	0	8.0
	RG_ER-GN-32	627897	5447753	25-Apr-21	25-Apr-21	11:40	12:20	0.67	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Kokanee			Largescale Sucker		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-33	629017	5447964	25-Apr-21	25-Apr-21	12:12	12:30	0.30	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-34	629017	5447954	25-Apr-21	25-Apr-21	12:13	12:35	0.37	1.0	2.0	50	2	0	0	0.0	0	0	0.0	1	0	2.7
	RG_ER-GN-35	627892	5447928	25-Apr-21	25-Apr-21	12:43	13:00	0.28	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-36	627892	5447928	25-Apr-21	25-Apr-21	12:45	13:03	0.30	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-37	627788	5447550	25-Apr-21	25-Apr-21	13:08	13:24	0.27	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-38	627788	5447450	25-Apr-21	25-Apr-21	13:10	13:30	0.33	1.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-39	626827	5446673	25-Apr-21	25-Apr-21	13:45	14:07	0.37	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-40	626827	5446658	25-Apr-21	25-Apr-21	13:50	14:14	0.40	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-41	627405	5447236	25-Apr-21	25-Apr-21	13:50	14:28	0.63	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-42	626827	5446673	25-Apr-21	25-Apr-21	14:08	14:40	0.53	1.0	2.0	50	1	1	0	1.9	0	0	0.0	0	0	0.0
	RG_ER-GN-43	626827	5446593	25-Apr-21	25-Apr-21	14:16	14:48	0.53	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-44	626827	5446558	25-Apr-21	25-Apr-21	14:33	14:55	0.37	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-45	626827	5446548	25-Apr-21	25-Apr-21	14:45	15:03	0.30	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-46	626827	5446593	25-Apr-21	25-Apr-21	14:50	15:40	0.83	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-47	627443	5447166	25-Apr-21	25-Apr-21	15:00	15:27	0.45	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-48	626827	5446593	25-Apr-21	25-Apr-21	15:10	15:40	0.50	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-49	627443	5447166	25-Apr-21	25-Apr-21	15:30	16:04	0.57	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-50	627495	5447204	25-Apr-21	25-Apr-21	15:45	16:12	0.45	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-51	627495	5447204	25-Apr-21	25-Apr-21	15:46	16:15	0.48	1.0	2.0	50	2	2	0	4.1	0	0	0.0	0	0	0.0
	RG_ER-GN-52	627443	5447166	25-Apr-21	25-Apr-21	16:07	16:30	0.38	1.5	2.5	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-53	626917	5446686	26-Apr-21	26-Apr-21	13:40	14:45	1.08	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-54	626884	5446615	26-Apr-21	26-Apr-21	13:43	14:55	1.20	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-55	626851	5446573	26-Apr-21	26-Apr-21	13:45	15:00	1.25	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-56	626873	5446598	26-Apr-21	26-Apr-21	14:57	16:12	1.25	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-57	626869	5446606	26-Apr-21	26-Apr-21	15:03	16:15	1.20	1.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-58	627841	5447496	26-Apr-21	26-Apr-21	15:23	16:00	0.62	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-59	627840	5447495	26-Apr-21	26-Apr-21	16:03	17:05	1.03	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-60	626882	5446631	27-Apr-21	27-Apr-21	14:31	15:03	0.53	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-61	626857	5446608	27-Apr-21	27-Apr-21	14:34	15:14	0.67	1.0	2.0	50	2	1	0	1.5	1	0	1.5	0	0	0.0
	RG_ER-GN-62	627161	5446759	27-Apr-21	27-Apr-21	15:05	15:30	0.42	1.0	2.0	50	2	0	0	0.0	0	0	0.0	2	0	4.8
	RG_ER-GN-63	626843	5446564	27-Apr-21	27-Apr-21	15:17	15:40	0.38	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-64	627470	5447154	27-Apr-21	27-Apr-21	15:32	15:55	0.38	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Kokanee			Largescale Sucker		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-65	626880	5446621	27-Apr-21	27-Apr-21	15:41	16:06	0.42	1.0	2.0	50	2	1	0	2.4	0	0	0.0	0	0	0.0
	RG_ER-GN-66	626825	5446546	27-Apr-21	27-Apr-21	16:00	16:25	0.42	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-67	626944	5446704	27-Apr-21	27-Apr-21	16:08	16:36	0.47	1.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-68	626948	5446731	27-Apr-21	27-Apr-21	16:33	16:48	0.25	1.0	2.0	50	3	2	0	8.0	0	0	0.0	1	0	4.0
	RG_ER-GN-69	628175	5446558	28-Apr-21	28-Apr-21	14:30	14:50	0.33	2.5	4.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-70	628175	5446558	28-Apr-21	28-Apr-21	15:00	15:20	0.33	2.5	4.5	75	2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-71	628116	5446567	28-Apr-21	28-Apr-21	15:10	15:30	0.33	2.0	4.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**34.8**					**9**	**0**	**0.3**	**3**	**0**	**0.09**	**14**	**0**	**0.4**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Mountain Whitefish			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Western Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-01	2	0	8.0	2	0	8.0	16	16	64.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-02	0	0	0.0	1	0	1.8	1	1	1.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-03	0	0	0.0	2	0	6.3	0	0	0.0	0	0	0.0	4	4	12.6	0	0	0.0	0	0	0.0
	RG_ER-GN-04	1	0	3.8	0	0	0.0	1	1	3.8	0	0	0.0	3	3	11.3	0	0	0.0	0	0	0.0
	RG_ER-GN-05	0	0	0.0	0	0	0.0	4	4	16.0	0	0	0.0	2	2	8.0	0	0	0.0	0	0	0.0
	RG_ER-GN-06	0	0	0.0	3	0	1.4	5	5	2.3	0	0	0.0	13	13	6.1	0	0	0.0	0	0	0.0
	RG_ER-GN-07	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-08	0	0	0.0	2	0	7.5	3	3	11.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-09	0	0	0.0	1	0	3.5	1	0	3.5	0	0	0.0	0	0	0.0	1	0	3.5	1	1	3.5
	RG_ER-GN-10	3	0	7.8	0	0	0.0	2	0	5.2	0	0	0.0	1	1	2.6	0	0	0.0	0	0	0.0
	RG_ER-GN-11	0	0	0.0	2	0	7.5	1	1	3.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-12	0	0	0.0	0	0	0.0	1	0	3.2	0	0	0.0	4	4	12.6	0	0	0.0	0	0	0.0
	RG_ER-GN-13	0	0	0.0	0	0	0.0	2	0	7.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-14	1	0	2.7	0	0	0.0	0	0	0.0	0	0	0.0	25	25	68.2	0	0	0.0	0	0	0.0
	RG_ER-GN-15	0	0	0.0	10	1	33.3	1	1	3.3	0	0	0.0	0	0	0.0	3	0	10.0	0	0	0.0
	RG_ER-GN-16	2	0	5.2	1	0	2.6	0	0	0.0	0	0	0.0	35	35	91.3	0	0	0.0	0	0	0.0
	RG_ER-GN-17	1	1	3.3	3	0	10.0	6	5	20.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-18	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_ER-GN-19	0	0	0.0	0	0	0.0	13	13	31.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-20	0	0	0.0	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-21	0	0	0.0	0	0	0.0	3	3	12.0	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0
	RG_ER-GN-22	0	0	0.0	0	0	0.0	1	1	2.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-23	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-24	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-25	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-26	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-27	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-28	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-29	0	0	0.0	0	0	0.0	1	0	2.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-30	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-31	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-32	0	0	0.0	1	0	1.5	3	0	4.5	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Mountain Whitefish			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Western Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-33	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-34	1	0	2.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-35	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-36	0	0	0.0	1	0	3.3	1	1	3.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-37	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-38	1	0	3.0	2	0	6.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-39	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-40	1	0	2.5	0	0	0.0	2	2	5.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-41	0	0	0.0	0	0	0.0	1	0	1.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-42	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-43	0	0	0.0	0	0	0.0	2	1	3.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-44	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-45	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-46	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-47	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	2	4.4	0	0	0.0	0	0	0.0
	RG_ER-GN-48	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-49	0	0	0.0	0	0	0.0	3	0	5.3	0	0	0.0	2	2	3.5	0	0	0.0	0	0	0.0
	RG_ER-GN-50	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-51	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-52	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	2.6	0	0	0.0	0	0	0.0
	RG_ER-GN-53	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	0.9	0	0	0.0	0	0	0.0
	RG_ER-GN-54	0	0	0.0	1	0	0.8	3	1	2.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-55	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-56	0	0	0.0	0	0	0.0	2	2	1.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-57	0	0	0.0	2	0	1.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-58	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	1	3.2	0	0	0.0	0	0	0.0
	RG_ER-GN-59	0	0	0.0	0	0	0.0	1	0	1.0	0	0	0.0	8	6	7.7	0	0	0.0	0	0	0.0
	RG_ER-GN-60	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-61	0	0	0.0	0	0	0.0	4	2	6.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-62	0	0	0.0	1	0	2.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-63	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-64	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.2: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Mountain Whitefish			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Western Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-GN-65	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-66	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-67	0	0	0.0	0	0	0.0	3	2	6.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-68	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-69	0	0	0.0	1	0	3.0	2	1	6.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-70	0	0	0.0	0	0	0.0	3	2	9.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-71	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
		13	**1**	**0.4**	**36**	**1**	**1.0**	**94**	**68**	**2.7**	**1**	**0**	**0.03**	**104**	**101**	**3.0**	**6**	**0**	**0.17**	**1**	**1**	**0.03**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.3: **Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021**

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-01	629764	5437064	21-Apr-21	21-Apr-21	14:23	14:38	0.25	2.5	2.5	75	2	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0
	RG_GC-GN-02	629770	5437018	21-Apr-21	21-Apr-21	14:29	14:45	0.27	3.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-03	629764	5437064	22-Apr-21	22-Apr-21	13:12	13:27	0.25	2.5	2.5	75	2	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0
	RG_GC-GN-04	629770	5437018	22-Apr-21	22-Apr-21	13:20	13:40	0.33	3.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-05	629764	5437064	22-Apr-21	22-Apr-21	13:37	13:52	0.25	2.5	2.5	75	2	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0
	RG_GC-GN-06	629770	5437018	22-Apr-21	22-Apr-21	13:50	14:05	0.25	3.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-07	629764	5437064	22-Apr-21	22-Apr-21	14:00	14:15	0.25	2.5	2.5	75	2	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-08	629770	5437018	22-Apr-21	22-Apr-21	14:15	14:45	0.50	3.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-09	629764	5437064	22-Apr-21	22-Apr-21	14:25	14:50	0.42	2.5	2.5	75	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-10	630104	5436839	22-Apr-21	22-Apr-21	12:22	12:46	0.40	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.5
	RG_GC-GN-11	630185	5436897	22-Apr-21	22-Apr-21	12:35	12:54	0.32	1.0	5.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	3.2
	RG_GC-GN-12	630028	5436881	22-Apr-21	22-Apr-21	12:53	13:12	0.32	1.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-13	629872	5436826	22-Apr-21	22-Apr-21	13:05	13:20	0.25	1.0	2.0	50	2	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0
	RG_GC-GN-14	629661	5436746	22-Apr-21	22-Apr-21	13:20	13:54	0.57	0.5	1.0	75	1	0	0	0.0	1	0	1.8	1	0	1.8	0	0	0.0
	RG_GC-GN-15	629718	5436483	22-Apr-21	22-Apr-21	13:50	14:10	0.33	1.0	1.5	50	2	0	0	0.0	1	0	3.0	0	0	0.0	0	0	0.0
	RG_GC-GN-16	629720	5436879	22-Apr-21	22-Apr-21	13:57	14:20	0.38	0.5	1.0	75	1	0	0	0.0	0	0	0.0	2	0	5.2	0	0	0.0
	RG_GC-GN-17	629718	5436483	22-Apr-21	22-Apr-21	14:17	14:40	0.33	1.0	1.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-18	630084	5437441	22-Apr-21	22-Apr-21	14:27	14:58	0.52	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-19	629718	5436483	22-Apr-21	22-Apr-21	14:50	15:10	0.33	1.0	1.5	50	2	0	0	0.0	0	0	0.0	2	0	6.0	0	0	0.0
	RG_GC-GN-20	624607	5437378	22-Apr-21	22-Apr-21	15:05	15:32	0.45	0.5	1.0	75	1	0	0	0.0	0	0	0.0	5	0	11.1	0	0	0.0
	RG_GC-GN-21	629639	5436975	22-Apr-21	22-Apr-21	15:18	15:50	0.53	1.0	2.0	50	2	0	0	0.0	0	0	0.0	2	0	3.8	0	0	0.0
	RG_GC-GN-22	629585	5437325	22-Apr-21	22-Apr-21	15:50	16:15	0.42	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-23	629599	5437251	22-Apr-21	22-Apr-21	16:20	16:40	0.33	0.5	1.0	75	1	0	0	0.0	0	0	0.0	5	0	15.0	0	0	0.0
	RG_GC-GN-24	629609	5437825	23-Apr-21	23-Apr-21	9:25	10:03	0.63	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-25	629690	5436918	23-Apr-21	23-Apr-21	9:28	9:49	0.35	1.5	3.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-26	629595	5437061	23-Apr-21	23-Apr-21	9:33	10:22	0.82	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-27	629636	5436932	23-Apr-21	23-Apr-21	9:52	10:05	0.22	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-28	629603	5437069	23-Apr-21	23-Apr-21	10:10	10:52	0.70	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-29	629703	5436907	23-Apr-21	23-Apr-21	10:18	10:42	0.40	1.0	2.5	50	2	0	0	0.0	0	0	0.0	1	0	2.5	0	0	0.0
	RG_GC-GN-30	625681	5437143	23-Apr-21	23-Apr-21	10:28	10:56	0.47	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-31	630621	5437388	23-Apr-21	23-Apr-21	11:20	11:40	0.33	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-32	631455	543780	23-Apr-21	23-Apr-21	11:27	12:09	0.70	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-33	631340	5438154	23-Apr-21	23-Apr-21	11:32	11:52	0.33	1.5	3.0	50	2	0	0	0.0	1	0	3.0	0	0	0.0	0	0	0.0
	RG_GC-GN-34	631298	5438453	23-Apr-21	23-Apr-21	11:48	12:25	0.62	0.5	2.0	75	1	0	0	0.0	1	0	1.6	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-35	631254	5438412	23-Apr-21	23-Apr-21	12:04	12:30	0.43	1.0	6.0	50	2	0	0	0.0	0	0	0.0	1	0	2.3	0	0	0.0
	RG_GC-GN-36	630114	5437459	23-Apr-21	23-Apr-21	12:39	13:10	0.52	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-37	629584	5437337	23-Apr-21	23-Apr-21	12:45	13:30	0.75	0.5	1.5	75	1	0	0	0.0	0	0	0.0	6	0	8.0	0	0	0.0
	RG_GC-GN-38	629584	5437337	23-Apr-21	23-Apr-21	13:35	13:50	0.75	0.5	1.5	75	1	0	0	0.0	0	0	0.0	2	0	2.7	0	0	0.0
	RG_GC-GN-39	629870	5436921	23-Apr-21	23-Apr-21	12:50	13:18	0.47	1.0	3.0	50	2	0	0	0.0	0	0	0.0	1	0	2.1	0	0	0.0
	RG_GC-GN-40	629867	5437386	23-Apr-21	23-Apr-21	13:14	13:52	0.63	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-41	629870	5436921	23-Apr-21	23-Apr-21	13:27	13:42	0.47	1.0	3.0	50	2	0	0	0.0	0	0	0.0	1	0	2.1	1	0	2.1
	RG_GC-GN-42	629845	5437367	23-Apr-21	23-Apr-21	13:50	14:20	0.50	0.5	2.5	50	2	0	0	0.0	2	0	4.0	0	0	0.0	6	0	12.0
	RG_GC-GN-43	629608	5437321	23-Apr-21	23-Apr-21	13:50	14:45	0.92	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-44	629845	5437367	23-Apr-21	23-Apr-21	14:27	14:50	0.50	0.5	2.5	50	2	1	0	2.0	0	0	0.0	0	0	0.0	2	0	4.0
	RG_GC-GN-45	629584	5437337	23-Apr-21	23-Apr-21	14:40	15:17	0.62	0.5	2.0	75	1	0	0	0.0	0	0	0.0	6	0	9.7	0	0	0.0
	RG_GC-GN-46	629608	5437321	23-Apr-21	23-Apr-21	14:47	15:45	0.92	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-47	629845	5437367	23-Apr-21	23-Apr-21	15:04	15:32	0.50	0.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-48	629584	5437337	23-Apr-21	23-Apr-21	15:30	16:21	0.62	0.5	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.6	0	0	0.0
	RG_GC-GN-49	629607	5437356	23-Apr-21	23-Apr-21	15:50	16:25	0.58	0.5	1.5	75	1	0	0	0.0	0	0	0.0	2	0	3.4	0	0	0.0
	RG_GC-GN-50	629579	5437380	24-Apr-21	24-Apr-21	9:58	10:46	0.80	1.0	2.0	75	1	0	0	0.0	0	0	0.0	4	0	5.0	1	0	1.3
	RG_GC-GN-51	630248	5436921	23-Apr-21	23-Apr-21	13:43	14:00	0.28	2.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-52	630608	5437110	23-Apr-21	23-Apr-21	14:15	14:35	0.33	1.0	4.0	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-53	630429	5437370	23-Apr-21	23-Apr-21	14:52	15:15	0.38	1.0	1.5	75	1	0	0	0.0	0	0	0.0	1	0	2.6	0	0	0.0
	RG_GC-GN-54	630429	5437370	23-Apr-21	23-Apr-21	15:27	15:45	0.30	1.5	2.0	75	1	0	0	0.0	0	0	0.0	3	0	10.0	0	0	0.0
	RG_GC-GN-55	630429	5437370	23-Apr-21	23-Apr-21	15:50	16:05	0.25	2.0	3.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-56	629580	5434335	24-Apr-21	24-Apr-21	10:50	11:37	0.78	0.5	1.5	75	1	0	0	0.0	0	0	0.0	8	0	10.2	0	0	0.0
	RG_GC-GN-57	629734	5437335	24-Apr-21	24-Apr-21	11:27	11:52	0.42	0.5	2.5	50	2	0	0	0.0	1	0	2.4	0	0	0.0	2	0	4.8
	RG_GC-GN-58	629593	5437377	24-Apr-21	24-Apr-21	11:34	12:15	0.68	0.5	2.0	75	1	0	0	0.0	0	0	0.0	2	0	2.9	0	0	0.0
	RG_GC-GN-59	629734	5437335	24-Apr-21	24-Apr-21	12:10	12:21	0.42	0.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.4
	RG_GC-GN-60	629974	5439345	24-Apr-21	24-Apr-21	11:45	12:27	0.70	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.4	0	0	0.0
	RG_GC-GN-61	629692	5436928	24-Apr-21	24-Apr-21	12:53	13:36	0.72	2.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-62	629618	5439363	24-Apr-21	24-Apr-21	12:58	13:45	0.78	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-63	629699	5436911	24-Apr-21	24-Apr-21	13:03	13:30	0.45	2.0	3.0	50	2	0	0	0.0	1	0	2.2	2	0	4.4	0	0	0.0
	RG_GC-GN-64	629699	5436911	24-Apr-21	24-Apr-21	13:36	14:00	0.40	2.0	3.0	50	2	0	0	0.0	0	0	0.0	4	0	10.0	0	0	0.0
	RG_GC-GN-65	629692	5436928	24-Apr-21	24-Apr-21	13:40	14:10	0.50	2.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-66	629653	5436731	24-Apr-21	24-Apr-21	13:50	14:32	0.70	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-67	629699	5436911	24-Apr-21	24-Apr-21	13:57	14:20	0.38	1.0	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-68	629684	5436705	24-Apr-21	24-Apr-21	14:15	14:38	0.38	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-69	631080	5436008	25-Apr-21	25-Apr-21	9:26	10:09	0.72	0.5	0.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-70	630858	5436224	25-Apr-21	25-Apr-21	9:30	10:14	0.73	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-71	630863	5436486	25-Apr-21	25-Apr-21	9:36	9:54	0.30	0.8	3.0	50	1	0	0	0.0	1	0	3.3	0	0	0.0	0	0	0.0
	RG_GC-GN-72	627835	5447493	28-Apr-21	28-Apr-21	13:50	14:10	0.33	1.5	2.5	75	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-73	631123	5435926	25-Apr-21	25-Apr-21	10:03	10:32	0.48	0.5	3.0	50	2	0	0	0.0	0	0	0.0	1	0	2.1	1	0	2.1
	RG_GC-GN-74	628116	5446567	28-Apr-21	28-Apr-21	14:20	14:40	0.33	2.0	4.0	75	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-75	630858	5436224	25-Apr-21	25-Apr-21	10:17	10:50	0.55	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-76	630909	5436185	25-Apr-21	25-Apr-21	10:21	10:56	0.58	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-77	632378	5434614	25-Apr-21	25-Apr-21	11:03	11:40	0.62	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-78	632642	5434458	25-Apr-21	25-Apr-21	11:08	11:46	0.63	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-79	632559	5434537	25-Apr-21	25-Apr-21	11:11	11:34	0.38	0.5	3.5	50	2	0	0	0.0	0	0	0.0	1	0	2.6	0	0	0.0
	RG_GC-GN-80	632559	5434537	25-Apr-21	25-Apr-21	11:37	12:00	0.38	0.5	3.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-81	632677	5435701	25-Apr-21	25-Apr-21	12:07	12:53	0.77	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-82	632788	5435721	25-Apr-21	25-Apr-21	12:11	12:46	0.58	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-83	632779	5435534	25-Apr-21	25-Apr-21	12:16	12:39	0.38	0.5	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	2	0	5.2
	RG_GC-GN-84	632767	5435627	25-Apr-21	25-Apr-21	12:43	13:08	0.42	0.5	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-85	632725	5435667	25-Apr-21	25-Apr-21	12:50	13:12	0.37	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-86	632770	5435722	25-Apr-21	25-Apr-21	12:56	13:17	0.35	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-87	631775	5436800	25-Apr-21	25-Apr-21	13:26	13:58	0.53	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-88	631785	5436744	25-Apr-21	25-Apr-21	13:29	14:01	0.53	0.0	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-89	631736	5436798	25-Apr-21	25-Apr-21	13:33	13:53	0.33	0.5	4.0	50	2	0	0	0.0	1	0	3.0	1	0	3.0	0	0	0.0
	RG_GC-GN-90	629612	5437385	25-Apr-21	25-Apr-21	14:13	14:55	0.70	0.0	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-91	629705	5437362	25-Apr-21	25-Apr-21	14:18	15:01	0.72	0.0	0.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-92	629582	5437351	25-Apr-21	25-Apr-21	14:57	16:13	1.27	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-93	629573	5437327	25-Apr-21	25-Apr-21	15:07	16:18	1.18	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-94	629737	5437339	25-Apr-21	25-Apr-21	15:10	15:40	0.50	0.5	2.0	50	2	2	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-95	629737	5437339	25-Apr-21	25-Apr-21	15:47	16:10	0.38	0.5	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-96	629565	5437369	26-Apr-21	26-Apr-21	9:35	10:00	0.42	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-97	629565	5437369	26-Apr-21	26-Apr-21	10:15	11:01	0.77	0.5	1.0	75	1	0	0	0.0	0	0	0.0	5	0	6.5	0	0	0.0
	RG_GC-GN-98	629615	5437386	26-Apr-21	26-Apr-21	9:56	10:31	0.58	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-99	629627	5437378	26-Apr-21	26-Apr-21	10:19	10:40	0.35	1.0	3.0	50	2	0	0	0.0	4	0	11.4	0	0	0.0	0	0	0.0
	RG_GC-GN-100	629615	5437386	26-Apr-21	26-Apr-21	10:37	11:14	0.62	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-101	630095	5437415	26-Apr-21	26-Apr-21	10:46	11:08	0.37	0.5	3.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-102	630093	5437457	26-Apr-21	26-Apr-21	11:05	11:37	0.53	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-103	629615	5437386	26-Apr-21	26-Apr-21	11:19	11:41	0.37	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-104	629976	5437402	26-Apr-21	26-Apr-21	11:11	11:46	0.58	0.8	3.0	50	2	0	0	0.0	2	0	3.4	0	0	0.0	3	0	5.1
	RG_GC-GN-105	630214	5437955	26-Apr-21	26-Apr-21	11:41	12:21	0.67	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-106	630262	5436900	26-Apr-21	26-Apr-21	11:52	12:24	0.53	1.0	4.0	50	2	0	0	0.0	1	0	1.9	0	0	0.0	3	0	5.6
	RG_GC-GN-107	629583	5437376	26-Apr-21	26-Apr-21	12:02	12:42	0.67	0.5	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.5	1	0	1.5
	RG_GC-GN-108	630262	5436900	26-Apr-21	26-Apr-21	12:29	13:03	0.57	1.0	4.0	50	2	1	0	1.8	0	0	0.0	4	0	7.1	0	0	0.0
	RG_GC-GN-109	630200	5436869	26-Apr-21	26-Apr-21	12:35	13:00	0.42	1.0	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-110	630304	5436865	26-Apr-21	26-Apr-21	12:40	13:08	0.47	0.5	2.0	75	1	0	0	0.0	0	0	0.0	1	0	2.1	0	0	0.0
	RG_GC-GN-111	629583	5437376	26-Apr-21	26-Apr-21	12:47	13:16	0.48	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-112	630200	5436869	26-Apr-21	26-Apr-21	13:06	13:30	0.40	1.0	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.5
	RG_GC-GN-113	630304	5436865	26-Apr-21	26-Apr-21	13:12	13:44	0.53	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-114	629583	5437334	26-Apr-21	26-Apr-21	13:20	13:56	0.60	0.5	1.0	75	1	0	0	0.0	0	0	0.0	4	0	6.7	0	0	0.0
	RG_GC-GN-115	630176	5436375	26-Apr-21	26-Apr-21	13:42	14:04	0.37	1.0	4.0	50	2	1	0	2.7	1	0	2.7	0	0	0.0	0	0	0.0
	RG_GC-GN-116	630130	5436855	26-Apr-21	26-Apr-21	13:50	14:22	0.53	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-117	629583	5437334	26-Apr-21	26-Apr-21	13:59	14:30	0.52	0.5	1.0	75	1	0	0	0.0	0	0	0.0	3	0	5.8	0	0	0.0
	RG_GC-GN-118	629860	5436790	26-Apr-21	26-Apr-21	14:18	14:48	0.50	1.0	4.0	50	2	0	0	0.0	1	0	2.0	0	0	0.0	1	0	2.0
	RG_GC-GN-119	630130	5436855	26-Apr-21	26-Apr-21	14:26	15:04	0.63	0.5	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-120	629583	5437334	26-Apr-21	26-Apr-21	14:34	15:10	0.60	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.7
	RG_GC-GN-121	629729	5436928	26-Apr-21	26-Apr-21	15:00	15:21	0.35	1.0	3.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.9
	RG_GC-GN-122	630130	5436855	26-Apr-21	26-Apr-21	15:08	15:36	0.47	0.5	2.0	75	1	0	0	0.0	0	0	0.0	2	0	4.3	0	0	0.0
	RG_GC-GN-123	629633	5437324	26-Apr-21	26-Apr-21	15:18	15:58	0.67	0.5	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.5	0	0	0.0
	RG_GC-GN-124	629729	5436928	26-Apr-21	26-Apr-21	15:25	15:55	0.50	1.0	3.0	50	2	0	0	0.0	0	0	0.0	1	0	2.0	0	0	0.0
	RG_GC-GN-125	630130	5436855	26-Apr-21	26-Apr-21	15:46	16:10	0.40	0.5	2.0	75	1	0	0	0.0	0	0	0.0	1	0	2.5	0	0	0.0
	RG_GC-GN-126	629633	5437324	26-Apr-21	26-Apr-21	15:53	16:15	0.37	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-127	629606	5437350	27-Apr-21	27-Apr-21	9:13	9:52	0.65	1.0	1.5	75	1	0	0	0.0	1	0	1.5	1	0	1.5	0	0	0.0
	RG_GC-GN-128	629591	5437312	27-Apr-21	27-Apr-21	9:15	9:58	0.72	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-129	629846	5437366	27-Apr-21	27-Apr-21	9:20	9:41	0.35	2.0	4.0	50	2	2	0	5.7	1	0	2.9	0	0	0.0	7	0	20.0
	RG_GC-GN-130	629846	5437366	27-Apr-21	27-Apr-21	9:50	10:14	0.40	2.0	4.0	50	2	0	0	0.0	4	0	10.0	0	0	0.0	4	0	10.0
	RG_GC-GN-131	629606	5437350	27-Apr-21	27-Apr-21	9:57	10:30	0.55	1.0	1.5	75	1	0	0	0.0	0	0	0.0	2	0	3.6	0	0	0.0
	RG_GC-GN-132	629591	5437312	27-Apr-21	27-Apr-21	10:01	10:35	0.57	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-133	630565	5437243	27-Apr-21	27-Apr-21	10:24	10:57	0.55	1.0	4.0	50	2	0	0	0.0	4	0	7.3	0	0	0.0	0	0	0.0
	RG_GC-GN-134	629644	5437371	27-Apr-21	27-Apr-21	10:33	11:05	0.53	0.5	1.5	75	1	0	0	0.0	0	0	0.0	2	0	3.8	0	0	0.0
	RG_GC-GN-135	629833	5437645	27-Apr-21	27-Apr-21	10:40	11:12	0.53	2.0	4.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-136	630565	5437243	27-Apr-21	27-Apr-21	11:02	11:28	0.43	1.0	4.0	50	2	2	0	4.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-137	629644	5437371	27-Apr-21	27-Apr-21	11:10	11:47	0.62	0.5	1.5	75	1	1	0	1.6	0	0	0.0	1	0	1.6	0	0	0.0
	RG_GC-GN-138	630218	5436853	27-Apr-21	27-Apr-21	11:15	11:59	0.73	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-139	630565	5437243	27-Apr-21	27-Apr-21	11:35	12:07	0.53	1.0	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.9
	RG_GC-GN-140	629646	5437373	27-Apr-21	27-Apr-21	11:50	12:38	0.80	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-141	630218	5436853	27-Apr-21	27-Apr-21	12:02	12:30	0.47	0.5	1.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-142	630565	5437243	27-Apr-21	27-Apr-21	12:10	12:45	0.58	1.0	4.0	50	2	1	0	1.7	0	0	0.0	1	0	1.7	0	0	0.0
	RG_GC-GN-143	630218	5436853	27-Apr-21	27-Apr-21	12:32	13:05	0.55	0.5	1.0	75	1	0	0	0.0	0	0	0.0	2	0	3.6	0	0	0.0
	RG_GC-GN-144	629646	5437373	27-Apr-21	27-Apr-21	12:40	13:20	0.67	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-145	630566	5437217	27-Apr-21	27-Apr-21	12:50	13:10	0.33	1.0	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-146	629606	5437342	27-Apr-21	27-Apr-21	13:09	13:47	0.63	1.0	2.5	75	1	0	0	0.0	0	0	0.0	1	0	1.6	0	0	0.0
	RG_GC-GN-147	629657	5437362	27-Apr-21	27-Apr-21	13:17	13:53	0.60	1.0	2.5	75	1	0	0	0.0	0	0	0.0	2	0	3.3	0	0	0.0
	RG_GC-GN-148	630438	5437316	27-Apr-21	27-Apr-21	13:33	14:01	0.47	1.0	5.0	50	2	0	0	0.0	1	0	2.1	0	0	0.0	1	0	2.1
	RG_GC-GN-149	629606	5437342	27-Apr-21	27-Apr-21	13:50	14:30	0.67	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-150	629644	5437340	27-Apr-21	27-Apr-21	13:57	14:52	0.92	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-151	629711	5436953	27-Apr-21	27-Apr-21	14:09	14:45	0.60	2.0	4.0	50	2	0	0	0.0	2	0	3.3	2	0	3.3	0	0	0.0
	RG_GC-GN-152	629700	5437366	27-Apr-21	27-Apr-21	14:33	15:08	0.58	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-153	629721	5436963	27-Apr-21	27-Apr-21	14:50	15:22	0.53	2.0	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-154	629644	5437340	27-Apr-21	27-Apr-21	14:56	15:29	0.55	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-155	629721	5436963	27-Apr-21	27-Apr-21	15:30	15:48	0.30	2.0	4.0	50	2	0	0	0.0	0	0	0.0	2	0	6.7	2	0	6.7
	RG_GC-GN-156	629700	5437366	27-Apr-21	27-Apr-21	15:10	15:38	0.47	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-157	629649	5437369	27-Apr-21	27-Apr-21	15:34	15:55	0.35	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-158	629700	5437366	27-Apr-21	27-Apr-21	15:42	16:00	0.30	1.0	2.5	75	1	0	0	0.0	0	0	0.0	1	0	3.3	0	0	0.0
	RG_GC-GN-159	630573	5437240	28-Apr-21	28-Apr-21	9:32	9:55	0.38	1.5	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.6
	RG_GC-GN-160	629640	5437279	28-Apr-21	28-Apr-21	9:37	10:12	0.58	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-161	629589	5437361	28-Apr-21	28-Apr-21	9:40	10:19	0.65	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.5	0	0	0.0
	RG_GC-GN-162	630573	5437240	28-Apr-21	28-Apr-21	10:00	10:23	0.38	1.5	4.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-163	629640	5437279	28-Apr-21	28-Apr-21	10:15	10:47	0.53	1.0	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.9	0	0	0.0
	RG_GC-GN-164	629589	5437361	28-Apr-21	28-Apr-21	10:22	10:53	0.52	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.9	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-165	630573	5437240	28-Apr-21	28-Apr-21	10:32	10:59	0.45	1.0	4.0	50	2	1	0	2.2	0	0	0.0	0	0	0.0	2	0	4.4
	RG_GC-GN-166	629597	5437336	28-Apr-21	28-Apr-21	10:48	11:45	0.95	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-167	629595	5437279	28-Apr-21	28-Apr-21	10:56	11:50	0.90	1.0	2.0	75	1	0	0	0.0	0	0	0.0	2	0	2.2	0	0	0.0
	RG_GC-GN-168	629703	5436932	28-Apr-21	28-Apr-21	11:11	11:37	0.43	2.0	3.0	50	2	0	0	0.0	0	0	0.0	1	1	2.3	1	0	2.3
	RG_GC-GN-169	629703	5436932	28-Apr-21	28-Apr-21	11:41	12:26	0.75	2.0	3.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-170	629597	5437336	28-Apr-21	28-Apr-21	11:50	12:40	0.83	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-171	629595	5437279	28-Apr-21	28-Apr-21	12:00	12:45	0.75	1.0	2.0	75	1	0	0	0.0	0	0	0.0	3	0	4.0	0	0	0.0
	RG_GC-GN-172	629733	5436949	28-Apr-21	28-Apr-21	12:34	12:55	0.35	1.0	3.0	75	1	1	0	2.9	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-173	629666	5437361	28-Apr-21	28-Apr-21	12:43	13:40	0.95	0.5	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-174	629600	5437347	28-Apr-21	28-Apr-21	12:50	13:13	0.38	1.0	2.0	50	2	1	1	2.6	0	0	0.0	0	0	0.0	1	1	2.6
	RG_GC-GN-175	629642	5437369	28-Apr-21	28-Apr-21	13:35	14:20	0.75	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-176	629666	5437361	28-Apr-21	28-Apr-21	13:44	14:25	0.68	0.5	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-177	629675	5437283	28-Apr-21	28-Apr-21	13:57	14:34	0.62	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-178	629642	5437369	28-Apr-21	28-Apr-21	14:24	15:11	0.78	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-179	629615	5437321	28-Apr-21	28-Apr-21	14:30	15:24	0.90	1.0	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-180	629675	5437283	28-Apr-21	28-Apr-21	14:37	15:16	0.65	1.0	1.5	75	1	0	0	0.0	0	0	0.0	1	0	1.5	0	0	0.0
	RG_GC-GN-181	629642	5437369	28-Apr-21	28-Apr-21	15:14	15:47	0.55	1.0	1.5	75	1	0	0	0.0	1	0	1.8	1	0	1.8	0	0	0.0
	RG_GC-GN-182	629675	5437283	28-Apr-21	28-Apr-21	15:20	15:58	0.63	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-183	629615	5437321	28-Apr-21	28-Apr-21	15:27	15:52	0.42	1.0	1.5	75	1	0	0	0.0	0	0	0.0	1	0	2.4	0	0	0.0
	RG_GC-GN-184	630572	5437245	29-Apr-21	29-Apr-21	9:21	9:46	0.42	1.0	3.0	50	2	0	0	0.0	2	0	4.8	0	0	0.0	1	0	2.4
	RG_GC-GN-185	629645	5437367	29-Apr-21	29-Apr-21	9:26	10:12	0.77	1.0	1.5	75	1	0	0	0.0	1	0	1.3	1	0	1.3	0	0	0.0
	RG_GC-GN-186	629604	5437369	29-Apr-21	29-Apr-21	9:30	10:18	0.80	1.0	1.5	75	1	0	0	0.0	0	0	0.0	2	0	2.5	0	0	0.0
	RG_GC-GN-187	629578	5437343	29-Apr-21	29-Apr-21	9:32	10:25	0.88	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-188	629703	5436936	29-Apr-21	29-Apr-21	10:02	10:21	0.32	2.0	3.0	50	2	0	0	0.0	3	0	9.5	1	0	3.2	0	0	0.0
	RG_GC-GN-189	629645	5437367	29-Apr-21	29-Apr-21	10:16	10:30	0.23	1.0	1.5	75	1	1	0	4.3	0	0	0.0	1	0	4.3	1	0	4.3
	RG_GC-GN-190	629604	5437369	29-Apr-21	29-Apr-21	10:21	11:06	0.75	1.0	1.5	75	1	1	0	1.3	0	0	0.0	0	0	0.0	1	0	1.3
	RG_GC-GN-191	629578	5437343	29-Apr-21	29-Apr-21	10:28	11:15	0.78	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.3	0	0	0.0
	RG_GC-GN-192	629662	5437361	29-Apr-21	29-Apr-21	10:55	11:44	0.82	1.0	2.0	75	1	0	0	0.0	0	0	0.0	2	0	2.4	0	0	0.0
	RG_GC-GN-193	629637	5437216	29-Apr-21	29-Apr-21	11:11	11:52	0.68	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-194	630619	5437383	28-Apr-21	28-Apr-21	10:00	11:18	1.30	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-195	630614	5437385	28-Apr-21	28-Apr-21	10:05	11:21	1.27	1.5	2.5	50	1	0	0	0.0	0	0	0.0	2	0	1.6	0	0	0.0
	RG_GC-GN-196	630624	5437423	28-Apr-21	28-Apr-21	10:10	11:27	1.28	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-197	630605	5437460	28-Apr-21	28-Apr-21	10:15	11:11	0.93	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.1

Table F.3: **Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021**

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-198	630639	5437371	28-Apr-21	28-Apr-21	11:15	11:42	0.45	1.0	2.0	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-199	630578	5437244	28-Apr-21	28-Apr-21	11:30	11:57	0.45	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-200	630521	5437282	28-Apr-21	28-Apr-21	11:34	12:00	0.43	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-201	630417	5437331	28-Apr-21	28-Apr-21	11:36	12:03	0.45	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-202	630613	5437307	28-Apr-21	28-Apr-21	11:44	12:31	0.78	1.0	2.0	50	2	0	0	0.0	1	0	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-203	629702	5436720	28-Apr-21	28-Apr-21	12:21	12:53	0.53	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-204	629869	5436807	28-Apr-21	28-Apr-21	12:23	12:57	0.57	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.8	1	0	1.8
	RG_GC-GN-205	629966	5436833	28-Apr-21	28-Apr-21	12:25	13:08	0.72	1.0	2.0	50	1	0	0	0.0	0	0	0.0	1	0	1.4	1	0	1.4
	RG_GC-GN-206	630233	5436873	29-Apr-21	29-Apr-21	12:35	13:15	0.67	1.5	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-207	629905	5436822	29-Apr-21	29-Apr-21	13:00	13:34	0.57	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.8
	RG_GC-GN-208	629931	5436844	29-Apr-21	29-Apr-21	13:02	13:42	0.67	1.5	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.5
	RG_GC-GN-209	629973	5436833	29-Apr-21	29-Apr-21	13:10	13:50	0.67	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-210	630225	5436889	29-Apr-21	29-Apr-21	13:20	13:58	0.63	1.0	2.0	50	2	1	0	1.6	1	0	1.6	0	0	0.0	0	0	0.0
	RG_GC-GN-211	629898	5436820	29-Apr-21	29-Apr-21	13:38	14:04	0.43	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-212	630067	5436836	29-Apr-21	29-Apr-21	13:45	14:15	0.50	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-213	629852	5436772	29-Apr-21	29-Apr-21	13:52	14:50	0.97	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-214	629882	5436792	28-Apr-21	28-Apr-21	14:00	14:53	0.88	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-215	629885	5436804	28-Apr-21	28-Apr-21	14:16	14:55	0.65	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.5	0	0	0.0
	RG_GC-GN-216	629946	5436833	29-Apr-21	29-Apr-21	11:25	11:55	0.50	1.0	2.0	50	1	0	0	0.0	0	0	0.0	1	0	2.0	0	0	0.0
	RG_GC-GN-217	630016	5436826	29-Apr-21	29-Apr-21	11:28	12:10	0.70	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-218	630042	5436840	29-Apr-21	29-Apr-21	12:17	12:58	0.68	1.5	2.5	75	1	0	0	0.0	1	0	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-219	629922	5436827	29-Apr-21	29-Apr-21	12:19	13:03	0.73	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-220	630853	5436833	29-Apr-21	29-Apr-21	13:00	13:55	0.92	1.5	2.5	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-221	629957	5436830	29-Apr-21	29-Apr-21	13:45	14:47	1.03	1.0	2.0	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-222	629780	5436712	29-Apr-21	29-Apr-21	14:00	14:51	0.85	1.0	2.0	50	1	0	0	0.0	0	0	0.0	2	0	2.4	0	0	0.0
	RG_GC-GN-223	630735	5436864	29-Apr-21	29-Apr-21	9:50	10:10	0.33	1.5	4.5	50	2	0	0	0.0	0	0	0.0	1	0	3.0	1	0	3.0
	RG_GC-GN-224	630184	5436873	29-Apr-21	29-Apr-21	10:00	10:20	0.33	1.0	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-225	629825	5437060	29-Apr-21	29-Apr-21	10:50	11:10	0.33	2.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-226	629825	5437060	29-Apr-21	29-Apr-21	10:55	11:10	0.25	2.0	2.5	75	1	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0
	RG_GC-GN-227	629825	5437060	29-Apr-21	29-Apr-21	11:25	11:40	0.25	2.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-228	629825	5437060	29-Apr-21	29-Apr-21	11:30	11:45	0.25	2.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-229	630105	5437425	29-Apr-21	29-Apr-21	11:50	12:10	0.33	1.5	4.0	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-230	630105	5437425	29-Apr-21	29-Apr-21	11:55	12:15	0.33	1.5	4.0	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-231	630735	5436864	29-Apr-21	29-Apr-21	12:20	12:40	0.33	1.5	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-232	630735	5436864	29-Apr-21	29-Apr-21	12:25	12:45	0.33	1.5	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-233	630235	5436864	29-Apr-21	29-Apr-21	12:55	13:10	0.25	1.0	2.5	75	1	0	0	0.0	1	0	4.0	2	0	8.0	0	0	0.0
	RG_GC-GN-234	630235	5436864	29-Apr-21	29-Apr-21	13:00	13:15	0.25	1.0	2.5	75	1	0	0	0.0	0	0	0.0	6	0	24.0	0	0	0.0
	RG_GC-GN-235	630235	5436864	29-Apr-21	29-Apr-21	13:25	13:45	0.33	1.0	2.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-236	630133	5436873	29-Apr-21	29-Apr-21	13:30	13:50	0.33	0.5	1.5	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-237	630235	5436864	29-Apr-21	29-Apr-21	14:05	14:25	0.33	0.5	3.5	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-238	630133	5436873	29-Apr-21	29-Apr-21	14:10	14:30	0.33	0.5	3.5	75	1	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-239	630133	5436873	29-Apr-21	29-Apr-21	14:35	14:55	0.33	0.5	3.0	75	1	0	0	0.0	0	0	0.0	2	0	6.0	0	0	0.0
	RG_GC-GN-240	630133	5436873	29-Apr-21	29-Apr-21	14:40	15:00	0.33	0.5	3.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-241	629568	5437369	29-Apr-21	29-Apr-21	11:20	11:58	0.63	1.0	1.0	75	1	0	0	0.0	0	0	0.0	2	0	3.2	0	0	0.0
	RG_GC-GN-242	629662	5437361	29-Apr-21	29-Apr-21	11:48	12:25	0.62	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-243	629637	5437216	29-Apr-21	29-Apr-21	11:56	12:32	0.60	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-244	629568	5437369	29-Apr-21	29-Apr-21	12:00	12:40	0.67	1.0	1.0	75	1	0	0	0.0	0	0	0.0	3	0	4.5	0	0	0.0
	RG_GC-GN-245	629662	5437361	29-Apr-21	29-Apr-21	12:29	13:15	0.77	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-246	629565	5437324	29-Apr-21	29-Apr-21	12:38	13:24	0.77	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-247	629639	5437261	29-Apr-21	29-Apr-21	12:44	13:31	0.78	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-248	629673	5437277	29-Apr-21	29-Apr-21	13:24	14:19	0.92	1.0	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-GN-249	629565	5437324	29-Apr-21	29-Apr-21	13:29	14:05	0.60	1.0	1.5	75	1	1	0	1.7	2	0	3.3	1	0	1.7	0	0	0.0
	RG_GC-GN-250	629639	5437261	29-Apr-21	29-Apr-21	13:34	14:15	0.68	1.0	1.5	75	1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.5
	RG_GC-GN-251	629680	5437353	29-Apr-21	29-Apr-21	14:12	15:00	0.80	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-252	629641	5437356	29-Apr-21	29-Apr-21	14:17	15:07	0.83	1.5	2.0	75	1	0	0	0.0	0	0	0.0	1	0	1.2	0	0	0.0
	RG_GC-GN-253	629673	5437277	29-Apr-21	29-Apr-21	14:22	15:11	0.82	1.0	2.0	75	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**124.5**					**19**	**1**	**0.15**	**46**	**0**	**0.37**	**168**	**1**	**1.3**	**59**	**1**	**0.47**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-01	9	9	36.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-02			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-03	6	6	24.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-04			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-05	2	2	8.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-06			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-07	2	2	8.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-08	1	1	2.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-09	12	12	28.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-10			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-11	5	5	15.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-12			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-13	1	1	4.0	0	0	0.0	0	0	0.0	3	0	12.0	0	0	0.0
	RG_GC-GN-14	2	0	3.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-15	3	3	9.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-16	1	0	2.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-17	6	6	18.0	0	0	0.0	0	0	0.0	1	0	3.0	2	2	6.0
	RG_GC-GN-18	1	1	1.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-19	3	0	9.0	0	0	0.0	0	0	0.0	2	0	6.0	0	0	0.0
	RG_GC-GN-20	47	0	104.4	0	0	0.0	2	2	4.4	0	0	0.0	0	0	0.0
	RG_GC-GN-21	1	0	1.9	0	0	0.0	0	0	0.0	1	0	1.9	0	0	0.0
	RG_GC-GN-22	12	0	28.8	0	0	0.0	2	2	4.8	0	0	0.0	0	0	0.0
	RG_GC-GN-23	5	0	15.0	0	0	0.0	2	2	6.0	0	0	0.0	0	0	0.0
	RG_GC-GN-24	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-25	1	1	2.9	0	0	0.0	0	0	0.0	1	0	2.9	0	0	0.0
	RG_GC-GN-26	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-27	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-28	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-29	1	1	2.5	0	0	0.0	0	0	0.0	2	0	5.0	0	0	0.0
	RG_GC-GN-30	1	0	2.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-31	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-32	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-33	1	1	3.0	0	0	0.0	0	0	0.0	1	0	3.0	0	0	0.0
	RG_GC-GN-34	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-35	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.3	0	0	0.0
	RG_GC-GN-36	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-37	5	0	6.7	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-38	1	0	1.3	0	0		12	12	16.0	0	0		0	0	0.0
	RG_GC-GN-39	1	1	2.1	0	0	0.0	0	0	0.0	1	0	2.1	0	0	0.0
	RG_GC-GN-40	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-41	0	0	0.0	0	0	0.0	0	0	0.0	2	0	4.3	0	0	0.0
	RG_GC-GN-42	5	3	10.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-43	1	0	1.1	0	0	0.0	4	4	4.4	0	0	0.0	0	0	0.0
	RG_GC-GN-44	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-45	1	0	1.6	0	0	0.0	10	10	16.2	0	0	0.0	0	0	0.0
	RG_GC-GN-46	1	0	1.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-47	1	1	2.0	0	0	0.0	0	0	0.0	2	0	4.0	0	0	0.0
	RG_GC-GN-48	2	0	3.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-49	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-50	5	0	6.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-51	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-52	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-53	2	2	5.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-54	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-55	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-56	2	0	2.6	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-57	6	5	14.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-58	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-59	1	0	2.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-60	1	0	1.4	0	0	0.0	1	1	1.4	0	0	0.0	0	0	0.0
	RG_GC-GN-61	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-62	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-63	1	1	2.2	0	0	0.0	0	0	0.0	2	0	4.4	0	0	0.0
	RG_GC-GN-64	2	2	5.0	0	0	0.0	0	0	0.0	2	0	5.0	0	0	0.0
	RG_GC-GN-65	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-66	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-67	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-68	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-69	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-70	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-71	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-72	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-73	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-74	3	3	9.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-75	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-76	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-77	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-78	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-79	3	3	7.8	0	0	0.0	0	0	0.0	1	0	2.6	0	0	0.0
	RG_GC-GN-80	2	2	5.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-81	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-82	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-83	0	0	0.0	0	0	0.0	0	0	0.0	2	0	5.2	0	0	0.0
	RG_GC-GN-84	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.4	0	0	0.0
	RG_GC-GN-85	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-86	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-87	4	0	7.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-88	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-89	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-90	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-91	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-92	1	0	0.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-93	4	0	3.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-94	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-95	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-96	3	0	7.2	0	0	0.0	1	1	2.4	0	0	0.0	0	0	0.0
	RG_GC-GN-97	2	0	2.6	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-98	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-99	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-100	5	0	8.1	0	0	0.0	2	2	3.2	0	0	0.0	0	0	0.0
	RG_GC-GN-101	1	0	2.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-102	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-103	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-104	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-105	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-106	4	0	7.5	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.9
	RG_GC-GN-107	3	0	4.5	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-108	2	0	3.5	0	0	0.0	1	1	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-109	1	1	2.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-110	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-111	4	0	8.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-112	2	1	5.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.5
	RG_GC-GN-113	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-114	2	0	3.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-115	1	0	2.7	0	0	0.0	0	0	0.0	1	0	2.7	0	0	0.0
	RG_GC-GN-116	0	0	0.0	0	0	0.0	1	1	1.9	0	0	0.0	0	0	0.0
	RG_GC-GN-117	2	0	3.9	0	0	0.0	2	2	3.9	0	0	0.0	0	0	0.0
	RG_GC-GN-118	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-119	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-120	2	0	3.3	0	0	0.0	1	1	1.7	0	0	0.0	0	0	0.0
	RG_GC-GN-121	2	0	5.7	0	0	0.0	0	0	0.0	1	0	2.9	1	1	2.9
	RG_GC-GN-122	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-123	4	0	6.0	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-124	4	4	8.0	0	0	0.0	0	0	0.0	2	0	4.0	0	0	0.0
	RG_GC-GN-125	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-126	3	0	8.2	0	0	0.0	1	1	2.7	0	0	0.0	0	0	0.0
	RG_GC-GN-127	7	0	10.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-128	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-129	2	0	5.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-130	1	0	2.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-131	1	0	1.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-132	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-133	2	2	3.6	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.8
	RG_GC-GN-134	1	0	1.9	0	0	0.0	1	1	1.9	0	0	0.0	0	0	0.0
	RG_GC-GN-135	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-136	4	4	9.2	0	0	0.0	0	0	0.0	0	0	0.0	1	1	2.3
	RG_GC-GN-137	3	0	4.9	0	0	0.0	2	2	3.2	1	0	1.6	0	0	0.0
	RG_GC-GN-138	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-139	3	1	5.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-140	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-141	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-142	1	1	1.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-143	9	0	16.4	0	0	0.0	1	1	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-144	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-145	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-146	5	0	7.9	0	0	0.0	2	2	3.2	0	0	0.0	0	0	0.0
	RG_GC-GN-147	4	0	6.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-148	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-149	3	0	4.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-150	1	0	1.1	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0
	RG_GC-GN-151	6	2	10.0	0	0	0.0	0	0	0.0	2	0	3.3	0	0	0.0
	RG_GC-GN-152	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-153	7	3	13.1	0	0	0.0	0	0	0.0	3	0	5.6	0	0	0.0
	RG_GC-GN-154	2	0	3.6	0	0	0.0	1	1	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-155	4	2	13.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-156	13	0	27.9	0	0	0.0	2	2	4.3	0	0	0.0	0	0	0.0
	RG_GC-GN-157	1	0	2.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-158	6	0	20.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-159	2	1	5.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-160	2	0	3.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-161	2	0	3.1	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-162	2	2	5.2	0	0	0.0	0	0	0.0	1	0	2.6	0	0	0.0
	RG_GC-GN-163	3	0	5.6	0	0	0.0	1	1	1.9	0	0	0.0	0	0	0.0
	RG_GC-GN-164	1	0	1.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-165	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-166	2	0	2.1	0	0	0.0	4	4	4.2	0	0	0.0	0	0	0.0
	RG_GC-GN-167	6	0	6.7	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0
	RG_GC-GN-168	6	5	13.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-169	7	4	9.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-170	4	0	4.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-171	5	0	6.7	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-172	5	0	14.3	0	0	0.0	2	2	5.7	0	0	0.0	0	0	0.0
	RG_GC-GN-173	4	0	4.2	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0
	RG_GC-GN-174	4	1	10.4	0	0	0.0	0	0	0.0	1	1	2.6	0	0	0.0
	RG_GC-GN-175	2	0	2.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-176	1	0	1.5	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-177	1	0	1.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-178	1	0	1.3	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-179	6	0	6.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-180	1	0	1.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-181	4	0	7.3	0	0	0.0	1	1	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-182	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-183	2	0	4.8	0	0	0.0	2	2	4.8	0	0	0.0	0	0	0.0
	RG_GC-GN-184	3	2	7.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-185	9	0	11.7	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-186	10	0	12.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-187	6	0	6.8	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0
	RG_GC-GN-188	7	0	22.1	0	0	0.0	0	0	0.0	3	0	9.5	1	1	3.2
	RG_GC-GN-189	6	0	25.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-190	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-191	4	0	5.1	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.3
	RG_GC-GN-192	3	0	3.7	0	0	0.0	2	2	2.4	0	0	0.0	0	0	0.0
	RG_GC-GN-193	2	0	2.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-194	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-195	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-196	3	0	2.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-197	8	0	8.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-198	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-199	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-200	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-201	0	0	0.0	0	0	0.0	1	1	2.2	0	0	0.0	0	0	0.0
	RG_GC-GN-202	2	1	2.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-203	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-204	0	0	0.0	0	0	0.0	1	1	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-205	1	0	1.4	0	0	0.0	3	3	4.2	0	0	0.0	0	0	0.0
	RG_GC-GN-206	1	0	1.5	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.5
	RG_GC-GN-207	0	0	0.0	0	0	0.0	5	5	8.8	0	0	0.0	0	0	0.0
	RG_GC-GN-208	1	0	1.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-209	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-210	3	0	4.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-211	2	0	4.6	0	0	0.0	1	1	2.3	0	0	0.0	0	0	0.0
	RG_GC-GN-212	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-213	1	0	1.0	0	0	0.0	1	1	1.0	0	0	0.0	0	0	0.0
	RG_GC-GN-214	1	0	1.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-215	2	0	3.1	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-216	1	0	2.0	0	0	0.0	3	3	6.0	0	0	0.0	0	0	0.0
	RG_GC-GN-217	4	0	5.7	0	0	0.0	2	2	2.9	0	0	0.0	0	0	0.0
	RG_GC-GN-218	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-219	0	0	0.0	0	0	0.0	1	1	1.4	0	0	0.0	0	0	0.0
	RG_GC-GN-220	3	0	3.3	0	0	0.0	2	2	2.2	0	0	0.0	0	0	0.0
	RG_GC-GN-221	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-222	3	0	3.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-223	2	2	6.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-224	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-225	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-226	2	0	8.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-227	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-228	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-229	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-230	0	0	0.0	1	0	3.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-231	0	0	0.0	0	0	0.0	5	5	15.0	0	0	0.0	0	0	0.0
	RG_GC-GN-232	0	0	0.0	0	0	0.0	1	1	3.0	0	0	0.0	0	0	0.0

Table F.3: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-233	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-234	5	0	20.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-235	0	0	0.0	0	0	0.0	1	1	3.0	0	0	0.0	0	0	0.0
	RG_GC-GN-236	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-237	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-238	1	0	3.0	0	0	0.0	2	2	6.0	0	0	0.0	0	0	0.0
	RG_GC-GN-239	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-240	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-241	3	0	4.7	0	0	0.0	1	1	1.6	0	0	0.0	0	0	0.0
	RG_GC-GN-242	4	0	6.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-243	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-244	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-245	2	0	2.6	0	0	0.0	3	3	3.9	0	0	0.0	0	0	0.0
	RG_GC-GN-246	12	0	15.7	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-247	7	0	8.9	0	0	0.0	1	1	1.3	0	0	0.0	0	0	0.0
	RG_GC-GN-248	4	0	4.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-249	5	1	8.3	0	0	0.0	1	1	1.7	0	0	0.0	0	0	0.0
	RG_GC-GN-250	2	0	2.9	0	0	0.0	1	1	1.5	0	0	0.0	0	0	0.0
	RG_GC-GN-251	3	0	3.8	0	0	0.0	3	1	3.8	0	0	0.0	0	0	0.0
	RG_GC-GN-252	0	0	0.0	0	0	0.0	2	2	2.4	0	0	0.0	0	0	0.0
	RG_GC-GN-253	4	0	4.9	0	0	0.0	1	1	1.2	0	0	0.0	0	0	0.0
	Total	**526**	**114**	**4.2**	**1**	**0**	**0.008**	**120**	**118**	**0.96**	**40**	**1**	**0.32**	**10**	**8**	**0.08**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.4: Gill Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Burbot			Largescale Sucker			Northern Pikeminnow			Peamouth Chub			Westslope Cutthroat Trout			Yellow Perch		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Sand Creek	RG_SC-GN-01	625563	5460385	28-May-21	28-May-21	12:40	12:55	0.25	0	2.5	50	2	0	0	0.0	0	0	0.0	1	0	4.0	1	0	4.0	2	1	8.0	0	0	0.0	0	0	0.0
	RG_SC-GN-02	625548	5460279	28-May-21	28-May-21	13:08	13:12	0.07	0	7	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	15.0	2	2	30.0	0	0	0.0	0	0	0.0
	RG_SC-GN-03	625563	5460385	28-May-21	28-May-21	13:20	13:35	0.25	2	6	50	2	0	0	0.0	0	0	0.0	0	0	0.0	5	3	20.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-04	625563	5460385	28-May-21	28-May-21	13:52	14:05	0.22	2	5	50	2	0	0	0.0	1	0	4.6	2	0	9.2	0	0	0.0	4	3	18.5	0	0	0.0	0	0	0.0
	RG_SC-GN-05	626053	5458266	28-May-21	28-May-21	10:25	10:46	0.35	1	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.9	2	2	5.7	0	0	0.0	0	0	0.0
	RG_SC-GN-06	625585	5460670	28-May-21	28-May-21	11:15	11:40	0.42	1	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.4	0	0	0.0
	RG_SC-GN-07	623784	5461545	28-May-21	28-May-21	12:00	12:20	0.33	1	1.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	2	6.0	0	0	0.0	0	0	0.0
	RG_SC-GN-08	623784	5461545	28-May-21	28-May-21	12:27	12:56	0.48	1	1.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-09	623896	5461501	28-May-21	28-May-21	12:45	13:10	0.42	1	1.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-10	625594	5460472	29-May-21	29-May-21	10:42	10:58	0.27	1	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	15	0	56.3	0	0	0.0	0	0	0.0
	RG_SC-GN-11	626108	5458118	29-May-21	29-May-21	11:20	11:36	0.27	1	3	50	2	1	0	3.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-12	625741	5457697	29-May-21	29-May-21	11:46	12:00	0.23	1	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-13	625740	5457720	30-May-21	30-May-21	9:56	10:10	0.23	2	3	50	2	0	0	0.0	0	0	0.0	1	0	4.3	2	0	8.6	5	0	21.4	0	0	0.0	0	0	0.0
	RG_SC-GN-14	625718	5457727	31-May-21	31-May-21	10:25	10:40	0.25	1	4	-	-	1	0	4.0	0	0	0.0	2	0	8.0	7	0	28.0	12	0	48.0	0	0	0.0	2	2	8.0
	RG_SC-GN-15	625740	5457720	30-May-21	30-May-21	12:07	12:27	0.33	2	3	50	2	0	0	0.0	0	0	0.0	1	0	3.0	3	0	9.0	1	0	3.0	0	0	0.0	0	0	0.0
							Total	**4.4**					**2**	**0**	0.46	**1**	**0**	**0.23**	**7**	**0**	**1.60**	**20**	**3**	**4.6**	**45**	**10**	**10.3**	**1**	**0**	**0.23**	**2**	**2**	**0.46**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.5: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Northern Pikeminnow			Peamouth Chub			Rainbow Trout		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Elk River	RG_ER-GN-01	628141	5446507	28-May-21	28-May-21	15:56	16:12	0.27	2	5	50	2	0	0	0.0	0	0	0.0	7	0	26.3	6	3	22.5	0	0	0.0
	RG_ER-GN-02	628386	5446795	29-May-21	29-May-21	11:30	11:50	0.33	2	5	50	2	0	0	0.0	0	0	0.0	1	0	3.0	8	8	24.0	0	0	0.0
	RG_ER-GN-03	628090	5446558	29-May-21	29-May-21	11:35	11:58	0.38	2	5	50	2	0	0	0.0	0	0	0.0	4	0	10.4	8	8	20.9	1	0	2.6
	RG_ER-GN-04	628629	5447424	30-May-21	30-May-21	12:40	13:00	0.33	1	3	50	2	1	0	3.0	1	0	3.0	6	0	18.0	8	0	24.0	0	0	0.0
	RG_ER-GN-05	628620	5447373	30-May-21	30-May-21	13:20	13:35	0.25	1	4	50	2	0	0	0.0	0	0	0.0	1	0	4.0	6	0	24.0	0	0	0.0
	RG_ER-GN-06	628442	5447059	30-May-21	30-May-21	13:22	13:45	0.38	1	4	50	2	1	0	2.6	1	0	2.6	1	0	2.6	3	0	7.8	0	0	0.0
	RG_ER-GN-07	627593	5447207	30-May-21	30-May-21	13:52	14:08	0.27	1	4	50	2	0	0	0.0	0	0	0.0	0	0	0.0	4	0	15.0	0	0	0.0
	RG_ER-GN-08	627456	5447139	30-May-21	30-May-21	13:55	14:15	0.33	1	4	50	2	0	0	0.0	0	0	0.0	6	0	18.0	6	0	18.0	0	0	0.0
							Total	**2.5**					**2**	**0**	0.78	**2**	**0**	**0.78**	**26**	**0**	**10.2**	**49**	**19**	**19.2**	**1**	**0**	**0.4**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.6: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Mountain Whitefish			Yellow Perch		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Gold Creek	RG_GC-GN-01	630535	5437245	25-May-21	25-May-21	14:20	14:40	0.33	0.7	5	50	2	0	0	0.0	2	0	6.0	1	0	3.0	3	3	9.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-02	630305	5436972	25-May-21	25-May-21	14:40	15:00	0.33	1.0	5	50	1	0	0	0.0	0	0	0.0	2	0	6.0	3	0	9.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-03	630564	5437236	25-May-21	25-May-21	14:55	15:16	0.35	1.0	5	50	2	0	0	0.0	0	0	0.0	1	0	2.9	3	3	8.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-04	630305	5436972	25-May-21	25-May-21	15:06	15:21	0.25	1.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-05	630564	5437236	25-May-21	25-May-21	15:15	15:30	0.25	1.0	5	50	2	0	0	0.0	1	0	4.0	0	0	0.0	1	1	4.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-06	630340	5436966	25-May-21	25-May-21	15:21	15:45	0.40	1.0	5	50	2	0	0	0.0	1	0	2.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-07	630564	5437236	25-May-21	25-May-21	15:35	15:50	0.25	1.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	1	4.0	0	0	0.0	0	0	0.0	1	1	4.0
	RG_GC-GN-08	630544	5437251	28-May-21	28-May-21	11:18	11:38	0.33	1.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	1	3.0	1	0	3.0	1	0	3.0	4	4	12.0
	RG_GC-GN-09	630458	5437298	28-May-21	28-May-21	11:22	11:50	0.47	1.0	5	50	1	0	0	0.0	0	0	0.0	1	0	2.1	4	0	8.6	0	0	0.0	1	0	2.1	0	0	0.0
	RG_GC-GN-10	630544	5437251	28-May-21	28-May-21	11:50	12:05	0.25	1.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-11	630349	5436971	28-May-21	28-May-21	12:07	12:25	0.30	0.5	2	50	2	0	0	0.0	3	0	10.0	2	0	6.7	2	0	6.7	1	0	3.3	0	0	0.0	0	0	0.0
	RG_GC-GN-12	630349	5436971	28-May-21	28-May-21	12:50	13:10	0.33	0.5	2	50	2	1	0	3.0	0	0	0.0	1	0	3.0	2	2	6.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-13	629601	5437385	28-May-21	28-May-21	13:18	13:38	0.33	0.2	2	50	2	0	0	0.0	2	0	6.0	0	0	0.0	2	2	6.0	0	0	0.0	0	0	0.0	1	0	3.0
	RG_GC-GN-14	629578	5437392	28-May-21	28-May-21	13:44	14:00	0.27	0.5	1.5	50	2	1	0	3.8	1	0	3.8	0	0	0.0	4	4	15.0	0	0	0.0	1	0	3.8	0	0	0.0
	RG_GC-GN-15	629578	5437392	28-May-21	28-May-21	14:15	14:40	0.42	0.5	1.5	50	2	0	0	0.0	1	0	2.4	1	0	2.4	3	3	7.2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-16	629385	5437189	30-May-21	30-May-21	9:34	9:52	0.30	0.5	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-17	629469	5437394	30-May-21	30-May-21	9:56	10:17	0.35	0.5	2.5	50	2	0	0	0.0	0	0	0.0	1	0	2.9	2	0	5.7	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-18	629857	5436791	30-May-21	30-May-21	10:23	10:39	0.27	0.5	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	3.8
	RG_GC-GN-19	630338	5436975	30-May-21	30-May-21	10:44	11:05	0.35	1.0	4	50	2	0	0	0.0	1	0	2.9	1	0	2.9	1	0	2.9	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-20	630373	5436970	30-May-21	30-May-21	10:47	11:12	0.42	1.0	4	50	2	0	0	0.0	1	0	2.4	1	0	2.4	1	0	2.4	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**6.5**					**2**	**0**	0.31	**13**	**0**	**2.0**	**12**	**0**	**1.8**	**33**	**20**	**5.0**	**2**	**0**	**0.31**	**3**	**0**	**0.46**	**7**	**6**	**1.1**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.7: Gill Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Northern Pikeminnow			Peamouth Chub			Redside Shiner			Yellow Perch		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Sand Creek	RG_SC-GN-01	625724	5458137	23-Jun-21	23-Jun-21	14:25	14:40	0.25	0	3	100	2	0	0	0.0	0	0	0.0	8	0	32.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-02	625845	5458096	23-Jun-21	23-Jun-21	14:30	14:45	0.25	0	2	100	2	0	0	0.0	1	0	4.0	4	0	16.0	4	4	16.0	0	0	0.0	0	0	0.0
	RG_SC-GN-03	625934	5458056	23-Jun-21	23-Jun-21	14:52	15:03	0.18	0	3	100	2	0	0	0.0	0	0	0.0	2	0	10.9	3	1	16.4	0	0	0.0	0	0	0.0
	RG_SC-GN-04	625885	5458084	25-Jun-21	25-Jun-21	9:00	9:15	0.25	0	5	100	1	0	0	0.0	0	0	0.0	1	0	4.0	2	0	8.0	78	12	312.0	0	0	0.0
	RG_SC-GN-05	625905	5458071	25-Jun-21	25-Jun-21	9:10	9:25	0.25	0	4	100	2	1	0	4.0	0	0	0.0	5	0	20.0	4	2	16.0	0	0	0.0	1	1	4.0
	RG_SC-GN-06	625905	5458084	25-Jun-21	25-Jun-21	9:50	10:05	0.25	0	3	100	2	0	0	0.0	0	0	0.0	1	0	4.0	1	1	4.0	0	0	0.0	0	0	0.0
	RG_SC-GN-07	625860	5458078	25-Jun-21	25-Jun-21	10:03	10:12	0.15	0	4	100	2	0	0	0.0	2	0	13.3	4	0	26.7	1	1	6.7	0	0	0.0	0	0	0.0
	RG_SC-GN-08	625905	5458084	25-Jun-21	25-Jun-21	10:10	10:25	0.25	0	3	100	2	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-09	625860	5459078	25-Jun-21	25-Jun-21	10:22	10:37	0.25	0	3	100	2	0	0	0.0	1	0	4.0	2	0	8.0	1	0	4.0	0	0	0.0	0	0	0.0
	RG_SC-GN-10	625933	5458077	25-Jun-21	25-Jun-21	10:35	10:50	0.25	0	2	100	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0
	RG_SC-GN-11	626040	5458294	25-Jun-21	25-Jun-21	11:00	11:16	0.27	0	4	100	2	0	0	0.0	0	0	0.0	0	0	0.0	3	1	11.3	0	0	0.0	0	0	0.0
	RG_SC-GN-12	626013	5458330	25-Jun-21	25-Jun-21	11:05	11:20	0.25	0	3	100	2	0	0	0.0	1	0	4.0	0	0	0.0	3	0	12.0	0	0	0.0	0	0	0.0
	RG_SC-GN-13	626040	5458294	25-Jun-21	25-Jun-21	11:16	11:29	0.22	0	4	100	2	1	0	4.6	1	0	4.6	1	0	4.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-14	626013	5458330	25-Jun-21	25-Jun-21	11:24	11:39	0.25	0	3	100	2	0	0	0.0	1	0	4.0	2	0	8.0	2	0	8.0	0	0	0.0	0	0	0.0
	RG_SC-GN-15	625880	5458089	25-Jun-21	25-Jun-21	11:36	11:51	0.25	0	4	100	2	0	0	0.0	2	0	8.0	1	0	4.0	1	0	4.0	0	0	0.0	0	0	0.0
	RG_SC-GN-16	625849	5458815	25-Jun-21	25-Jun-21	11:50	12:01	0.18	0	4	100	2	0	0	0.0	2	0	10.9	2	0	10.9	2	0	10.9	0	0	0.0	0	0	0.0
	RG_SC-GN-17	625880	5458089	25-Jun-21	25-Jun-21	12:00	12:15	0.25	0	4	100	2	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-GN-18	625705	5458092	25-Jun-21	25-Jun-21	12:44	12:55	0.18	0	4	100	2	0	0	0.0	3	0	16.4	0	0	0.0	1	0	5.5	0	0	0.0	0	0	0.0
	RG_SC-GN-19	625693	5458012	25-Jun-21	25-Jun-21	12:49	13:05	0.27	0	4	100	2	1	0	3.8	2	0	7.5	2	0	7.5	3	1	11.3	0	0	0.0	0	0	0.0
	RG_SC-GN-20	625742	5458122	25-Jun-21	25-Jun-21	13:03	13:15	0.20	0	4	100	2	0	0	0.0	1	0	5.0	0	0	0.0	2	0	10.0	0	0	0.0	0	0	0.0
	RG_SC-GN-21	625699	5458003	25-Jun-21	25-Jun-21	13:13	13:24	0.18	0	4	100	2	1	0	5.5	1	0	5.5	2	0	10.9	4	0	21.8	0	0	0.0	0	0	0.0
	RG_SC-GN-22	625747	5458106	25-Jun-21	25-Jun-21	13:25	13:36	0.18	0	3	100	2	0	0	0.0	1	0	5.5	1	0	5.5	2	1	10.9	0	0	0.0	0	0	0.0
	RG_SC-GN-23	625713	6458005	25-Jun-21	25-Jun-21	13:30	13:40	0.17	0	4	100	2	0	0	0.0	0	0	0.0	1	0	6.0	1	0	6.0	0	0	0.0	0	0	0.0
							Total	**5.2**					**4**	**0**	**0.77**	**21**	**0**	**4.1**	**39**	**0**	**7.5**	**41**	**12**	**7.9**	**78**	**12**	**15.0**	**1**	**1**	**0.2**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.8: Gill Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Mountain Whitefish			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Yellow Perch		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Elk River	RG_ER-GN-01	628726	5447480	22-Jun-21	22-Jun-21	11:30	11:45	0.25	0	4	100	1	0	0	0.0	1	0	4.0	0	0	0.0	3	0	12.0	2	0	8.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-02	628798	5447490	22-Jun-21	22-Jun-21	11:38	12:10	0.53	0	5	100	2	0	0	0.0	1	0	1.9	0	0	0.0	1	0	1.9	7	7	13.1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-03	628742	5447501	22-Jun-21	22-Jun-21	11:50	12:20	0.50	0	4	100	1	0	0	0.0	0	0	0.0	0	0	0.0	6	0	12.0	4	0	8.0	0	0	0.0	47	13	94.0	0	0	0.0
	RG_ER-GN-04	628768	5447506	22-Jun-21	22-Jun-21	12:10	12:35	0.42	0	4	100	2	0	0	0.0	0	0	0.0	0	0	0.0	4	0	9.6	4	1	9.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-05	628766	5447503	22-Jun-21	22-Jun-21	13:10	13:40	0.50	0	4	100	2	0	0	0.0	1	0	2.0	0	0	0.0	8	0	16.0	8	2	16.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-06	628804	5447527	22-Jun-21	22-Jun-21	14:15	14:30	0.25	0	5	100	2	2	0	8.0	2	0	8.0	1	0	4.0	5	0	20.0	3	0	12.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-07	628715	5447466	22-Jun-21	22-Jun-21	14:20	14:28	0.13	0	6	100	2	0	0	0.0	1	0	7.5	0	0	0.0	3	0	22.5	2	0	15.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-08	628766	5447503	22-Jun-21	22-Jun-21	14:30	14:43	0.22	0	4	100	2	1	0	4.6	4	0	18.5	0	0	0.0	4	0	18.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-09	628765	5447500	23-Jun-21	23-Jun-21	9:30	9:45	0.25	0	4	100	2	0	0	0.0	6	0	24.0	0	0	0.0	6	0	24.0	11	2	44.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-10	628804	5447523	23-Jun-21	23-Jun-21	9:40	9:55	0.25	0	4	100	2	0	0	0.0	1	0	4.0	0	0	0.0	1	0	4.0	2	0	8.0	0	0	0.0	0	0	0.0	1	1	4.0
	RG_ER-GN-11	628766	5447503	23-Jun-21	23-Jun-21	9:55	10:10	0.25	0	4	100	2	0	0	0.0	6	0	24.0	0	0	0.0	4	0	16.0	4	3	16.0	0	0	0.0	0	0	0.0	1	0	4.0
	RG_ER-GN-12	628804	5447523	23-Jun-21	23-Jun-21	10:15	10:50	0.58	0	3	100	2	0	0	0.0	1	0	1.7	0	0	0.0	4	0	6.9	1	0	1.7	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-13	628766	5447503	23-Jun-21	23-Jun-21	10:30	10:45	0.25	0	4	100	2	0	0	0.0	0	0	0.0	0	0	0.0	3	0	12.0	2	0	8.0	1	0	4.0	0	0	0.0	0	0	0.0
	RG_ER-GN-14	628804	5447522	23-Jun-21	23-Jun-21	10:40	10:55	0.25	0	3	100	2	0	0	0.0	1	0	4.0	0	0	0.0	1	0	4.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-15	628768	5447503	23-Jun-21	23-Jun-21	10:50	11:05	0.25	0	3	100	2	0	0	0.0	1	0	4.0	0	0	0.0	5	0	20.0	3	1	12.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-16	628767	5447502	23-Jun-21	23-Jun-21	11:10	11:25	0.25	0	4	100	2	0	0	0.0	1	0	4.0	0	0	0.0	1	0	4.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-17	628766	5447500	23-Jun-21	23-Jun-21	11:30	11:45	0.25	0	3	100	2	0	0	0.0	2	0	8.0	1	0	4.0	3	0	12.0	2	0	8.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-18	628800	5447582	23-Jun-21	23-Jun-21	11:35	11:50	0.25	0	3	100	2	0	0	0.0	2	0	8.0	0	0	0.0	7	0	28.0	5	1	20.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-19	628760	5447504	23-Jun-21	23-Jun-21	11:55	12:10	0.25	0	4	100	2	1	0	4.0	0	0	0.0	0	0	0.0	4	0	16.0	3	0	12.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-GN-20	628801	5447522	23-Jun-21	23-Jun-21	12:05	12:20	0.25	0	5	100	2	0	0	0.0	1	0	4.0	0	0	0.0	5	0	20.0	2	0	8.0	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**6.1**					**4**	**0**	0.65	**32**	**0**	**5.22**	**2**	**0**	**0.3**	**78**	**0**	**12.7**	**66**	**17**	**10.8**	**1**	**0**	**0.16**	**47**	**13**	**7.66**	**2**	**1**	**0.33**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.9: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Kokanee			Mountain Whitefish		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-01	628781	5436614	22-Jun-21	22-Jun-21	12:18	12:37	0.32	3.8	4.4	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-02	628599	5436833	22-Jun-21	22-Jun-21	12:27	12:43	0.27	2.2	2.4	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-03	628579	5436725	22-Jun-21	22-Jun-21	12:32	13:10	0.63	1.6	2	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-04	628595	5436947	22-Jun-21	22-Jun-21	13:00	13:15	0.25	1.7	1.8	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-05	628616	5437002	22-Jun-21	22-Jun-21	13:05	13:20	0.25	0.9	1.4	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-06	628542	5436707	22-Jun-21	22-Jun-21	13:13	13:46	0.55	1.5	2.2	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-07	628495	5436934	22-Jun-21	22-Jun-21	13:30	13:52	0.37	0.8	1.1	50	2	0	0	0.0	0	0	0.0	0	0	0.0	2	0	5.5
	RG_GC-GN-08	628577	5436735	22-Jun-21	22-Jun-21	13:34	14:06	0.53	0.9	1.5	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-09	628712	5436690	22-Jun-21	22-Jun-21	13:50	14:29	0.65	2.2	4	50	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-10	630224	5436818	23-Jun-21	23-Jun-21	10:47	11:15	0.47	4.0	6	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-11	630330	5430948	23-Jun-21	23-Jun-21	10:56	11:23	0.45	2.0	6	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-12	630017	5437943	23-Jun-21	23-Jun-21	11:40	12:05	0.42	1.5	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-13	630228	5438104	23-Jun-21	23-Jun-21	11:47	12:07	0.33	2.0	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-14	630234	5438126	23-Jun-21	23-Jun-21	12:32	12:56	0.40	2.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-15	630173	5438786	23-Jun-21	23-Jun-21	12:36	13:00	0.40	0.5	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-16	630283	5436907	23-Jun-21	23-Jun-21	13:14	13:46	0.53	2.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-17	629927	5436801	23-Jun-21	23-Jun-21	13:21	14:02	0.68	3.0	6	50	2	0	0	0.0	2	0	2.9	1	0	1.5	0	0	0.0
	RG_GC-GN-18	628915	5436563	24-Jun-21	24-Jun-21	9:21	9:32	0.18	2.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-19	628603	5436754	24-Jun-21	24-Jun-21	9:24	9:54	0.50	2.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-20	628701	5436674	24-Jun-21	24-Jun-21	9:52	10:09	0.28	3.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-21	628560	5436956	24-Jun-21	24-Jun-21	10:00	10:27	0.45	2.0	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-22	630385	5436929	24-Jun-21	24-Jun-21	10:47	11:05	0.30	6.0	7	50	2	0	0	0.0	1	0	3.3	0	0	0.0	0	0	0.0
	RG_GC-GN-23	630329	5436946	24-Jun-21	24-Jun-21	10:50	11:15	0.42	6.0	9	50	2	1	0	2.4	2	0	4.8	0	0	0.0	2	0	4.8
	RG_GC-GN-24	629966	5436809	24-Jun-21	24-Jun-21	11:24	11:54	0.50	6.0	8	50	2	0	0	0.0	2	0	4.0	0	0	0.0	1	0	2.0
	RG_GC-GN-25	639078	5436825	24-Jun-21	24-Jun-21	11:30	12:04	0.57	5.0	8	50	2	0	0	0.0	1	0	1.8	0	0	0.0	0	0	0.0
	RG_GC-GN-26	630228	5438058	24-Jun-21	24-Jun-21	12:12	12:28	0.27	1.0	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-27	630375	5437882	24-Jun-21	24-Jun-21	12:15	12:30	0.25	1.0	3	50	2	0	0	0.0	1	0	4.0	1	0	4.0	1	0	4.0
	RG_GC-GN-28	629943	5437864	24-Jun-21	24-Jun-21	12:34	13:06	0.53	2.0	4	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.9
	RG_GC-GN-29	630424	5437826	24-Jun-21	24-Jun-21	13:02	13:18	0.27	4.0	6	50	2	0	0	0.0	1	0	3.8	0	0	0.0	0	0	0.0
	RG_GC-GN-30	630371	5437871	24-Jun-21	24-Jun-21	13:16	13:40	0.40	3.0	5	50	2	0	0	0.0	1	0	2.5	0	0	0.0	0	0	0.0
	RG_GC-GN-31	630445	5437899	24-Jun-21	24-Jun-21	13:25	13:50	0.42	1.5	2	50	2	0	0	0.0	1	0	2.4	0	0	0.0	0	0	0.0
	RG_GC-GN-32	630387	5437938	24-Jun-21	24-Jun-21	13:48	14:04	0.27	1.5	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	3.8
	RG_GC-GN-33	630303	5438288	24-Jun-21	24-Jun-21	14:00	14:14	0.23	2.0	3	50	2	0	0	0.0	2	0	8.6	0	0	0.0	0	0	0.0

Table F.9: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Lift Time	Effort (Fishing Hours)	Depth Range (m)		Set		Bull Trout			Largescale Sucker			Kokanee			Mountain Whitefish		
		Easting	Northing								Length (ft)	Mesh (inches)	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-34	629049	5436466	24-Jun-21	24-Jun-21	14:27	14:46	0.32	4.0	6	50	2	0	0	0.0	1	0	3.2	0	0	0.0	0	0	0.0
	RG_GC-GN-35	628960	5436565	24-Jun-21	24-Jun-21	14:31	14:56	0.42	1.5	2	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-36	629729	5436626	24-Jun-21	24-Jun-21	15:09	15:23	0.23	4.0	9	50	2	0	0	0.0	1	0	4.3	0	0	0.0	1	0	4.3
	RG_GC-GN-37	629862	5436758	24-Jun-21	24-Jun-21	15:14	15:33	0.32	6.0	9	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-38	630054	5436831	24-Jun-21	24-Jun-21	15:46	16:00	0.23	-	-	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-39	630160	5436780	24-Jun-21	24-Jun-21	15:50	16:04	0.23	2.0	3	50	2	0	0	0.0	1	0	4.3	0	0	0.0	0	0	0.0
	RG_GC-GN-40	628421	5436958	25-Jun-21	25-Jun-21	9:34	9:52	0.30	1.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-41	628470	5436867	25-Jun-21	25-Jun-21	9:37	9:55	0.30	-	-	50	2	1	0	3.3	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-42	628542	5436691	25-Jun-21	25-Jun-21	10:06	10:29	0.38	2.0	2.5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-43	628498	5436703	25-Jun-21	25-Jun-21	10:08	10:35	0.45	2.0	3	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-44	630378	5437873	25-Jun-21	25-Jun-21	10:45	11:07	0.37	5.0	7	50	2	0	0	0.0	0	0	0.0	5	0	13.6	0	0	0.0
	RG_GC-GN-45	630041	5437843	25-Jun-21	25-Jun-21	10:52	11:30	0.63	5.0	8	50	2	0	0	0.0	1	0	1.6	2	0	3.2	0	0	0.0
	RG_GC-GN-46	630446	5436668	25-Jun-21	25-Jun-21	12:08	12:25	0.28	4.0	6	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-47	630413	5436758	25-Jun-21	25-Jun-21	12:12	12:31	0.32	3.0	5	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-48	630543	5436551	25-Jun-21	25-Jun-21	12:28	12:44	0.27	5.0	9	50	2	0	0	0.0	0	0	0.0	0	0	0.0	1	0	3.8
	RG_GC-GN-49	630403	5437841	25-Jun-21	25-Jun-21	12:51	13:12	0.35	2.0	4	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-50	630416	5437832	25-Jun-21	25-Jun-21	12:56	13:29	0.55	2.0	4	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-51	630317	5436948	25-Jun-21	25-Jun-21	13:37	14:00	0.38	5.0	6	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-52	630173	5436819	25-Jun-21	25-Jun-21	13:41	14:07	0.43	8.0	10	50	2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
							Total	**20.1**					**2**	**0**	**0.10**	**18**	**0**	**0.90**	**9**	**0**	**0.4**	**10**	**0**	**0.50**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.9: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-GN-01	0	0	0.0	0	0	0.0	0	0	0.0	8	2	25.3	0	0	0.0
	RG_GC-GN-02	4	0	15.0	0	0	0.0	1	0	3.8	0	0	0.0	0	0	0.0
	RG_GC-GN-03	0	0	0.0	0	0	0.0	0	0	0.0	3	2	4.7	0	0	0.0
	RG_GC-GN-04	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-05	1	0	4.0	0	0	0.0	0	0	0.0	3	0	12.0	0	0	0.0
	RG_GC-GN-06	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-07	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-08	1	0	1.9	0	0	0.0	0	0	0.0	61	9	114.4	0	0	0.0
	RG_GC-GN-09	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-10	3	0	6.4	2	2	4.3	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-11	7	0	15.6	1	0	2.2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-12	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-13	2	0	6.0	11	9	33.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-14	2	0	5.0	5	1	12.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-15	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-16	0	0	0.0	1	1	1.9	0	0	0.0	2	0	3.8	0	0	0.0
	RG_GC-GN-17	4	0	5.9	11	4	16.1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-18	6	0	32.7	1	1	5.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-19	1	0	2.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.0
	RG_GC-GN-20	4	0	14.1	0	0	0.0	0	0	0.0	0	0	0.0	7	0	24.7
	RG_GC-GN-21	0	0	0.0	1	0	2.2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-22	2	0	6.7	3	3	10.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-23	2	0	4.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-24	1	0	2.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-25	1	0	1.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-26	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-27	4	0	16.0	12	12	48.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-28	2	0	3.8	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-29	2	0	7.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-30	2	0	5.0	1	1	2.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-31	2	0	4.8	2	2	4.8	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-32	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-33	2	0	8.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0

Table F.9: Gill Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Gold Creek	RG_GC-GN-34	1	0	3.2	3	0	9.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-35	4	0	9.6	0	0	0.0	0	0	0.0	0	0	0.0	1	0	2.4
	RG_GC-GN-36	0	0	0.0	1	0	4.3	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-37	2	0	6.3	3	0	9.5	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-38	1	0	4.3	2	0	8.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-39	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-40	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-41	0	0	0.0	0	0	0.0	1	0	3.3	0	0	0.0	0	0	0.0
	RG_GC-GN-42	0	0	0.0	1	0	2.6	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-43	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-44	0	0	0.0	6	2	16.4	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-45	4	0	6.3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-46	1	0	3.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-47	1	0	3.2	1	1	3.2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-48	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-49	1	0	2.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-50	2	0	3.6	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-51	2	0	5.2	2	0	5.2	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-GN-52	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
		74	**0**	**3.7**	**70**	**39**	**3.5**	**2**	**0**	**0.10**	**77**	**13**	**3.8**	**9**	**0**	**0.45**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the gill net sets in one area.

Table F.10: **Hoop Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, April 2021**

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Bull Trout			Burbot			Kokanee			Largescale Sucker			Longnose Sucker			Northern Pikeminnow		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Sand Creek	RG_SC-HN-01	2.5	625456	5460238	19-Apr-21	20-Apr-21	12:00	14:00	26.00	0	1.5	Central Lead	1.08	1	0	0.9	0	0	0.0	0	0	0.0	2	0	1.8	0	0	0.0	3	0	2.8
	RG_SC-HN-02	2.5	625187	5460475	19-Apr-21	20-Apr-21	13:30	12:25	22.92	0	1.5	Central Lead	0.95	0	0	0.0	0	0	0.0	0	0	0.0	2	0	2.1	1	0	1.0	0	0	0.0
	RG_SC-HN-03	2.5	625187	5460475	20-Apr-21	21-Apr-21	13:15	13:15	24.00	0	2.5	Central Lead	1.00	0	0	0.0	1	0	1.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.0
	RG_SC-HN-04	2.5	625456	5460238	20-Apr-21	21-Apr-21	14:30	14:30	24.00	1	2.5	Central Lead	1.00	0	0	0.0	4	0	4.0	0	0	0.0	3	0	3.0	2	0	2.0	2	0	2.0
	RG_SC-HN-05	2.5	625456	5460238	21-Apr-21	22-Apr-21	13:10	12:50	23.67	1	2.5	Central Lead	0.99	1	0	1.0	1	0	1.0	0	0	0.0	15	0	15.2	0	0	0.0	4	0	4.1
	RG_SC-HN-06	2.5	625187	5460475	21-Apr-21	22-Apr-21	13:25	14:00	24.58	0.5	2	Central Lead	1.02	0	0	0.0	0	0	0.0	1	0	1.0	31	0	30.3	4	0	3.9	4	0	3.9
	RG_SC-HN-07	2.5	625199	5460462	22-Apr-21	23-Apr-21	13:20	9:10	19.83	0.1	1.0	Central Lead	0.83	2	0	2.4	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-08	2.5	625450	5460243	22-Apr-21	23-Apr-21	14:30	9:45	19.25	0.1	1	Central Lead	0.80	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.2	0	0	0.0	1	0	1.2
	RG_SC-HN-09	2.5	625201	5460461	23-Apr-21	24-Apr-21	9:30	10:10	24.67	0.2	1.4	Central Lead	1.03	0	0	0.0	0	0	0.0	0	0	0.0	2	0	1.9	0	0	0.0	2	0	1.9
	RG_SC-HN-10	2.5	625445	5460245	23-Apr-21	24-Apr-21	10:00	10:36	24.60	0.1	1	Central Lead	1.03	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.0
	RG_SC-HN-11	2.5	625197	5460459	24-Apr-21	26-Apr-21	10:20	10:45	48.42	0.2	1.2	Central Lead	2.02	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-12	2.5	625445	5460245	24-Apr-21	26-Apr-21	10:45	11:00	48.25	0.1	1	Central Lead	2.01	2	0	1.0	1	0	0.5	0	0	0.0	1	0	0.5	0	0	0.0	2	0	1.0
												Total	**9.73**	**6**	**0**	**0.6**	**7**	**0**	**0.7**	**1**	**0**	**0.1**	**57**	**0**	**5.9**	**7**	**0**	**0.7**	**20**	**0**	**2.1**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.10: Hoop Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Peamouth Chub			Mountain Whitefish			Rainbow Trout			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Sand Creek	RG_SC-HN-01	1	1	0.9	0	0	0.0	0	0	0.0	3	3	2.8	0	0	0.0	0	0	0.0
	RG_SC-HN-02	6	6	6.3	3	0	3.1	1	0	1.0	10	10	10.5	2	0	2.1	1	1	1.0
	RG_SC-HN-03	2	2	2.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-04	7	7	7.0	2	0	2.0	1	0	1.0	7	6	7.0	0	0	0.0	1	1	1.0
	RG_SC-HN-05	5	0	5.1	0	0	0.0	0	0	0.0	10	8	10.1	0	0	0.0	0	0	0.0
	RG_SC-HN-06	12	0	11.7	0	0	0.0	0	0	0.0	9	3	8.8	0	0	0.0	0	0	0.0
	RG_SC-HN-07	2	0	2.4	0	0	0.0	0	0	0.0	3	0	3.6	0	0	0.0	0	0	0.0
	RG_SC-HN-08	1	0	1.2	1	0	1.2	0	0	0.0	1	0	1.2	0	0	0.0	0	0	0.0
	RG_SC-HN-09	1	0	1.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.0	0	0	0.0
	RG_SC-HN-10	14	0	13.7	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-11			0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-12	3	0	1.5	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
		54	**16**	**5.5**	**6**	**0**	**0.6**	**2**	**0**	**0.2**	**43**	**30**	**4.4**	**3**	**0**	**0.3**	**2**	**2**	**0.2**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.11: Hoop Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Bull Trout			Largescale Sucker			Longnose Sucker			Mountain Whitefish		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Elk River	RG_ER-HN-01	2.5	627484	5447159	20-Apr-21	21-Apr-21	13:15	12:33	23.3	0	5	Central Lead	0.97	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-02	2.5	626827	5446573	20-Apr-21	21-Apr-21	14:10	13:30	23.3	0	3	Central Lead	0.97	0	0	0.0	6	0	6.2	0	0	0.0	0	0	0.0
	RG_ER-HN-03	2.5	627461	5447182	22-Apr-21	23-Apr-21	12:45	12:45	24.0	0	0.5	Central Lead	1.00	1	0	1.0	8	0	8.0	2	0	2.0	0	0	0.0
	RG_ER-HN-04	2.5	626827	5446573	21-Apr-21	22-Apr-21	13:50	11:45	21.9	0	3	Central Lead	0.91	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-05	2.5	626799	5446581	23-Apr-21	24-Apr-21	12:00	15:40	27.7	0.1	1	Central Lead	1.15	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-06	2.5	627461	5447182	23-Apr-21	24-Apr-21	12:45	16:05	27.3	0.2	1.2	Central Lead	1.14	1	0	0.9	2	0	1.8	0	0	0.0	0	0	0.0
	RG_ER-HN-07	2.5	626799	5446581	24-Apr-21	25-Apr-21	16:00	9:15	17.3	0.2	1	Central Lead	0.72	0	0	0.0	1	0	1.4	0	0	0.0	1	0	1.4
	RG_ER-HN-08	2.5	627461	5447182	24-Apr-21	25-Apr-21	16:30	9:45	17.3	0.2	1.2	Central Lead	0.72	1	0	1.4	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-09	2.5	626808	5446590	25-Apr-21	26-Apr-21	9:30	16:20	30.8	0.2	1.2	Central Lead	1.28	3	0	2.3	2	1	1.6	0	0	0.0	0	0	0.0
	RG_ER-HN-10	2.5	627458	5447154	25-Apr-21	26-Apr-21	10:10	14:05	27.9	0.2	1	Central Lead	1.16	0	0	0.0	7	0	6.0	0	0	0.0	0	0	0.0
	RG_ER-HN-11	2.5	627455	5447174	26-Apr-21	27-Apr-21	14:12	13:45	23.5	0.2	1.2	Central Lead	0.98	0	0	0.0	1	0	1.0	0	0	0.0	0	0	0.0
	RG_ER-HN-12	2.5	626802	5446579	26-Apr-21	27-Apr-21	16:45	14:00	21.3	0.3	1.4	Central Lead	0.89	0	0	0.0	1	0	1.1	0	0	0.0	0	0	0.0
												Total	**11.9**	**6**	**0**	**0.5**	**28**	**1**	**2.4**	**2**	**0**	**0.2**	**1**	**0**	**0.1**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.11: Hoop Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Northern Pikeminnow			Peamouth Chub			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Elk River	RG_ER-HN-01	1	0	1.0	1	1	1.0	0	0	0.0	1	0	1.0	1	1	1.0
	RG_ER-HN-02	6	0	6.2	7	5	7.2	0	0	0.0	0	0	0.0	1	1	1.0
	RG_ER-HN-03	3	0	3.0	2	0	2.0	0	0	0.0	0	0	0.0	6	6	6.0
	RG_ER-HN-04	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-05	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-06	1	0	0.9	0	0	0.0	0	0	0.0	2	0	1.8	1	0	0.9
	RG_ER-HN-07	2	0	2.8	3	1	4.2	4	0	5.6	1	0	1.4	2	0	2.8
	RG_ER-HN-08	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.4
	RG_ER-HN-09	1	0	0.8	9	6	7.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-10	0	0	0.0	3	1	2.6	3	2	2.6	0	0	0.0	2	0	1.7
	RG_ER-HN-11	0	0	0.0	1	0	1.0	5	0	5.1	0	0	0.0	0	0	0.0
	RG_ER-HN-12	0	0	0.0	3	1	3.4	1	0	1.1	3	0	3.4	1	0	1.1
		14	**0**	**1.2**	**29**	**15**	**2.4**	**13**	**2**	**1.1**	**7**	**0**	**0.6**	**15**	**8**	**1.3**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.12: Hoop Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Bull Trout			Largescale Sucker			Longnose Sucker		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-HN-01	2.5	629845	5437365	19-Apr-21	20-Apr-21	12:50	9:40	20.83	0.5	5	Central Lead	0.87	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-02	2.5	629668	5437090	19-Apr-21	20-Apr-21	13:10	10:30	21.33	1	3	Central Lead	0.89	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-HN-03	2.5	629845	5437365	19-Apr-21	20-Apr-21	13:30	10:55	21.42	1	4.0	Central Lead	0.89	0	0	0.0	23	0	25.8	0	0	0.0
	RG_GC-HN-04	2.5	630104	5437448	20-Apr-21	21-Apr-21	10:20	10:20	24.00	0.4	1.5	Central Lead	1.00	1	0	1.0	0	0	0.0	2	0	2.0
	RG_GC-HN-05	2.5	629668	5437090	20-Apr-21	21-Apr-21	10:40	12:15	25.58	1	3.0	Central Lead	1.07	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-06	2.5	630104	5437448	21-Apr-21	22-Apr-21	11:15	10:00	22.75	1.5	2.5	Central Lead	0.95	0	0	0.0	0	0	0.0	1	0	1.1
	RG_GC-HN-07	2.5	629668	5437090	21-Apr-21	22-Apr-21	12:30	11:20	22.83	1	3.0	Central Lead	0.95	1	0	1.1	0	0	0.0	0	0	0.0
	RG_GC-HN-08	2.5	630104	5437448	22-Apr-21	23-Apr-21	10:30	10:15	23.75	1.5	2.5	Central Lead	0.99	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-09	2.5	629668	5437090	22-Apr-21	23-Apr-21	11:30	12:15	24.75	1	3.0	Central Lead	1.03	0	0	0.0	0	0	0.0	2	0	1.9
	RG_GC-HN-10	2.5	630104	5437448	23-Apr-21	24-Apr-21	10:30	10:05	23.58	1.5	2.5	Central Lead	0.98	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-11	2.5	629668	5437090	23-Apr-21	24-Apr-21	12:30	10:55	22.42	1.0	2.0	Central Lead	0.93	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-HN-12	2.5	630104	5437448	24-Apr-21	25-Apr-21	10:15	14:30	28.25	1.5	2.5	Central Lead	1.18	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-13	2.5	629668	5437090	24-Apr-21	25-Apr-21	11:00	11:55	24.92	1	2	Central Lead	1.04	0	0	0.0	1	0	1.0	0	0	0.0
	RG_GC-HN-14	2.5	629586	5437394	25-Apr-21	26-Apr-21	14:45	14:05	23.33	0	0.8	Central Lead	0.97	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-15	2.5	629570	5437075	25-Apr-21	26-Apr-21	16:05	14:40	22.58	0.5	1	Central Lead	0.94	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-HN-16	2.5	629586	5437394	26-Apr-21	27-Apr-21	14:07	13:00	22.88	0	0.8	Central Lead	0.95	0	0	0.0	1	0	1.0	0	0	0.0
	RG_GC-HN-17	2.5	629589	5437055	26-Apr-21	27-Apr-21	14:44	14:15	23.52	0.5	1.5	Central Lead	0.98	0	0	0.0	6	0	6.1	0	0	0.0
	RG_GC-HN-18	2.5	629586	5437394	27-Apr-21	28-Apr-21	13:04	14:40	25.60	1	1.5	Central Lead	1.07	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-19	2.5	629589	5437055	27-Apr-21	28-Apr-21	14:27	14:50	24.38	0.5	1.5	Central Lead	1.02	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-20	2.5	629586	5437394	28-Apr-21	29-Apr-21	14:42	12:51	22.15	1	1.5	Central Lead	0.92	0	0	0.0	1	0	1.1	0	0	0.0
												Total	**19.62**	**2**	**0**	**0.10**	**35**	**0**	**1.8**	**5**	**0**	**0.25**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.12: Hoop Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, April 2021

Area	Station ID	Northern Pikeminnow			Peamouth Chub			Mountain Whitefish			Slimy Sculpin			Redside Shiner			Westslope Cutthroat Trout			Yellow Perch		
		Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-HN-01	1	0	1.2	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-02	0	0	0	4	2	4.5	0	0	0.0	0	0	0.0	2	2	2.2	1	0	1.1	2	2	2.2
	RG_GC-HN-03	0	0	0	5	1	5.6	3	0	3.4	0	0	0.0	0	0	0.0	2	0	2.2	0	0	0.0
	RG_GC-HN-04	3	0	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-05	0	0	0	1	1	0.9	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	2	1.9
	RG_GC-HN-06	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	2	2.1
	RG_GC-HN-07	1	0	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-08	2	0	2	0	0	0.0	0	0	0.0	1	1	1.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-09	0	0	0	1	0	1.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.0
	RG_GC-HN-10	3	0	3	1	0	1.0	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	3	3	3.1
	RG_GC-HN-11	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-12	1	0	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-13	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	3	3	2.9
	RG_GC-HN-14	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.0	0	0	0.0	3	3	3.1
	RG_GC-HN-15	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-16	0	0	0	1	0	1.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-17	0	0	0	3	1	3.1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-18	0	0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-19	1	0	1	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-20	3	0	3	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	2	2	2.2
		15	**0**	**0.76**	**16**	**5**	**0.82**	**3**	**0**	**0.15**	**1**	**1**	**0.05**	**3**	**3**	**0.15**	**3**	**0**	**0.15**	**18**	**18**	**0.92**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.13: Hoop Net Records for Fish Caught in Sand Creek, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Bull Trout			Burbot			Largescale Sucker			Longnose Sucker			Northern Pikeminnow			Peamouth Chub			Yellow Perch		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]	Catch	Mortalities/ Sacrificed	CPUE [a]
Sand Creek	RG_SC-HN-01	2.5	625878	5457149	25-May-21	26-May-21	14:45	11:00	20.3	1	2	Central Lead	0.84	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	3	0	3.6	0	0	0.0	1	0	1.2
	RG_SC-HN-02	2.5	625863	5457149	25-May-21	26-May-21	13:45	12:32	22.8	0	2	Central Lead	0.95	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-03	2.5	625878	5457149	26-May-21	27-May-21	12:30	12:02	23.5	1	2	Central Lead	0.98	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_SC-HN-04	2.5	625739	5457736	26-May-21	27-May-21	12:50	13:01	24.2	0	4	Central Lead	1.01	2	0	2.0	0	0	0.0	1	0	1.0	4	0	4.0	1	0	1.0	4	0	4.0	1	0	1.0
	RG_SC-HN-05	2.5	625878	5457149	27-May-21	29-May-21	12:10	10:12	46.0	1	4	Central Lead	1.92	1	0	0.5	4	0	2.1	9	0	4.7	2	0	1.0	1	0	0.5	2	0	1.0	3	3	1.6
												Total	**5.7**	**3**	**0**	**0.5**	**4**	**0**	**0.7**	**10**	**0**	**1.8**	**6**	**0**	**1.1**	**5**	**0**	**0.9**	**6**	**0**	**1.1**	**5**	**3**	**0.9**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.14: Hoop Net Records for Fish Caught in Elk River, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Largescale Sucker			Longnose Sucker			Northern Pikeminnow			Peamouth Chub			Yellow Perch		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Elk River	RG_ER-HN-01	2.5	626907	5446665	26-May-21	27-May-21	15:15	12:15	21.0	1	5	Central Lead	0.88	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-02	2.5	626965	5446796	26-May-21	27-May-21	15:43	13:19	21.6	0.5	3	Central Lead	0.90	0	0	0.0	0	0	0.0	13	0	14.4	0	0	0.0	5	0	5.6
	RG_ER-HN-03	2.5	628901	5447567	27-May-21	28-May-21	13:26	12:00	22.6	0.7	1.1	Central Lead	0.94	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_ER-HN-04	2.5	628901	5447567	28-May-21	29-May-21	12:00	13:00	25.0	0.7	1.1	Central Lead	1.04	6	0	5.8	7	0	6.7	5	0	4.8	1	0	1.0	0	0	0.0
												Total	**3.8**	**6**	**0**	**1.6**	**7**	**0**	**1.9**	**18**	**0**	**4.8**	**1**	**0**	**0.3**	**5**	**0**	**1.3**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.15: Hoop Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, May 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Bull Trout			Largescale Sucker			Longnose Sucker			Mountain Whitefish			Northern Pikeminnow			Peamouth Chub			Rainbow Trout			Redside Shiner			Yellow Perch		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-HN-01	2.5	629419	5436909	25-May-21	26-May-21	13:48	12:15	22.5	1	1.5	Central Lead	0.94	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-02	2.5	629522	5437422	25-May-21	26-May-21	14:10	12:40	22.5	0.5	1.2	Central Lead	0.94	0	0	0.0	1	0	1.1	1	0	1.1	1	0	1.1	0	0	0.0	0	0	0.0	0	0	0.0	1	0	1.1	0	0	0.0
	RG_GC-HN-03	2.5	629512	5436850	26-May-21	27-May-21	12:27	10:40	22.2	0.3	0.6	Central Lead	0.93	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0	4	0	4.3	0	0	0.0	0	0	0.0
	RG_GC-HN-04	2.5	629522	5437422	26-May-21	27-May-21	12:48	10:30	21.7	0.5	1.2	Central Lead	0.90	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0.0	1	1	1.1	0	0	0.0	0	0	0.0	0	0	0.0
	RG_GC-HN-05	2.5	629522	5437422	27-May-21	28-May-21	10:30	14:30	28.0	0.5	1.2	Central Lead	1.17	1	0	0.9	33	0	28.3	10	0	8.6	0	0	0.0	2	0	1.7	0	0	0.0	0	0	0.0	0	0	0.0	6	6	5.1
	RG_GC-HN-06	2.5	629522	5437422	27-May-21	28-May-21	10:40	13:20	26.7	0.5	1.2	Central Lead	1.11	0	0	0.0	2	0	1.8	2	0	1.8	0	0	0.0	1	0	0.9	1	1	0.9	0	0	0.0	0	0	0.0	0	0	0.0
												Total	**6.0**	**1**	**0**	**0.2**	**36**	**0**	**6.0**	**13**	**0**	**2.2**	**2**	**1**	**0.3**	**3**	**0**	**0.5**	**2**	**2**	**0.3**	**4**	**0**	**0.7**	**1**	**0**	**0.2**	**6**	**6**	**1.0**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.16: Hoop Net Records for Fish Caught in Gold Creek, Koocanusa Reservoir Monitoring Program, June 2021

Area	Station ID	Net Size (inches)	UTM (NAD83, 11U)		Set Date	Lift Date	Set Time	Removal Time	Fishing Hours (hrs)	Depth Range (m)		Set Configuration	Effort (Fishing days)	Longnose Sucker			Northern Pikeminnow		
			Easting	Northing										Catch	Mortalities/ Sacrificed	CPUE[a]	Catch	Mortalities/ Sacrificed	CPUE[a]
Gold Creek	RG_GC-HN-01	2.5	620073	5436788	22-Jun-21	23-Jun-21	15:31	10:10	18.65	0.1	7.2	Central Lead	0.78	0	0	0.0	0	0	0.0
	RG_GC-HN-02	2.5	629804	5437671	22-Jun-21	23-Jun-21	16:02	10:24	18.37	-	-	Central Lead	0.77	1	0	1.3	2	0	3
	RG_GC-HN-03	2.5	629804	5437671	23-Jun-21	23-Jun-21	10:34	14:38	4.07	-	-	Central Lead	0.17	0	0	0.0	1	0	6
												Total	**1.71**	**1**	**0**	**0.6**	**3**	**0**	**1.8**

[a] Total catch-per-unit-effort (CPUE) calculated as the total catch of a single species over the total effort for all the hoop net sets in one area.

Table F.17: Fish Meristics Data for Peamouth Chub Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor(K)	Gonado-somatic Index	Hepato-somatic Index	Anomalies [c]				Worm Weight (g)	Tissue Collected	Comment
															0	1	2	3			
Sand Creek	19-Apr-21	RG_SC_PCC-01	24.6	22.2	103	OT, SC	7	F	11.861	1.519	89.620	0.94	0.115	0.015	-	-	-	-	-	O,M	-
	19-Apr-21	RG_SC_PCC-04	26.2	23.8	134	OT, SC	8	F	8.568	2.581	122.851	0.99	0.064	0.019	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-16	25.8	23.0	135	OT, SC	7	F	11.211	2.218	121.571	1.11	0.083	0.016	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-17	30.1	27.2	230	OT, SC	9	F	21.252	5.322	203.426	1.14	0.092	0.023	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-18	28.9	25.9	160	OT, SC	8	F	12.264	3.451	144.285	0.92	0.077	0.022	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-19	23.3	20.8	108	OT, SC	7	F	9.872	1.433	96.695	1.20	0.091	0.013	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-20	28.8	25.8	185	OT, SC	9	F	14.466	4.601	165.933	1.08	0.078	0.025	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-22	24.1	20.7	117	OT, SC	8	F	8.687	2.153	106.160	1.32	0.074	0.018	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-24	24.1	21.6	110	OT, SC	5	F	8.622	1.911	99.467	1.09	0.078	0.017	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-26	27.3	24.6	177	OT, SC	8	F	6.938	2.421	167.641	1.19	0.039	0.014	-	-	-	L++	18.979	O,M	-
	20-Apr-21	RG_SC_PCC-28	23.8	21.4	116	OT, SC	7	F	9.725	2.470	103.805	1.18	0.084	0.021	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-29	25.9	23.9	147	OT, SC	8	F	13.496	3.299	130.205	1.08	0.092	0.022	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-30	24.9	22.3	116	OT, SC	8	F	5.431	1.952	108.617	1.05	0.047	0.017	-	L	-	-	4.99	O,M	-
	20-Apr-21	RG_SC_PCC-31	23.2	20.9	94	OT, SC	8	F	7.399	1.914	84.687	1.03	0.079	0.020	-	-	-	-	-	O,M	-
	20-Apr-21	RG_SC_PCC-32	29.2	26.5	205	OT, SC	12	F	16.991	2.736	185.273	1.10	0.083	0.013	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-09	19.6	17.4	55	OT, SC	4	IF	0.045	0.778	54.177	1.04	0.001	0.014	-	L	-	-	4.055	-	-
	19-Apr-21	RG_SC_PCC-11	21.1	18.6	58	OT, SC	4	IF	0.026	0.795	57.179	0.90	0.000	0.014	-	L	-	-	3.512	-	-
	19-Apr-21	RG_SC_PCC-13	19.1	16.8	49	OT, SC	6	IF	0.187	0.793	48.420	1.04	0.004	0.016	-	-	L	-	4.372	-	-
	19-Apr-21	RG_SC_PCC-14	18.5	16.5	41	OT, SC	6	IF	0.031	0.400	40.569	0.91	0.001	0.010	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-25	25.0	22.5	118	OT, SC	6	IF	1.321	1.130	115.549	1.04	0.011	0.010	-	-	L	-	10.484	-	-
	total sample size		**20**	**20**	**20**	**-**	**20**	**-**	**20**	**20**	**20**	**20**	**20**	**20**	-	-	-	-	-	-	-
	average		**24.7**	**22.1**	**123**	**-**	**7.25**	**-**	**8.420**	**2.194**	**112.307**	**1.07**	**0.060**	**0.017**	-	-	-	-	-	-	-
	median		**24.8**	**22.3**	**116.5**	**-**	**7.5**	**-**	**8.655**	**2.053**	**107.389**	**1.06**	**0.077**	**0.017**	-	-	-	-	-	-	-
	standard deviation		**2.88**	**2.74**	**47.6**	**-**	**1.91**	**-**	**5.353**	**1.202**	**42.058**	**0.11**	**0.031**	**0.004**	-	-	-	-	-	-	-
	standard error		**0.645**	**0.612**	**10.65**	**-**	**0.43**	**-**	**1.197**	**0.269**	**9.404**	**0.02**	**0.007**	**0.001**	-	-	-	-	-	-	-
	minimum		**18.5**	**16.5**	**41**	**-**	**4**	**-**	**0.026**	**0.400**	**40.569**	**0.90**	**0.000**	**0.010**	-	-	-	-	-	-	-
	maximum		**30.1**	**27.2**	**230**	**-**	**12**	**-**	**21.252**	**5.322**	**203.426**	**1.32**	**0.115**	**0.025**	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-02	24.8	22.4	113	OT, SC	7	M	4.807	1.753	106.440	1.01	0.043	0.016	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-03	19.2	17.9	60	OT, SC	5	M	0.473	0.659	58.868	1.05	0.008	0.011	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-05	21.1	18.6	68	OT, SC	5	M	1.461	0.630	65.909	1.06	0.021	0.009	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-06	24.2	21.7	108	OT, SC	6	M	5.996	1.827	100.177	1.06	0.056	0.017	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-07	20.2	19.1	40	OT, SC	6	M	0.233	0.670	39.097	0.57	0.006	0.017	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-08	23.0	21.2	110	OT, SC	7	M	3.740	1.121	105.139	1.15	0.034	0.010	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-10	18.1	15.6	48	OT, SC	5	M	0.062	0.328	47.610	1.26	0.001	0.007	-	-	-	-	-	-	-
	19-Apr-21	RG_SC_PCC-12	18.4	16.2	45	OT, SC	4	M	1.485	0.667	42.848	1.06	0.033	0.015	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-15	23.9	19.9	107	OT, SC	6	M	1.093	0.682	105.225	1.36	0.010	0.006	-	-	L	-	10.888	-	-
	20-Apr-21	RG_SC_PCC-21	23.8	21.7	98	OT, SC	6	M	2.506	1.652	93.842	0.96	0.026	0.017	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-23	24.4	21.6	108	OT, SC	8	M	4.589	1.518	101.893	1.07	0.042	0.014	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-27	24.0	20.7	109	OT, SC	7	M	5.581	1.959	101.460	1.23	0.051	0.018	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-33	21.2	19.6	72	OT, SC	7	M	1.604	0.833	69.563	0.96	0.022	0.012	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-34	24.1	21.4	117	OT, SC	7	M	5.597	1.483	109.920	1.19	0.048	0.013	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-35	25.0	22.4	117	OT, SC	7	M	2.052	1.358	113.590	1.04	0.018	0.012	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-36	25.2	22.6	136	OT, SC	9	M	1.625	2.018	132.357	1.18	0.012	0.015	-	-	L	-	4.563	-	-
	20-Apr-21	RG_SC_PCC-37	23.4	20.3	88	OT, SC	7	M	2.798	1.181	84.021	1.05	0.032	0.013	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-38	23.9	21.8	103	OT, SC	7	M	0.994	0.937	101.069	0.99	0.010	0.009	-	L	-	-	4.699	-	-
	20-Apr-21	RG_SC_PCC-39	24.1	21.5	100	OT, SC	7	M	3.479	1.261	95.260	1.01	0.035	0.013	-	-	-	-	-	-	-
	20-Apr-21	RG_SC_PCC-40	23.7	21.1	103	OT, SC	7	M	4.946	1.160	96.894	1.10	0.048	0.011	-	-	-	-	-	-	-
	total sample size		**20**	**20**	**20**	**-**	**20**	**-**	**20**	**20**	**20**	**20**	**20**	**20**	-	-	-	-	-	-	-
	average		**22.8**	**20.4**	**93**	**-**	**6.5**	**-**	**2.756**	**1.185**	**88.559**	**1.07**	**0.028**	**0.013**	-	-	-	-	-	-	-
	median		**23.9**	**21.2**	**103**	**-**	**7**	**-**	**2.279**	**1.171**	**98.536**	**1.06**	**0.029**	**0.013**	-	-	-	-	-	-	-
	standard deviation		**2.24**	**2.00**	**27.3**	**-**	**1.15**	**-**	**1.941**	**0.501**	**25.793**	**0.16**	**0.017**	**0.003**	-	-	-	-	-	-	-
	standard error		**0.500**	**0.447**	**6.11**	**-**	**0.26**	**-**	**0.434**	**0.112**	**5.767**	**0.04**	**0.004**	**0.001**	-	-	-	-	-	-	-
	minimum		**18.1**	**15.6**	**40**	**-**	**4**	**-**	**0.062**	**0.328**	**39.097**	**0.57**	**0.001**	**0.006**	-	-	-	-	-	-	-
	maximum		**25.2**	**22.6**	**136**	**-**	**9**	**-**	**5.996**	**2.018**	**132.357**	**1.36**	**0.056**	**0.018**	-	-	-	-	-	-	-

Table F.17: Fish Meristics Data for Peamouth Chub Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor(K)	Gonado-somatic Index	Hepato-somatic Index	Anomalies [c]				Worm Weight (g)	Tissue Collected	Comment
															0	1	2	3			
Elk River	19-Apr-21	RG_ER_PCC-01	28.3	25.0	68	OT, SC	9	F	14.053	3.091	50.856	0.44	0.207	0.045	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-03	28.7	26.0	195	OT, SC	7	F	12.489	2.962	179.549	1.11	0.064	0.015	-	L	-	-	6.836	O,M	-
	19-Apr-21	RG_ER_PCC-04	24.0	21.7	118	OT, SC	6	F	9.875	2.507	105.618	1.15	0.084	0.021	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-05	25.5	22.6	148	OT, SC	9	F	2.159	1.630	144.211	1.28	0.015	0.011	-	-	-	L	17.193	O,M	-
	19-Apr-21	RG_ER_PCC-06	27.3	24.6	150	OT, SC	6	F	12.150	3.556	134.294	1.01	0.081	0.024	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-07	25.7	23.2	120	OT, SC	6	F	6.796	1.469	111.735	0.96	0.057	0.012	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-08	25.6	23.3	130	OT, SC	6	F	10.709	2.634	116.657	1.03	0.082	0.020	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-10	26.7	24.2	135	OT, SC	7	F	11.873	2.935	120.192	0.95	0.088	0.022	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-11	26.0	23.1	150	OT, SC	7	F	13.465	2.064	134.471	1.22	0.090	0.014	-	L	-	-	6.265	O,M	-
	19-Apr-21	RG_ER_PCC-12	26.8	24.9	138	OT, SC	7	F	12.214	2.774	123.012	0.89	0.089	0.020	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-13	22.9	20.5	94	OT, SC	7	F	7.591	2.317	84.092	1.09	0.081	0.025	-	-	-	-	-	O,M	-
	19-Apr-21	RG_ER_PCC-14	23.1	20.4	90	OT, SC	7	F	6.707	2.350	80.943	1.06	0.075	0.026	-	-	-	-	-	-	-
	19-Apr-21	RG_ER_PCC-15	22.2	19.6	85	OT, SC	5	F	6.324	2.154	76.522	1.13	0.074	0.025	-	-	-	-	-	-	-
	21-Apr-21	RG_ER_PCC-17	25.7	23.3	138	OT, SC	8	F	10.714	2.254	125.032	1.09	0.078	0.016	-	-	-	-	-	-	-
	21-Apr-21	RG_ER_PCC-18	26.4	24.0	128	OT, SC	13	F	4.710	2.520	120.770	0.93	0.037	0.020	-	-	-	-	-	-	-
	total sample size		**15**	**15**	**15**	**-**	**15**	**-**	**15**	**15**	**15**	**15**	**15**	**15**	-	-	-	-	-	-	-
	average		**25.7**	**23.1**	**126**	**-**	**7.3333**	**-**	**9.455**	**2.481**	**113.864**	**1.02**	**0.080**	**0.021**	-	-	-	-	-	-	-
	median		**25.7**	**23.3**	**130**	**-**	**7**	**-**	**10.709**	**2.507**	**120.192**	**1.06**	**0.081**	**0.020**	-	-	-	-	-	-	-
	standard deviation		**1.91**	**1.85**	**31.9**	**-**	**1.91**	**-**	**3.527**	**0.548**	**31.383**	**0.19**	**0.041**	**0.008**	-	-	-	-	-	-	-
	standard error		**0.492**	**0.479**	**8.24**	**-**	**0.49**	**-**	**0.911**	**0.141**	**8.103**	**0.05**	**0.011**	**0.002**	-	-	-	-	-	-	-
	minimum		**22.2**	**19.6**	**68**	**-**	**5**	**-**	**2.159**	**1.469**	**50.856**	**0.44**	**0.015**	**0.011**	-	-	-	-	-	-	-
	maximum		**28.7**	**26**	**195**	**-**	**13**	**-**	**14.053**	**3.556**	**179.549**	**1.28**	**0.207**	**0.045**	-	-	-	-	-	-	-
	19-Apr-21	RG_ER_PCC-02	24.5	22.3	110	OT, SC	7	M	2.814	1.248	105.938	0.99	0.026	0.011	-	-	L	-	5.378	-	-
	19-Apr-21	RG_ER_PCC-09	22.8	20.7	85	OT, SC	5	M	2.020	1.358	81.622	0.96	0.024	0.016	-	-	-	-	-	-	-
	19-Apr-21	RG_ER_PCC-16	24.3	21.7	94	OT, SC	8	M	1.678	1.041	91.281	0.92	0.018	0.011	-	L	-	-	5.641	-	-
	21-Apr-21	RG_ER_PCC-19	24.4	22.0	96	OT, SC	6	M	1.302	1.162	93.536	0.90	0.014	0.012	-	-	-	-	-	-	-
	21-Apr-21	RG_ER_PCC-20	24.1	21.6	90	OT, SC	6	M	2.937	1.037	86.026	0.89	0.033	0.012	-	-	-	-	-	-	-
	21-Apr-21	RG_ER_PCC-21	18.5	16.8	46	OT, SC	5	M	0.403	0.557	45.040	0.97	0.009	0.012	-	-	-	L	4.963	-	-
	23-Apr-21	RG_ER_PCC-22	25.3	22.8	116	OT, SC	7	M	4.838	1.434	109.728	0.98	0.042	0.012	-	-	-	-	-	-	-
	23-Apr-21	RG_ER_PCC-23	23.9	21.3	110	OT, SC	8	M	5.252	2.163	102.585	1.14	0.048	0.020	-	-	-	-	-	-	-
	23-Apr-21	RG_ER_PCC-24	25.6	23.0	125	OT, SC	8	M	4.809	1.901	118.290	1.03	0.038	0.015	-	-	-	-	-	-	-
	23-Apr-21	RG_ER_PCC-25	24.7	22.0	112	OT, SC	5	M	5.336	1.684	104.980	1.05	0.048	0.015	-	-	-	-	-	-	-
	25-Apr-21	RG_ER_PCC-26	23.3	21.1	110	OT, SC	8	M	6.666	3.086	100.248	1.17	0.061	0.028	-	-	-	-	-	-	-
	25-Apr-21	RG_ER_PCC-27	24.9	22.5	84	OT, SC	9	M	0.760	1.062	82.478	0.74	0.009	0.013	-	-	-	-	-	-	-
	25-Apr-21	RG_ER_PCC-28	23.8	21.3	108	OT, SC	8	M	4.083	1.558	102.059	1.11	0.038	0.014	-	-	-	-	-	-	-
	26-Apr-21	RG_ER_PCC-29	24.7	21.9	113	OT, SC	8	M	5.568	1.150	106.582	1.08	0.049	0.010	-	-	-	-	-	-	-
	26-Apr-21	RG_ER_PCC-30	23.8	21.4	115	OT, SC	8	M	3.577	3.371	108.152	1.17	0.031	0.029	-	-	L	-	11.956	-	liver odd colour (lightish)
	26-Apr-21	RG_ER_PCC-31	25.2	23.3	128	OT, SC	6	M	5.007	2.056	121.337	1.02	0.039	0.016	-	-	-	-	-	-	-
	26-Apr-21	RG_ER_PCC-32	23.9	21.4	100	OT, SC	7	M	3.903	1.465	94.832	1.02	0.039	0.015	-	-	-	-	-	-	-
	27-Apr-21	RG_ER_PCC-33	25.3	22.7	119	OT, SC	7	M	3.666	1.435	113.899	1.02	0.031	0.012	-	-	-	-	-	-	-
	27-Apr-21	RG_ER_PCC-34	23.7	21.2	98	OT, SC	5	M	4.284	1.196	92.520	1.03	0.044	0.012	-	-	-	-	-	-	-
	28-Apr-21	RG_ER_PCC-35	24.4	21.5	106	OT, SC	9	M	3.517	0.839	101.644	1.07	0.033	0.008	-	-	-	-	-	-	-
	total sample size		**20**	**20**	**20**	**-**	**20**	**-**	**20**	**20**	**20**	**20**	**20**	**20**	-	-	-	-	-	-	-
	average		**24.1**	**21.6**	**103**	**-**	**7**	**-**	**3.621**	**1.540**	**98.139**	**1.01**	**0.034**	**0.015**	-	-	-	-	-	-	-
	median		**24.4**	**21.7**	**108.85**	**-**	**7**	**-**	**3.785**	**1.396**	**101.852**	**1.02**	**0.036**	**0.012**	-	-	-	-	-	-	-
	standard deviation		**1.49**	**1.33**	**18.2**	**-**	**1.34**	**-**	**1.711**	**0.699**	**16.627**	**0.10**	**0.014**	**0.005**	-	-	-	-	-	-	-
	standard error		**0.333**	**0.298**	**4.08**	**-**	**0.30**	**-**	**0.38**	**0.156**	**3.718**	**0.02**	**0.003**	**0.001**	-	-	-	-	-	-	-
	minimum		**18.5**	**16.8**	**46**	**-**	**5**	**-**	**0.403**	**0.557**	**45.040**	**0.74**	**0.009**	**0.008**	-	-	-	-	-	-	-
	maximum		**25.6**	**23.3**	**128.4**	**-**	**9**	**-**	**6.666**	**3.371**	**121.337**	**1.17**	**0.061**	**0.029**	-	-	-	-	-	-	-

Table F.17: Fish Meristics Data for Peamouth Chub Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor(K)	Gonado-somatic Index	Hepato-somatic Index	Anomalies [c]				Worm Weight (g)	Tissue Collected	Comment
															0	1	2	3			
Gold Creek	20-Apr-21	RG_GC_PCC-05	26.8	23.9	134	OT, SC	7	F	10.009	2.330	121.661	0.98	0.075	0.017	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-08	29.3	26.4	192	OT, SC	8	F	9.301	2.922	179.777	1.04	0.048	0.015	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-09	27.1	24.1	180	OT, SC	10	F	12.938	3.192	163.870	1.29	0.072	0.018	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-10	26.6	23.7	164	OT, SC	9	F	11.968	1.727	150.305	1.23	0.073	0.011	-	-	-	-	-	O,M	ovary mass attached to intestine
	21-Apr-21	RG_GC_PCC-11	26.0	23.7	140	OT, SC	7	F	8.441	3.264	128.295	1.05	0.060	0.023	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-12	25.2	22.7	129	OT, SC	9	F	10.666	2.054	116.280	1.10	0.083	0.016	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-13	26.0	23.4	140	OT, SC	9	F	12.264	2.404	125.332	1.09	0.088	0.017	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-14	27.2	22.9	154	OT, SC	10	F	10.496	2.703	140.801	1.28	0.068	0.018	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-15	25.0	21.7	127	OT, SC	7	F	10.238	3.292	113.470	1.24	0.081	0.026	-	-	-	-	-	O,M	-
	21-Apr-21	RG_GC_PCC-16	25.7	22.6	127	OT, SC	7	F	9.105	2.442	115.453	1.10	0.072	0.019	-	-	-	-	-	O,M	-
	22-Apr-21	RG_GC_PCC-17	27.7	25.00	171	OT, SC	9	F	10.537	2.323	158.140	1.09	0.062	0.014	-	-	-	-	-	O,M	-
	22-Apr-21	RG_GC_PCC-18	27.2	22.9	149	OT, SC	7	F	10.435	2.790	135.775	1.24	0.070	0.019	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-20	28.1	25.3	152	OT, SC	10	F	9.656	2.571	139.773	0.94	0.064	0.017	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-21	27.5	24.8	175	OT, SC	11	F	13.629	4.281	157.090	1.15	0.078	0.024	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-22	26.2	23.1	147	OT, SC	6	F	12.871	3.491	130.638	1.19	0.088	0.024	-	-	-	-	-	-	-
	20-Apr-21	RG_GC_PCC-01	19.3	16.6	48	OT, SC	3	IF	0.158	0.749	47.093	1.05	0.003	0.016	-	-	L	-	4.447	-	-
	20-Apr-21	RG_GC_PCC-02	15.6	13.7	24	OT, SC	4	IF	0.068	0.589	23.343	0.93	0.003	0.025	-	-	L	-	3.625	-	-
	20-Apr-21	RG_GC_PCC-03	18.2	16.3	45	OT, SC	5	IF	0.094	0.633	44.273	1.04	0.002	0.014	-	-	-	L	6.829	-	-
	20-Apr-21	RG_GC_PCC-04	17.7	15.4	47	OT, SC	5	IF	0.087	0.831	46.082	1.29	0.002	0.018	-	L	-	-	3.729	-	-
	20-Apr-21	RG_GC_PCC-06	19.6	17.3	45	OT, SC	4	IF	0.207	0.759	44.034	0.87	0.005	0.017	-	-	-	L	5	-	-
	20-Apr-21	RG_GC_PCC-07	16.2	14.1	28	OT, SC	3	IF	0.115	0.476	27.409	1.00	0.004	0.017	-	-	-	-	-	-	-
	total sample size		**21**	**21**	**21**	**-**	**21**	**-**	**21**	**21**	**21**	**21**	**21**	**21**	-	-	-	-	-	-	-
	average		**24.2**	**21.4**	**120**	**-**	**7.1429**	**-**	**7.775**	**2.182**	**109.947**	**1.11**	**0.052**	**0.018**	-	-	-	-	-	-	-
	median		**26.0**	**22.9**	**140**	**-**	**7**	**-**	**10.009**	**2.404**	**125.332**	**1.09**	**0.068**	**0.017**	-	-	-	-	-	-	-
	standard deviation		**4.35**	**3.99**	**55.1**	**-**	**2.43**	**-**	**5.13**	**1.118**	**49.339**	**0.125**	**0.033**	**0.0040**	-	-	-	-	-	-	-
	standard error		**0.950**	**0.870**	**12.02**	**-**	**0.53**	**-**	**1.12**	**0.244**	**10.767**	**0.027**	**0.0072**	**0.0009**	-	-	-	-	-	-	-
	minimum		**15.6**	**13.7**	**24**	**-**	**3**	**-**	**0.068**	**0.476**	**23.343**	**0.87**	**0.002**	**0.011**	-	-	-	-	-	-	-
	maximum		**29.3**	**26.4**	**192**	**-**	**11**	**-**	**13.629**	**4.281**	**179.777**	**1.29**	**0.088**	**0.026**	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-19	24.9	22.0	113	OT, SC	9	M	3.027	1.926	108.047	1.06	0.027	0.017	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-23	22.6	20.2	87	OT, SC	7	M	1.912	1.956	83.132	1.06	0.022	0.022	-	-	L	-	6.827	-	-
	22-Apr-21	RG_GC_PCC-24	25.8	23.1	125	OT, SC	13	M	5.156	2.259	117.585	1.01	0.041	0.018	-	-	-	-	-	-	-
	22-Apr-21	RG_GC_PCC-25	23.2	20.5	103	OT, SC	6	M	1.675	0.177	101.148	1.20	0.016	0.002	-	-	-	L+++	16.499	-	-
	22-Apr-21	RG_GC_PCC-26	23.1	20.7	92	OT, SC	8	M	1.279	1.165	89.556	1.04	0.014	0.013	-	-	L	-	4.201	-	-
	24-Apr-21	RG_GC_PCC-27	25.8	22.6	107	OT, SC	7	M	0.770	0.892	105.338	0.93	0.007	0.008	-	-	-	L+	22.716	-	-
	25-Apr-21	RG_GC_PCC-28	24.3	21.5	113	OT, SC	7	M	3.893	1.443	107.664	1.14	0.034	0.013	-	-	-	-	-	-	-
	25-Apr-21	RG_GC_PCC-29	24.9	22.5	115	OT, SC	6	M	3.526	1.472	110.002	1.01	0.031	0.013	-	-	-	-	-	-	-
	27-Apr-21	RG_GC_PCC-30	24.6	21.7	118	OT, SC	6	M	4.182	1.801	112.017	1.15	0.035	0.015	-	-	-	-	-	-	-
	27-Apr-21	RG_GC_PCC-31	25.4	22.5	125	OT, SC	7	M	1.600	2.392	121.308	1.10	0.013	0.019	-	-	-	L++	10.699	-	-
	27-Apr-21	RG_GC_PCC-32	24.4	21.8	108	OT, SC	7	M	3.771	1.504	102.925	1.04	0.035	0.014	-	-	-	-	-	-	Duplicate Collected
	27-Apr-21	RG_GC_PCC-33	23.7	21.5	104	OT, SC	6	M	0.810	1.953	101.337	1.05	0.008	0.019	-	-	-	L	10.387	-	-
	27-Apr-21	RG_GC_PCC-34	24.9	22.9	109	OT, SC	7	M	4.942	0.947	103.111	0.91	0.045	0.009	-	-	-	-	-	-	-
	27-Apr-21	RG_GC_PCC-35	24.6	22.6	121	OT, SC	7	M	1.741	1.857	117.702	1.05	0.014	0.015	-	-	-	L++	13.906	-	Worms Present
	28-Apr-21	RG_GC_PCC-36	24.7	21.3	111	OT, SC	8	M	2.450	1.197	107.653	1.15	0.022	0.011	-	-	-	-	-	-	-
	28-Apr-21	RG_GC_PCC-37	25.3	22.2	123	OT, SC	8	M	4.751	1.061	116.988	1.12	0.039	0.009	-	-	-	-	-	-	-
	28-Apr-21	RG_GC_PCC-38	25.1	19.9	143	OT, SC	9	M	1.779	2.111	139.310	1.82	0.012	0.015	-	-	-	L+++	20.096	-	-
	28-Apr-21	RG_GC_PCC-39	25.1	23.0	121	OT, SC	7	M	6.188	1.251	113.661	1.00	0.051	0.010	-	-	-	-	-	-	Worms Present
	29-Apr-21	RG_GC_PCC-40	23.4	20.7	103	OT, SC	7	M	1.737	1.288	99.575	1.16	0.017	0.013	-	-	L	-	9.84	-	-
	29-Apr-21	RG_GC_PCC-41	23.2	21.0	106	OT, SC	7	M	0.857	0.718	104.425	1.14	0.008	0.007	-	-	-	L+	14.257	-	-
	total sample size		**20**	**20**	**20**	**-**	**20**	**-**	**20**	**20**	**20**	**20**	**20**	**20**	-	-	-	-	-	-	-
	average		**24.5**	**21.7**	**112**	**-**	**7.45**	**-**	**2.802**	**1.469**	**108.124**	**1.11**	**0.025**	**0.013**	-	-	-	-	-	-	-
	median		**24.7**	**21.8**	**112**	**-**	**7**	**-**	**2.181**	**1.458**	**107.659**	**1.06**	**0.022**	**0.013**	-	-	-	-	-	-	-
	standard deviation		**0.94**	**0.97**	**12.5**	**-**	**1.57**	**-**	**1.64**	**0.57**	**11.847**	**0.184**	**0.014**	**0.0049**	-	-	-	-	-	-	-
	standard error		**0.211**	**0.218**	**2.81**	**-**	**0.35**	**-**	**0.37**	**0.127**	**2.649**	**0.041**	**0.0030**	**0.0011**	-	-	-	-	-	-	-
	minimum		**22.6**	**19.9**	**87**	**-**	**6**	**-**	**0.770**	**0.177**	**83.132**	**0.91**	**0.007**	**0.002**	-	-	-	-	-	-	-
	maximum		**25.8**	**23.1**	**143.2**	**-**	**13**	**-**	**6.188**	**2.392**	**139.310**	**1.82**	**0.051**	**0.022**	-	-	-	-	-	-	-

Notes: M = Muscle, O = Ovary

[a] Age structures collected: sc - scales, oto - otoliths

[b] Adjusted Body Weight = Body Weight - Liver Weight - Gonad Weight

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Table F.18: Fish Meristics Data for Peamouth Chub, Koocanusa Reservoir Monitoring Program, May 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor(K)	Gonado-somatic Index	Hepato-somatic Index	Anomalies[c]				Worm Weight (g)	Tissue Collected	Comment
															0	1	2	3			
Sand Creek	27-May-21	RG_SC_PCC-01	26.9	24.3	144.0	OT, SC	8	F	22.763	2.193	119.044	1.00	0.158	0.015	-	L	-	-	-	O,M	-
	27-May-21	RG_SC_PCC-02	32.1	29.0	250.0	OT, SC	10	F	13.599	3.681	232.720	1.03	0.054	0.015	-	-	-	-	-	O,M	-
	28-May-21	RG_SC_PCC-03	28.5	25.6	201.5	OT, SC	9	F	32.760	2.799	165.941	1.20	0.163	0.014	-	-	-	-	0.020	O,M	-
	28-May-21	RG_SC_PCC-04	27.0	24.0	175.5	OT, SC	10	F	23.792	2.340	149.368	1.27	0.136	0.013	-	-	L	-	-	O,M	-
	28-May-21	RG_SC_PCC-05	29.1	26.0	208.3	OT, SC	8	F	34.713	3.525	170.062	1.19	0.167	0.017	-	-	-	-	-	O,M	-
	28-May-21	RG_SC_PCC-06	27.2	24.6	153.7	OT, SC	8	F	18.793	2.339	132.568	1.03	0.122	0.015	-	-	-	L	-	O,M	-
	28-May-21	RG_SC_PCC-07	25.7	22.6	139.1	OT, SC	8	F	7.243	1.732	130.125	1.21	0.052	0.012	-	-	-	-	10.972	O,M	-
	28-May-21	RG_SC_PCC-08	27.6	25.0	159.8	OT, SC	8	F	19.428	2.596	137.776	1.02	0.122	0.016	-	-	-	-	-	O,M	-
	28-May-21	RG_SC_PCC-09	25.5	21.7	135.6	OT, SC	7	F	9.352	1.684	124.564	1.33	0.069	0.012	-	-	-	-	6.080	O,M	-
	28-May-21	RG_SC_PCC-10	26.6	23.8	136.9	OT, SC	7	F	17.812	2.134	116.954	1.02	0.130	0.016	-	-	-	-	-	O,M	-
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-	-
average			**27.6**	**24.7**	**170**	**-**	**8.3**	**-**	**20.026**	**2.502**	**147.912**	**1.13**	**0.117**	**0.015**	-	-	-	-	-	-	-
median			**27.1**	**24.5**	**156.75**	**-**	**8**	**-**	**19.111**	**2.340**	**135.172**	**1.11**	**0.126**	**0.015**	-	-	-	-	-	-	-
standard deviation			**1.92**	**2.00**	**38.2**	**-**	**1.06**	**-**	**8.975**	**0.673**	**34.963**	**0.1216**	**0.044**	**0.0015**	-	-	-	-	-	-	-
standard error			**0.609**	**0.632**	**12.10**	**-**	**0.33**	**-**	**2.838**	**0.213**	**11.056**	**0.0385**	**0.0138**	**0.0005**	-	-	-	-	-	-	-
minimum			**25.5**	**21.7**	**136**	**-**	**7**	**-**	**7.243**	**1.684**	**116.954**	**1.004**	**0.052**	**0.012**	-	-	-	-	-	-	-
maximum			**32.1**	**29**	**250**	**-**	**10**	**-**	**34.713**	**3.681**	**232.720**	**1.33**	**0.167**	**0.017**	-	-	-	-	-	-	-
Elk River	28-May-21	RG_ER_PCC-01	28.0	24.9	184.1	OT, SC	7	F	28.164	3.870	152.056	1.19	0.153	0.021	-	C	-	-	-	O,M	-
	28-May-21	RG_ER_PCC-02	25.5	22.5	149.2	OT, SC	10	F	23.290	3.042	122.868	1.31	0.156	0.020	-	-	-	-	-	O,M	-
	28-May-21	RG_ER_PCC-03	26.5	24.0	164.1	OT, SC	10	F	23.460	3.060	137.580	1.19	0.143	0.019	-	-	-	-	-	O,M	-
	29-May-21	RG_ER_PCC-04	27.0	24.2	159.1	OT, SC	14	F	22.947	3.090	133.063	1.12	0.144	0.019	-	-	-	-	-	O,M	-
	29-May-21	RG_ER_PCC-05	27.1	24.6	153.3	OT, SC	7	F	10.607	1.454	141.239	1.03	0.069	0.009	-	-	L	-	14.350	O,M	-
	29-May-21	RG_ER_PCC-06	25.5	22.8	134.2	OT, SC	7	F	21.170	2.026	111.004	1.13	0.158	0.015	-	-	-	-	-	O,M	-
	29-May-21	RG_ER_PCC-07	25.5	22.9	161.2	OT, SC	7	F	22.877	1.817	136.506	1.34	0.142	0.011	-	-	-	-	-	O,M	-
	29-May-21	RG_ER_PCC-08	24.0	21.7	105.3	OT, SC	8	F	11.625	1.881	91.794	1.03	0.110	0.018	-	-	-	-	-	O,M	-
	29-May-21	RG_ER_PCC-09	25.8	23.1	136.9	OT, SC	6	F	6.684	1.420	128.796	1.11	0.049	0.010	-	L	-	-	8.000	O,M	-
	29-May-21	RG_ER_PCC-10	23.4	21.3	102.9	OT, SC	7	F	15.725	1.628	85.547	1.06	0.153	0.016	-	-	-	-	-	O,M	-
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-	-
average			**25.8**	**23.2**	**145**	**-**	**8.3**	**-**	**18.655**	**2.329**	**124.045**	**1.15**	**0.128**	**0.016**	-	-	-	-	-	-	-
median			**25.7**	**23.0**	**151.25**	**-**	**7**	**-**	**22.024**	**1.954**	**130.930**	**1.13**	**0.144**	**0.017**	-	-	-	-	-	-	-
standard deviation			**1.40**	**1.21**	**25.8**	**-**	**2.41**	**-**	**7.021**	**0.859**	**21.644**	**0.11**	**0.039**	**0.004**	-	-	-	-	-	-	-
standard error			**0.444**	**0.382**	**8.15**	**-**	**0.76**	**-**	**2.220**	**0.272**	**6.845**	**0.03**	**0.012**	**0.001**	-	-	-	-	-	-	-
minimum			**23.4**	**21.3**	**102.9**	**-**	**6**	**-**	**6.684**	**1.420**	**85.547**	**1.03**	**0.049**	**0.009**	-	-	-	-	-	-	-
maximum			**28.0**	**24.9**	**184.1**	**-**	**14**	**-**	**28.164**	**3.870**	**152.056**	**1.34**	**0.158**	**0.021**	-	-	-	-	-	-	-
Gold Creek	25-May-21	RG_GC_PCC-01	28.5	25.6	174.8	OT, SC	15	F	5.217	1.645	167.938	1.04	0.030	0.009	-	-	L	-	14.900	O,M	-
	25-May-21	RG_GC_PCC-02	27.4	25.2	156.0	OT, SC	8	F	19.083	2.158	134.759	0.97	0.122	0.014	-	-	-	-	-	O,M	-
	25-May-21	RG_GC_PCC-03	25.7	23.4	137.0	OT, SC	7	F	21.476	1.284	114.240	1.07	0.157	0.009	-	-	-	-	-	O,M	-
	25-May-21	RG_GC_PCC-04	28.5	25.6	156.3	OT, SC	12	F	13.845	3.086	139.369	0.93	0.089	0.020	-	C	-	-	-	O,M	-
	28-May-21	RG_GC_PCC-05	27.6	24.5	173.8	OT, SC	9	F	7.800	2.169	163.831	1.18	0.045	0.012	-	-	-	L	14.600	O,M	-
	28-May-21	RG_GC_PCC-06	27.7	26.0	195.5	OT, SC	7	F	7.470	2.556	185.474	1.11	0.038	0.013	-	-	-	-	30.680	O,M	-
	28-May-21	RG_GC_PCC-07	24.5	23.4	116.6	OT, SC	8	F	5.510	1.515	109.575	0.91	0.047	0.013	-	-	L	-	7.380	O,M	-
	28-May-21	RG_GC_PCC-08	24.2	21.6	116.5	OT, SC	8	F	8.093	1.960	106.447	1.16	0.069	0.017	-	-	L	-	6.930	O,M	-
	28-May-21	RG_GC_PCC-09	25.9	22.0	126.8	OT, SC	7	F	15.750	1.486	109.564	1.19	0.124	0.012	-	-	-	-	-	O,M	-
	28-May-21	RG_GC_PCC-10	26.0	24.1	137.4	OT, SC	7	F	19.316	2.275	115.809	0.98	0.141	0.017	-	C	-	-	-	O,M	-
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-	-
average			**26.6**	**24.1**	**149**	**-**	**8.8**	**-**	**12.356**	**2.013**	**134.701**	**1.06**	**0.086**	**0.014**	-	-	-	-	-	-	-
median			**26.7**	**24.3**	**147**	**-**	**8**	**-**	**10.969**	**2.059**	**125.284**	**1.06**	**0.079**	**0.013**	-	-	-	-	-	-	-
standard deviation			**1.56**	**1.53**	**26.7**	**-**	**2.66**	**-**	**6.247**	**0.553**	**28.655**	**0.10**	**0.047**	**0.003**	-	-	-	-	-	-	-
standard error			**0.493**	**0.484**	**8.45**	**-**	**0.84**	**-**	**1.976**	**0.175**	**9.062**	**0.03**	**0.015**	**0.001**	-	-	-	-	-	-	-
minimum			**24.2**	**21.6**	**116.5**	**-**	**7**	**-**	**5.217**	**1.284**	**106.447**	**0.91**	**0.030**	**0.009**	-	-	-	-	-	-	-
maximum			**28.5**	**26.0**	**195.5**	**-**	**15**	**-**	**21.476**	**3.086**	**185.474**	**1.19**	**0.157**	**0.020**	-	-	-	-	-	-	-

[a] Age structures collected: sc - scales, oto - otoliths

[b] Adjusted Body Weight = Body Weight - Liver Weight - Gonad Weight

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Note: M = Muscle, O = Ovary

Table F.19: Fish Meristics Data for Peamouth Chub, Koocanusa Reservoir Monitoring Program, June 2021

Area	Processing Date	Fish ID	Total Length	Fork Length	Body Weight	Age Structure	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body	Fulton's Condition	Gonado-somatic	Hepato-somatic	Anomalies[c]				Worm Weight (g)	Tissue Collected	Comment
															0	1	2	3			
Sand Creek	23-Jun-21	RG_SC_PCC-01	24.7	22.2	119.259	OT, SC	8	F	18.996	0.559	99.704	1.09	0.159	0.005	-	-	-	-	-	O,M	-
	23-Jun-21	RG_SC_PCC-02	27	24	130.345	OT, SC	8	F	18.208	1.026	111.111	0.94	0.140	0.008	-	-	-	-	-	O,M	-
	23-Jun-21	RG_SC_PCC-03	26.4	23.9	131.070	OT, SC	9	F	2.376	1.162	127.532	0.96	0.018	0.009	-	-	L	-	8.839	O,M	-
	23-Jun-21	RG_SC_PCC-05	26.9	24.1	140.263	OT, SC	7	F	5.007	1.617	133.639	1.00	0.036	0.012	-	-	-	-	-	O,M	-
	25-Jun-21	RG_SC_PCC-06	26.2	23.8	159.416	OT, SC	7	F	21.241	1.876	136.299	1.18	0.133	0.012	-	-	-	L	6.852	O,M	-
	25-Jun-21	RG_SC_PCC-07	26.6	24.0	136.404	OT, SC	8	F	17.279	2.523	116.602	0.99	0.127	0.018	-	-	-	-	-	O,M	-
	25-Jun-21	RG_SC_PCC-08	25.0	22.8	119.561	OT, SC	7	F	9.301	1.32	108.94	1.01	0.078	0.011	-	-	-	L	3.243	O,M	-
	25-Jun-21	RG_SC_PCC-09	27.1	24.5	174.560	OT, SC	6	F	23.193	1.791	149.576	1.19	0.133	0.010	-	-	-	L	7.905	O,M	-
	25-Jun-21	RG_SC_PCC-10	25.7	23.5	141.491	OT, SC	9	F	18.719	1.111	121.661	1.09	0.132	0.008	-	-	-	L	8.917	O,M	Dup
	25-Jun-21	RG_SC_PCC-11	24.6	21.3	112.838	OT, SC	7	F	15.563	0.917	96.358	1.17	0.138	0.008	-	-	-	L	4.66	O,M	-
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-	-
average			**26.0**	**23.4**	**136.521**	**-**	**7.6**	**-**	**14.988**	**1.390**	**120.142**	**1.06**	**0.109**	**0.010**	-	-	-	-	-	-	-
median			**26.3**	**23.9**	**133.737**	**-**	**7.5**	**-**	**17.744**	**1.241**	**119.132**	**1.05**	**0.133**	**0.010**	-	-	-	-	-	-	-
standard deviation			**0.96**	**1.00**	**18.927**	**-**	**0.97**	**-**	**7.0189**	**0.569**	**16.897**	**0.09**	**0.048**	**0.004**	-	-	-	-	-	-	-
standard error			**0.304**	**0.317**	**5.985**	**-**	**0.306**	**-**	**2.220**	**0.180**	**5.343**	**0.03**	**0.015**	**0.001**	-	-	-	-	-	-	-
minimum			**24.6**	**21.3**	**112.838**	**-**	**6**	**-**	**2.376**	**0.559**	**96.358**	**0.94**	**0.018**	**0.005**	-	-	-	-	-	-	-
maximum			**27.1**	**24.5**	**174.56**	**-**	**9**	**-**	**23.193**	**2.523**	**149.576**	**1.19**	**0.159**	**0.018**	-	-	-	-	-	-	-
Elk River	22-Jun-21	RG_ER_PCC-01	25.1	22.5	107.880	OT, SC	8	F	12.430	0.395	95.055	0.95	0.115	0.004	-	-	-	-	-	O,M	-
	22-Jun-21	RG_ER_PCC-02	23.8	21.3	104.290	OT, SC	7	F	15.493	0.582	88.215	1.08	0.149	0.006	-	-	-	-	-	O,M	-
	22-Jun-21	RG_ER_PCC-03	24.2	22.0	90.740	OT, SC	6	F	7.118	0.742	82.880	0.85	0.078	0.008	-	-	-	-	-	O,M	-
	22-Jun-21	RG_ER_PCC-04	24.9	22.4	113.466	OT, SC	8	F	12.933	1.218	99.315	1.01	0.114	0.011	-	-	-	-	-	O,M	-
	23-Jun-21	RG_ER_PCC-05	26.0	23.4	137.000	OT, SC	7	F	15.000	1.728	120.272	1.07	0.109	0.013	-	-	-	-	-	O,M	-
	23-Jun-21	RG_ER_PCC-06	27.0	24.3	124.200	OT, SC	8	F	20.586	1.063	102.551	0.87	0.166	0.009	-	-	-	-	-	O,M	-
	23-Jun-21	RG_ER_PCC-07	24.4	22.2	119.738	OT, SC	8	F	16.303	1.643	101.792	1.09	0.136	0.014	-	-	L	-	-	O,M	-
	23-Jun-21	RG_ER_PCC-08	24.5	22.3	114.007	OT, SC	7	F	10.466	1.149	102.392	1.03	0.092	0.010	-	L	-	-	-	O,M	-
	23-Jun-21	RG_ER_PCC-09	26.5	24.0	143.820	OT, SC	8	F	16.926	1.403	125.491	1.04	0.118	0.010	-	-	-	-	-	O,M	Dup
	23-Jun-21	RG_ER_PCC-10	26.2	23.5	142.006	OT, SC	7	F	13.785	0.746	127.475	1.09	0.097	0.005	-	-	-	-	-	O,M	-
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-	-
average			**25.3**	**22.8**	**119.715**	**-**	**7.4**	**-**	**14.104**	**1.067**	**104.544**	**1.01**	**0.117**	**0.009**	-	-	-	-	-	-	-
median			**25.0**	**22.5**	**116.873**	**-**	**7.5**	**-**	**14.393**	**1.106**	**102.092**	**1.03**	**0.115**	**0.009**	-	-	-	-	-	-	-
standard deviation			**1.09**	**0.96**	**17.276**	**-**	**0.70**	**-**	**3.710**	**0.448**	**15.208**	**0.09**	**0.027**	**0.003**	-	-	-	-	-	-	-
standard error			**0.345**	**0.303**	**5.463**	**-**	**0.221**	**-**	**1.173**	**0.142**	**4.809**	**0.03**	**0.008**	**0.001**	-	-	-	-	-	-	-
minimum			**23.8**	**21.3**	**90.740**	**-**	**6**	**-**	**7.118**	**0.395**	**82.880**	**0.85**	**0.078**	**0.004**	-	-	-	-	-	-	-
maximum			**27**	**24.3**	**143.820**	**-**	**8**	**-**	**20.586**	**1.728**	**127.475**	**1.09**	**0.166**	**0.014**	-	-	-	-	-	-	-
Gold Creek	23-Jun-21	RG_GC_PCC-01	21.0	18.9	69.294	OT, Sc	6	F	10.526	0.801	57.967	1.03	0.152	0.012	-	-	-	-	-	O,M	-
	24-Jun-21	RG_GC_PCC-02	25.6	22.9	112.062	OT, Sc	7	F	1.407	1.460	109.195	0.93	0.013	0.013	-	-	-	-	-	O,M	-
	24-Jun-21	RG_GC_PCC-03	25.0	22.9	107.787	OT, Sc	5	F	1.579	1.767	104.441	0.90	0.015	0.016	-	-	-	-	-	O,M	-
	25-Jun-21	RG_GC_PCC-04	20.5	18.3	56.238	-	-	F	-	-	-	0.92	-	-	-	-	-	-	-	-	Spent Female
	25-Jun-21	RG_GC_PCC-05	21.5	19.2	69.431	-	-	F	-	-	-	0.98	-	-	-	-	-	-	-	-	Spent Female
total sample size			**5**	**5**	**5**	**-**	**3**	**-**	**3**	**3**	**3**	**5**	**3**	**3**	-	-	-	-	-	-	-
average			**22.7**	**20.4**	**82.962**	**-**	**6.0**	**-**	**4.504**	**1.343**	**90.534**	**1.0**	**0.060**	**0.014**	-	-	-	-	-	-	-
median			**21.5**	**19.2**	**69.431**	**-**	**6.0**	**-**	**1.579**	**1.460**	**104.441**	**0.9**	**0.015**	**0.013**	-	-	-	-	-	-	-
standard deviation			**2.39**	**2.27**	**25.235**	**-**	**1.00**	**-**	**5.216**	**0.494**	**28.304**	**0.05**	**0.080**	**0.002**	-	-	-	-	-	-	-
standard error			**1.069**	**1.015**	**11.285**	**-**	**0.577**	**-**	**3.011**	**0.285**	**16.341**	**0.023**	**0.046**	**0.001**	-	-	-	-	-	-	-
minimum			**20.5**	**18.3**	**56.238**	**-**	**5**	**-**	**1.407**	**0.801**	**57.967**	**0.898**	**0.013**	**0.012**	-	-	-	-	-	-	-
maximum			**25.6**	**22.9**	**112.062**	**-**	**7**	**-**	**10.526**	**1.767**	**109.195**	**1.026**	**0.152**	**0.016**	-	-	-	-	-	-	-

[a] Age structures collected: sc - scales, oto - otoliths

[b] Adjusted Body Weight = Body Weight - Liver Weight - Gonad Weight

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Note: Data not collected for all PCC in Gold Creek because fish were determined to be spawned out

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Sand Creek	19-Apr-21	RG_SC_RSC-02	10.6	9.4	8.832	OT	3	F	0.410	0.152	8.270	1.06	0.046	0.017	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-04	11.2	10.0	10.941	OT	4	F	0.552	0.271	10.118	1.09	0.050	0.025	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-07	11.5	10.4	11.624	OT	3	F	0.473	0.188	10.963	1.03	0.041	0.016	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-08	11.4	10.1	10.662	OT	2	F	0.466	0.123	10.073	1.03	0.044	0.012	-		-	-	-	-
	19-Apr-21	RG_SC_RSC-09	10.1	8.8	7.691	OT	3	F	0.071	0.232	7.388	1.13	0.009	0.030	-	-	L	-	0.622	-
	19-Apr-21	RG_SC_RSC-10	10.1	8.9	7.697	OT	3	F	0.016	0.065	7.616	1.09	0.002	0.008	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-14	12.4	10.9	14.726	OT	3	F	0.845	0.210	13.671	1.14	0.057	0.014	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-15	12.1	10.4	15.597	OT	3	F	1.011	0.268	14.318	1.39	0.065	0.017	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-16	11.2	10.0	12.480	OT	3	F	0.787	0.184	11.509	1.25	0.063	0.015	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-17	12.8	10.3	20.023	OT	4	F	0.893	0.384	18.746	1.83	0.045	0.019	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-19	12.2	10.8	15.991	OT	4	F	0.582	0.268	15.141	1.27	0.036	0.017	-	L	-	-	0.337	-
	20-Apr-21	RG_SC_RSC-22	10.8	9.6	10.888	OT	3	F	0.620	0.149	10.119	1.23	0.057	0.014	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-23	11.9	10.5	15.499	OT	3	F	0.340	0.178	14.981	1.34	0.022	0.011	-	-	L	-	1.817	-
	20-Apr-21	RG_SC_RSC-27	11.6	10.3	12.840	OT	3	F	0.698	0.152	11.990	1.18	0.054	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-28	11.0	9.8	10.648	OT	3	F	0.522	0.180	9.946	1.13	0.049	0.017	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-29	13.5	12.0	20.293	OT	4	F	1.112	0.470	18.711	1.17	0.055	0.023	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-30	11.5	10.0	12.270	OT	3	F	0.565	0.151	11.554	1.23	0.046	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-31	10.5	9.5	10.493	OT	3	F	0.548	0.242	9.703	1.22	0.052	0.023	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-32	12.7	11.8	17.534	OT	4	F	0.854	0.342	16.338	1.07	0.049	0.020	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-33	10.8	9.5	10.609	OT	3	F	0.252	0.150	10.207	1.24	0.024	0.014	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-34	10.3	8.9	8.196	OT	2	F	0.188	0.096	7.912	1.16	0.023	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-37	13.3	12.0	21.207	OT	4	F	0.791	0.147	20.269	1.23	0.037	0.007	-	-	-	L	1.934	-
	20-Apr-21	RG_SC_RSC-38	11.1	9.8	11.737	OT	3	F	0.583	0.130	11.024	1.25	0.050	0.011	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-41	12.1	10.7	16.384	OT	4	F	0.957	0.300	15.127	1.34	0.058	0.018	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-42	11.3	10.1	12.430	OT	3	F	0.463	0.053	11.914	1.21	0.037	0.004	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-43	11.4	10.2	11.946	OT	3	F	0.696	0.274	10.976	1.13	0.058	0.023	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-44	11.7	10.2	12.607	OT	3	F	0.911	0.148	11.548	1.19	0.072	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-45	11.4	9.9	11.664	OT	3	F	0.412	0.185	11.067	1.20	0.035	0.016	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-46	10.8	9.8	11.515	OT	3	F	0.550	0.184	10.781	1.22	0.048	0.016	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-51	11.7	10.5	12.322	OT	3	F	0.428	0.204	11.690	1.06	0.035	0.017	-	L	-	-	0.487	-
	20-Apr-21	RG_SC_RSC-52	10.4	9.2	9.464	OT	3	F	0.513	0.123	8.828	1.22	0.054	0.013	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-56	11.9	10.6	14.580	OT	3	F	0.913	0.342	13.325	1.22	0.063	0.023	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-57	11.5	10.4	12.064	OT	3	F	0.623	0.121	11.320	1.07	0.052	0.010	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-59	12.2	10.5	14.415	OT	4	F	0.726	0.150	13.539	1.25	0.050	0.010	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-60	11.2	10.0	11.553	OT	3	F	0.417	0.104	11.032	1.16	0.036	0.009	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-62	11.0	9.7	9.971	OT	3	F	0.481	0.187	9.303	1.09	0.048	0.019	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-63	12.2	10.8	15.249	OT	4	F	0.490	0.177	14.582	1.21	0.032	0.012	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-66	12.0	10.4	13.642	OT	3	F	0.635	0.172	12.835	1.21	0.047	0.013	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-68	11.3	9.8	11.002	OT	3	F	0.473	0.171	10.358	1.17	0.043	0.016	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-69	10.6	9.5	11.391	OT	3	F	0.357	0.124	10.910	1.33	0.031	0.011	-	L	-	-	0.073	-
	total sample size		**40**	**40**	**40**	**-**	**40**	**-**	**40**	**40**	**40**	**40**	**40**	**40**	-	**-**	**-**	-	-	-
	average		**11.5**	**10.2**	**12.767**	**-**	**3.2**	**-**	**0.6**	**0.2**	**11.993**	**1.2**	**0.044**	**0.015**	-	**-**	**-**	-	-	-
	median		**11.4**	**10.1**	**12.005**	**-**	**3.0**	**-**	**0.6**	**0.2**	**11.194**	**1.2**	**0.047**	**0.015**	-	**-**	**-**	-	-	-
	standard deviation		**0.812**	**0.733**	**3.221**	**-**	**0.501**	**-**	**0.245**	**0.086**	**2.993**	**0.133**	**0.015**	**0.005**	-	**-**	**-**	-	-	-
	standard error		**0.128**	**0.116**	**0.509**	**-**	**0.079**	**-**	**0.039**	**0.014**	**0.473**	**0.021**	**0.002**	**0.001**	-	**-**	**-**	-	-	-
	minimum		**10.1**	**8.8**	**7.691**	**-**	**2**	**-**	**0.016**	**0.053**	**7.388**	**1.03**	**0.002**	**0.004**	-	**-**	**-**	-	-	-
	maximum		**13.5**	**12**	**21.207**	**-**	**4**	**-**	**1.112**	**0.47**	**20.269**	**1.83**	**0.072**	**0.030**	-	**-**	**-**	-	-	-

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Sand Creek	19-Apr-21	RG_SC_RSC-01	10.6	9.4	9.053	OT	3	M	0.106	0.123	8.824	1.09	0.012	0.014	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-03	11.2	9.9	11.748	OT	4	M	0.157	0.239	11.352	1.21	0.013	0.020	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-05	11.4	10.1	11.428	OT	4	M	0.172	0.109	11.147	1.11	0.015	0.010	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-06	11.1	9.6	10.278	OT	2	M	0.087	0.216	9.975	1.16	0.008	0.021	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-11	11.1	9.5	10.698	OT	4	M	0.110	0.157	10.431	1.25	0.010	0.015	-	-	-	-	-	-
	19-Apr-21	RG_SC_RSC-12	9.9	8.9	7.920	OT	3	M	0.109	0.194	7.617	1.12	0.014	0.024	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-13	12.5	11.3	16.600	OT	4	M	0.216	0.214	16.170	1.15	0.013	0.013	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-18	11.9	10.3	13.094	OT	3	M	0.138	0.233	12.723	1.20	0.011	0.018	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-20	11.2	9.6	11.733	OT	3	M	0.152	0.184	11.397	1.33	0.013	0.016	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-21	11.8	10.0	13.490	OT	3	M	0.202	0.160	13.128	1.35	0.015	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-24	12.1	10.5	14.494	OT	3	M	0.125	0.226	14.143	1.25	0.009	0.016	-	L	-	-	0.067	-
	20-Apr-21	RG_SC_RSC-25	11.8	10.1	11.767	OT	3	M	0.094	0.138	11.535	1.14	0.008	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-26	10.7	9.4	9.489	OT	3	M	0.093	0.099	9.297	1.14	0.010	0.010	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-35	10.1	8.9	8.662	OT	2	M	0.050	0.109	8.503	1.23	0.006	0.013	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-36	12.6	11.2	14.800	OT	3	M	0.140	0.156	14.504	1.05	0.009	0.011	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-39	11.7	9.8	14.730	OT	3	M	0.129	0.177	14.424	1.57	0.009	0.012	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-40	12.0	10.4	13.337	OT	3	M	0.135	0.277	12.925	1.19	0.010	0.021	-	L	-	-	0.036	Fatty Liver
	20-Apr-21	RG_SC_RSC-47	11.3	9.8	11.404	OT	4	M	0.136	0.216	11.052	1.21	0.012	0.019	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-48	11.1	9.6	9.360	OT	3	M	0.111	0.130	9.119	1.06	0.012	0.014	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-49	11.6	9.9	10.949	OT	3	M	0.183	0.165	10.601	1.13	0.017	0.015	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-50	11.6	10.3	13.651	OT	4	M	0.324	0.226	13.101	1.25	0.024	0.017	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-53	10.3	9.1	8.851	OT	3	M	0.129	0.225	8.497	1.17	0.015	0.025	-	-	-	-	-	-
	20-Apr-21	RG_SC_RSC-54	11.0	9.9	9.477	OT	3	M	0.153	0.212	9.112	0.98	0.016	0.022	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-55	11.6	10.4	13.493	OT	3	M	0.154	0.056	13.283	1.20	0.011	0.004	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-58	12.1	10.7	14.017	OT	3	M	0.153	0.146	13.718	1.14	0.011	0.010	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-61	10.0	8.2	9.011	OT	3	M	0.100	0.117	8.794	1.63	0.011	0.013	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-64	12.5	11.0	15.642	OT	4	M	0.216	0.195	15.231	1.18	0.014	0.012	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-65	10.9	8.7	10.491	OT	3	M	0.212	0.149	10.130	1.59	0.020	0.014	-	-	-	-	-	-
	21-Apr-21	RG_SC_RSC-67	11.4	10.9	12.614	OT	3	M	0.152	0.280	12.182	0.97	0.012	0.022	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-70	10.5	9.3	9.734	OT	3	M	0.122	0.143	9.469	1.21	0.013	0.015	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-71	11.1	9.8	11.088	OT	3	M	0.140	0.245	10.703	1.18	0.013	0.022	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-72	12.1	10.6	13.197	OT	3	M	0.141	0.144	12.912	1.11	0.011	0.011	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-73	11.4	9.9	10.680	OT	3	M	0.106	0.134	10.440	1.10	0.010	0.013	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-74	10.5	9.3	9.084	OT	2	M	0.098	0.120	8.866	1.13	0.011	0.013	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-75	10.7	9.4	10.852	OT	3	M	0.192	0.196	10.464	1.31	0.018	0.018	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-76	12.0	10.4	13.053	OT	3	M	0.155	0.199	12.699	1.16	0.012	0.015	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-77	11.1	9.6	9.645	OT	3	M	0.120	0.112	9.413	1.09	0.012	0.012	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-78	11.6	10.2	12.545	OT	3	M	0.176	0.124	12.245	1.18	0.014	0.010	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-79	11.2	9.8	10.391	OT	3	M	0.137	0.128	10.126	1.10	0.013	0.012	-	-	-	-	-	-
	22-Apr-21	RG_SC_RSC-80	11.6	10.0	13.495	OT	3	M	0.091	0.119	13.285	1.35	0.007	0.009	-	-	-	-	-	-
	total sample size		**40**	**40**	**40**	**-**	**40**	**-**	**40**	**40**	**40**	**40**	**40**	**40**	-	-	-	-	-	-
	average		**11.3**	**9.9**	**11.651**	**-**	**3.1**	**-**	**0.1**	**0.2**	**11.3**	**1.2**	**0.012**	**0.015**	-	-	-	-	-	-
	median		**11.4**	**9.9**	**11.416**	**-**	**3.0**	**-**	**0.1**	**0.2**	**11.1**	**1.2**	**0.012**	**0.014**	-	-	-	-	-	-
	standard deviation		**0.680**	**0.672**	**2.150**	**-**	**0.496**	**-**	**0.048**	**0.053**	**2.113**	**0.143**	**0.003**	**0.005**	-	-	-	-	-	-
	standard error		**0.107**	**0.106**	**0.340**	**-**	**0.078**	**-**	**0.008**	**0.008**	**0.334**	**0.023**	**0.001**	**0.001**	-	-	-	-	-	-
	minimum		**9.9**	**8.2**	**7.920**	**-**	**2**	**-**	**0.05**	**0.056**	**7.617**	**0.974**	**0.006**	**0.004**	-	-	-	-	-	-
	maximum		**12.6**	**11.3**	**16.600**	**-**	**4**	**-**	**0.324**	**0.28**	**16.17**	**1.634**	**0.024**	**0.025**	-	-	-	-	-	-

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Elk River	20-Apr-21	RG_ER_RSC-02	12.1	10.5	13.950	OT	3	F	0.673	0.173	13.104	1.21	0.048	0.012	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-03	12.3	10.7	13.286	OT	5	F	0.621	0.180	12.485	1.08	0.047	0.014	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-04	10.6	9.5	10.176	OT	3	F	0.705	0.171	9.300	1.19	0.069	0.017	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-06	11.2	9.9	10.251	OT	4	F	0.450	0.123	9.678	1.06	0.044	0.012	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-10	11.4	10.0	11.824	OT	3	F	0.493	0.188	11.143	1.18	0.042	0.016	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-11	9.2	8.9	6.602	OT	3	F	0.248	0.130	6.224	0.94	0.038	0.020	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-12	9.3	8.7	6.581	OT	3	F	0.211	0.121	6.249	1.00	0.032	0.018	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-13	9.8	8.5	8.100	OT	4	F	0.248	0.123	7.729	1.32	0.031	0.015	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-15	9.5	8.3	7.596	OT	3	F	0.061	0.095	7.440	1.33	0.008	0.013	-	L	-	-	1.495	-
	20-Apr-21	RG_ER_RSC-17	9.4	7.9	6.470	OT	3	F	0.134	0.120	6.216	1.31	0.021	0.019	-	L	-	-	0.042	-
	20-Apr-21	RG_ER_RSC-18	9.7	8.4	7.466	OT	3	F	0.278	0.141	7.047	1.26	0.037	0.019	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-19	9.4	8.3	6.458	OT	3	F	0.164	0.088	6.206	1.13	0.025	0.014	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-20	12.0	10.5	14.725	OT, SC	4	F	0.812	0.136	13.777	1.27	0.055	0.009	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-21	12.0	10.7	15.834	OT, SC	4	F	0.898	0.273	14.663	1.29	0.057	0.017	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-22	13.9	12.2	17.348	OT, SC	4	F	0.237	0.114	16.997	0.96	0.014	0.007	-	-	-	L	3.206	-
	21-Apr-21	RG_ER_RSC-23	11.6	10.1	11.640	OT, SC	4	F	0.707	0.934	9.999	1.13	0.061	0.080	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-25	11.6	10.4	11.708	OT, SC	3	F	0.507	0.129	11.072	1.04	0.043	0.011	-	L	-	-	0.661	-
	21-Apr-21	RG_ER_RSC-26	11.3	10.0	11.704	OT, SC	3	F	0.494	0.162	11.048	1.17	0.042	0.014	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-27	12.3	10.8	15.931	OT, SC	4	F	0.695	0.265	14.971	1.26	0.044	0.017	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-29	11.0	9.5	12.187	OT, SC	3	F	0.609	0.050	11.528	1.42	0.050	0.004	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-30	12.1	10.6	15.138	OT, SC	4	F	0.669	0.249	14.220	1.27	0.044	0.016	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-31	10.4	9.1	9.495	OT, SC	4	F	0.543	0.177	8.775	1.26	0.057	0.019	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-32	11.6	10.6	13.728	OT, SC	3	F	0.872	0.302	12.554	1.15	0.064	0.022	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-33	12.0	10.3	12.248	OT, SC	3	F	0.620	0.122	11.506	1.12	0.051	0.010	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-35	11.2	10.0	11.669	OT, SC	3	F	0.608	0.138	10.923	1.17	0.052	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-36	12.0	10.4	15.170	OT, SC	3	F	0.741	0.219	14.210	1.35	0.049	0.014	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-39	11.2	9.7	11.890	OT, SC	4	F	0.521	0.176	11.193	1.30	0.044	0.015	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-40	12.0	10.4	13.702	OT, SC	3	F	0.694	0.203	12.805	1.22	0.051	0.015	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-41	10.8	9.5	10.421	OT, SC	3	F	0.571	0.177	9.673	1.22	0.055	0.017	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-43	11.2	9.8	11.107	OT, SC	3	F	0.413	0.137	10.557	1.18	0.037	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-46	10.7	9.5	9.468	OT, SC	3	F	0.537	0.147	8.784	1.10	0.057	0.016	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-49	11.7	10.4	13.631	OT, SC	3	F	0.678	0.259	12.694	1.21	0.050	0.019	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-50	10.8	9.0	8.999	OT, SC	3	F	0.272	0.120	8.607	1.23	0.030	0.013	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-51	11.5	10.0	11.693	OT, SC	4	F	0.599	0.137	10.957	1.17	0.051	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-52	11.9	10.4	10.378	OT, SC	3	F	0.311	0.111	9.956	0.92	0.030	0.011	-	L	-	-	0.373	Fatty liver
	21-Apr-21	RG_ER_RSC-53	10.2	9.5	9.542	OT, SC	3	F	0.477	0.123	8.942	1.11	0.050	0.013	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-54	11.4	10.6	12.736	OT, SC	3	F	0.546	0.157	12.033	1.07	0.043	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-55	11.0	9.8	11.947	OT, SC	3	F	0.519	0.183	11.245	1.27	0.043	0.015	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-57	12.0	10.5	14.419	OT, SC	3	F	0.650	0.134	13.635	1.25	0.045	0.009	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-60	11.7	10.3	12.826	OT, SC	2	F	0.733	0.111	11.982	1.17	0.057	0.009	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-01	10.2	8.9	7.594	OT	4	IF	0.044	0.124	7.426	1.08	0.006	0.016	-	-	-	-	-	-
	total sample size		**41**	**41**	**41**	**-**	**41**	**-**	**41**	**41**	**41**	**41**	**41**	**41**	-	**-**	**-**	-	-	-
	average		**11.2**	**9.8**	**11.406**	**-**	**3.3171**	**-**	**0.509**	**0.176**	**10.721**	**1.18**	**0.043**	**0.016**	-	**-**	**-**	-	-	-
	median		**11.3**	**10.0**	**11.704**	**-**	**3**	**-**	**0.543**	**0.138**	**11.048**	**1.18**	**0.044**	**0.014**	-	**-**	**-**	-	-	-
	standard deviation		**1.019**	**0.873**	**2.862**	**-**	**0.57**	**-**	**0.219**	**0.133**	**2.68**	**0.115**	**0.014**	**0.011**	-	**-**	**-**	-	-	-
	standard error		**0.159**	**0.136**	**0.447**	**-**	**0.09**	**-**	**0.034**	**0.021**	**0.418**	**0.018**	**0.002**	**0.002**	-	**-**	**-**	-	-	-
	minimum		**9.2**	**7.9**	**6.458**	**-**	**2**	**-**	**0.044**	**0.050**	**6.206**	**0.92**	**0.006**	**0.004**	-	**-**	**-**	-	-	-
	maximum		**13.9**	**12.2**	**17.348**	**-**	**5**	**-**	**0.898**	**0.934**	**16.997**	**1.42**	**0.069**	**0.080**	-	**-**	**-**	-	-	-

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Elk River	20-Apr-21	RG_ER_RSC-05	10.0	8.6	7.266	OT	3	M	0.106	0.115	7.045	1.14	0.015	0.016	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-07	11.0	9.8	10.535	OT	4	M	0.094	0.167	10.274	1.12	0.009	0.016	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-08	10.6	9.4	8.930	OT	3	M	0.100	0.106	8.724	1.08	0.011	0.012	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-09	10.1	8.8	6.580	OT	3	M	0.036	0.045	6.499	0.97	0.005	0.007	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-14	10.8	9.7	10.857	OT	3	M	0.049	0.099	10.709	1.19	0.005	0.009	-	-	-	-	-	-
	20-Apr-21	RG_ER_RSC-16	9.9	8.8	7.393	OT	3	M	0.062	0.147	7.184	1.08	0.008	0.020	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-24	11.1	10.0	10.223	OT, SC	3	M	0.106	0.128	9.989	1.02	0.010	0.013	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-28	11.5	9.8	11.534	OT, SC	3	M	0.089	0.898	10.547	1.23	0.008	0.078	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-34	10.1	9.0	8.742	OT, SC	3	M	0.103	0.117	8.522	1.20	0.012	0.013	-	L	-	-	0.012	-
	21-Apr-21	RG_ER_RSC-37	10.8	8.6	9.763	OT, SC	3	M	0.147	0.130	9.486	1.53	0.015	0.013	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-38	12.1	11.0	12.683	OT, SC	3	M	0.132	0.121	12.430	0.95	0.010	0.010	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-42	12.0	10.6	13.700	OT, SC	3	M	0.098	0.185	13.417	1.15	0.007	0.014	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-44	10.2	9.7	8.379	OT, SC	3	M	0.049	0.106	8.224	0.92	0.006	0.013	-	L	-	-	0.023	-
	21-Apr-21	RG_ER_RSC-45	11.2	9.8	11.387	OT, SC	4	M	0.134	0.081	11.172	1.21	0.012	0.007	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-47	10.3	9.4	9.477	OT, SC	3	M	0.099	0.117	9.261	1.14	0.010	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-48	10.2	9.3	8.032	OT, SC	3	M	0.073	0.085	7.874	1.00	0.009	0.011	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-56	11.7	10.5	12.248	OT, SC	3	M	0.110	0.140	11.998	1.06	0.009	0.011	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-58	10.2	9.4	9.402	OT, SC	3	M	0.278	0.132	8.992	1.13	0.030	0.014	-	L	-	-	0.332	-
	21-Apr-21	RG_ER_RSC-59	10.2	9.0	8.215	OT, SC	2	M	0.030	0.127	8.058	1.13	0.004	0.015	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-61	10.8	9.9	10.016	OT, SC	3	M	0.122	0.173	9.721	1.03	0.012	0.017	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-62	11.5	10.2	11.860	OT, SC	3	M	0.166	0.145	11.549	1.12	0.014	0.012	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-63	10.1	9.9	7.567	OT, SC	2	M	0.089	0.101	7.377	0.78	0.012	0.013	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-64	11.0	9.5	10.365	OT, SC	3	M	0.114	0.118	10.133	1.21	0.011	0.011	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-65	11.2	10.0	11.912	OT, SC	3	M	0.148	0.264	11.500	1.19	0.012	0.022	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-66	11.2	9.3	9.275	OT, SC	3	M	0.019	0.072	9.184	1.15	0.002	0.008	-	L	-	-	0.041	-
	21-Apr-21	RG_ER_RSC-67	10.1	8.9	7.477	OT, SC	2	M	0.047	0.050	7.380	1.06	0.006	0.007	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-68	10.8	9.5	9.160	OT, SC	2	M	0.091	0.101	8.968	1.07	0.010	0.011	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-69	11.3	9.7	10.330	OT, SC	3	M	0.103	0.100	10.127	1.13	0.010	0.010	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-70	11.5	10.2	10.912	OT, SC	3	M	0.104	0.178	10.630	1.03	0.010	0.016	-	-	-	-	-	-
	21-Apr-21	RG_ER_RSC-71	11.1	10.4	10.501	OT, SC	3	M	0.129	0.119	10.253	0.93	0.012	0.011	-	-	-	-	-	-
	25-Apr-21	RG_ER_RSC-72	12.4	11.5	16.834	OT, SC	3	M	0.355	0.201	16.278	1.11	0.021	0.012	-	F	-	-	-	-
	25-Apr-21	RG_ER_RSC-73	11.5	10.4	11.629	OT, SC	3	M	0.096	0.161	11.372	1.03	0.008	0.014	-	L	-	-	0.201	-
	25-Apr-21	RG_ER_RSC-74	10.2	9.6	8.719	OT, SC	2	M	0.072	0.081	8.566	0.99	0.008	0.009	-	-	-	-	-	-
	25-Apr-21	RG_ER_RSC-75	10.1	8.8	9.277	OT, SC	2	M	0.077	0.094	9.106	1.36	0.008	0.010	-	-	L,F	-	1.449	-
	25-Apr-21	RG_ER_RSC-76	10.5	9.4	8.013	OT, SC	2	M	0.089	0.085	7.839	0.96	0.011	0.011	-	L	-	-	0.155	-
	26-Apr-21	RG_ER_RSC-77	11.9	10.8	13.992	OT, SC	3	M	0.197	0.262	13.533	1.11	0.014	0.019	-	L	-	-	0.119	-
	26-Apr-21	RG_ER_RSC-78	12.5	11.0	16.606	OT, SC	4	M	0.139	0.132	16.335	1.25	0.008	0.008	-	L	-	-	1.131	-
	26-Apr-21	RG_ER_RSC-79	10.8	9.2	10.011	OT, SC	3	M	0.032	0.125	9.854	1.29	0.003	0.012	-	-	-	-	-	-
	26-Apr-21	RG_ER_RSC-80	10.7	9.6	10.258	OT, SC	3	M	0.045	0.191	10.022	1.16	0.004	0.019	-	-	-	-	-	-
	26-Apr-21	RG_ER_RSC-81	11.1	9.8	10.572	OT, SC	3	M	0.129	0.143	10.300	1.12	0.012	0.014	-	-	L	-	0.116	-
	total sample size		**40**	**40**	**40**	**-**	**40**	**-**	**40**	**40**	**40**	**40**	**40**	**40**	**-**	**-**	**-**	-	-	**-**
	average		**10.9**	**9.7**	**10.266**	**-**	**2.9**	**-**	**0.106**	**0.149**	**10.011**	**1.11**	**0.010**	**0.014**	**-**	**-**	**-**	-	-	**-**
	median		**10.8**	**9.7**	**10.120**	**-**	**3**	**-**	**0.100**	**0.123**	**9.922**	**1.12**	**0.010**	**0.012**	**-**	**-**	**-**	-	-	**-**
	standard deviation		**0.703**	**0.690**	**2.292**	**-**	**0.50**	**-**	**0.063**	**0.130**	**2.22**	**0.130**	**0.005**	**0.011**	**-**	**-**	**-**	-	-	**-**
	standard error		**0.111**	**0.109**	**0.362**	**-**	**0.08**	**-**	**0.010**	**0.021**	**0.351**	**0.021**	**0.001**	**0.002**	**-**	**-**	**-**	-	-	**-**
	minimum		**9.9**	**8.6**	**6.580**	**-**	**2**	**-**	**0.019**	**0.045**	**6.499**	**0.78**	**0.002**	**0.007**	**-**	**-**	**-**	-	-	**-**
	maximum		**12.5**	**11.5**	**16.834**	**-**	**4**	**-**	**0.355**	**0.898**	**16.335**	**1.53**	**0.030**	**0.078**	**-**	**-**	**-**	-	-	**-**

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Gold Creek	20-Apr-21	RG_GC_RSC-01	13.9	12.2	26.839	OT	4	F	0.627	0.339	25.873	1.48	0.023	0.013	-	-	L	-	6.498	-
	20-Apr-21	RG_GC_RSC-02	13.8	12.0	19.875	OT, SC	4	F	0.156	0.257	19.462	1.15	0.008	0.013	-	-	L	-	1.535	-
	22-Apr-21	RG_GC_RSC-04	10.8	9.3	9.781	OT, SC	2	F	0.166	0.403	9.212	1.22	0.017	0.041	-	-	-	-	-	-
	23-Apr-21	RG_GC_RSC-07	12.5	11.0	14.933	OT, SC	4	F	0.645	0.133	14.155	1.12	0.043	0.009	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-09	11.2	9.5	12.499	OT, SC	3	F	0.709	0.308	11.482	1.46	0.057	0.025	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-10	12.0	10.6	13.407	OT, SC	4	F	0.694	0.200	12.513	1.13	0.052	0.015	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-11	11.2	10.2	12.737	OT, SC	3	F	0.851	0.197	11.689	1.20	0.067	0.015	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-12	11.2	9.8	14.258	OT, SC	3	F	0.227	0.069	13.962	1.51	0.016	0.005	-	-	L	-	3.008	-
	26-Apr-21	RG_GC_RSC-13	10.3	8.6	8.235	OT, SC	3	F	0.327	0.098	7.810	1.29	0.040	0.012	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-15	12.1	10.0	15.212	OT, SC	3	F	0.771	0.163	14.278	1.52	0.051	0.011	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-16	12.3	10.8	17.660	OT, SC	3	F	0.600	0.286	16.774	1.40	0.034	0.016	-	-	L	-	1.936	-
	26-Apr-21	RG_GC_RSC-17	11.4	9.8	11.775	OT, SC	3	F	0.568	0.124	11.083	1.25	0.048	0.011	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-18	11.7	9.9	13.656	OT, SC	3	F	0.125	0.179	13.352	1.41	0.009	0.013	-	-	L	-	1.137	-
	26-Apr-21	RG_GC_RSC-19	10.1	8.2	9.947	OT, SC	3	F	0.062	0.079	9.806	1.80	0.006	0.008	-	L,F	-	-	1.891	-
	27-Apr-21	RG_GC_RSC-25	10.5	9.2	9.417	OT, SC	3	F	0.050	0.120	9.247	1.21	0.005	0.013	-	F	L	-	1.701	-
	27-Apr-21	RG_GC_RSC-26	11.8	10.5	11.320	OT, SC	3	F	0.062	0.175	11.083	0.98	0.005	0.015	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-29	12.2	10.8	13.793	OT, SC	3	F	0.818	0.434	12.541	1.09	0.059	0.031	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-32	11.2	9.6	11.204	OT, SC	3	F	0.775	0.109	10.320	1.27	0.069	0.010	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-34	11.5	10.2	11.645	OT, SC	3	F	0.817	0.138	10.690	1.10	0.070	0.012	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-41	12.3	11.0	14.081	OT, SC	3	F	0.708	0.115	13.258	1.06	0.050	0.008	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-45	11.1	9.6	10.614	OT, SC	3	F	0.013	0.064	10.537	1.20	0.001	0.006	-	L	-	-	1.479	-
	28-Apr-21	RG_GC_RSC-46	11.0	9.6	9.594	OT, SC	3	F	0.096	0.115	9.383	1.08	0.010	0.012	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-47	9.6	8.7	7.941	OT, SC	2	F	0.017	0.027	7.897	1.21	0.002	0.003	-	L	-	-	1.258	-
	28-Apr-21	RG_GC_RSC-48	11.1	10.3	20.024	OT, SC	4	F	0.847	0.201	18.976	1.83	0.042	0.010	-	L	-	-	1.604	-
	28-Apr-21	RG_GC_RSC-50	12.4	11.0	15.565	OT, SC	3	F	0.859	0.082	14.624	1.17	0.055	0.005	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-51	10.3	9.0	8.455	OT, SC	3	F	0.348	0.092	8.015	1.16	0.041	0.011	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-53	11.5	10.3	12.363	OT, SC	3	F	0.644	0.134	11.585	1.13	0.052	0.011	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-57	13.0	11.4	19.388	OT, SC	4	F	0.128	0.129	19.131	1.31	0.007	0.007	-	-	-	L	2.479	-
	28-Apr-21	RG_GC_RSC-58	10.6.	9.3	10.941	OT, SC	3	F	0.142	0.111	10.688	1.36	0.013	0.010	-	L	-	-	1.719	-
	29-Apr-21	RG_GC_RSC-62	12.1	11.1	16.608	OT, SC	3	F	0.263	0.065	16.280	1.21	0.016	0.004	-	-	L	-	2.525	-
	29-Apr-21	RG_GC_RSC-65	11.5	10.0	11.658	OT, SC	3	F	0.194	0.046	11.418	1.17	0.017	0.004	-	L	-	-	0.461	-
	29-Apr-21	RG_GC_RSC-67	11.0	9.6	11.129	OT, SC	3	F	0.105	0.094	10.930	1.26	0.009	0.008	-	-	L	-	0.1705	-
	29-Apr-21	RG_GC_RSC-68	12.0	10.6	15.026	OT, SC	3	F	0.592	0.147	14.287	1.26	0.039	0.010	-	-	-	L	1.656	-
	29-Apr-21	RG_GC_RSC-69	11.4	10.2	11.336	OT, SC	4	F	0.540	0.119	10.677	1.07	0.048	0.010	-	L	-	-	0.083	-
	29-Apr-21	RG_GC_RSC-70	12.6	11.1	15.700	OT, SC	4	F	0.857	0.083	14.760	1.15	0.055	0.005	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-71	10.7	9.4	8.789	OT, SC	3	F	0.443	0.100	8.246	1.06	0.050	0.011	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-72	10.8	9.1	10.183	OT, SC	3	F	0.465	0.108	9.610	1.35	0.046	0.011	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-73	11.2	9.8	10.772	OT, SC	4	F	0.427	0.134	10.211	1.14	0.040	0.012	-	-	L	-	0.323	-
	29-Apr-21	RG_GC_RSC-77	12.6	11.2	11.191	OT, SC	4	F	0.154	0.121	10.916	0.80	0.014	0.011	-	-	L	-	1.567	-
	29-Apr-21	RG_GC_RSC-78	11.1	9.6	9.974	OT, SC	3	F	0.375	0.129	9.470	1.13	0.038	0.013	-	-	-	-	-	-
	total sample size		**39**	**40**	**40**	**-**	**40**	**-**	**40**	**40**	**40**	**40**	**40**	**40**	**-**	**-**	**-**	-	-	-
	average		**11.6**	**10.1**	**12.988**	**-**	**3.2**	**-**	**0.432**	**0.151**	**12.406**	**1.24**	**0.033**	**0.012**	**-**	**-**	**-**	-	-	-
	median		**11.4**	**10.0**	**11.7165**	**-**	**3**	**-**	**0.435**	**0.123**	**11.251**	**1.20**	**0.040**	**0.011**	**-**	**-**	**-**	-	-	-
	standard deviation		**0.932**	**0.901**	**3.851**	**-**	**0.52**	**-**	**0.291**	**0.092**	**3.73**	**0.199**	**0.021**	**0.007**	**-**	**-**	**-**	-	-	-
	standard error		**0.149**	**0.142**	**0.609**	**-**	**0.08**	**-**	**0.046**	**0.015**	**0.589**	**0.031**	**0.003**	**0.001**	**-**	**-**	**-**	-	-	-
	minimum		**9.6**	**8.2**	**7.941**	**-**	**2**	**-**	**0.013**	**0.027**	**7.810**	**0.80**	**0.001**	**0.003**	**-**	**-**	**-**	-	-	-
	maximum		**13.9**	**12.2**	**26.839**	**-**	**4**	**-**	**0.859**	**0.434**	**25.873**	**1.83**	**0.070**	**0.041**	**-**	**-**	**-**	-	-	-

Table F.20: Fish Meristics Data for Redside Shiners Health Assessment, Koocanusa Reservoir, April 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor (K)	Gonado-somatic Index	Hepato-somatic Index	Anomolies [c]				Worm Weight (g)	Comment
															0	1	2	3		
Gold Creek	22-Apr-21	RG_GC_RSC-03	11.0	9.8	11.500	OT, SC	4	M	0.100	0.231	11.169	1.22	0.009	0.020	-	L	-	-	0.957	-
	22-Apr-21	RG_GC_RSC-05	10.5	9.2	8.736	OT, SC	2	M	0.098	0.088	8.550	1.12	0.011	0.010	-	-	-	-	-	-
	23-Apr-21	RG_GC_RSC-06	10.1	8.9	7.310	OT, SC	4	M	0.049	0.106	7.155	1.04	0.007	0.015	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-08	11.4	9.8	10.976	OT, SC	3	M	0.122	0.115	10.739	1.17	0.011	0.010	-	-	-	-	-	-
	26-Apr-21	RG_GC_RSC-14	10.7	8.5	8.609	OT, SC	3	M	0.141	0.121	8.347	1.40	0.016	0.014	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-20	10.3	9.0	8.196	OT, SC	3	M	0.115	0.150	7.931	1.12	0.014	0.018	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-21	11.1	9.6	10.246	OT, SC	4	M	0.114	0.178	9.954	1.16	0.011	0.017	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-22	11.6	10.1	10.928	OT, SC	4	M	0.130	0.195	10.603	1.06	0.012	0.018	-	L	-	-	0.02	-
	27-Apr-21	RG_GC_RSC-23	13.0	11.2	12.726	OT, SC	3	M	0.150	0.202	12.374	0.91	0.012	0.016	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-24	11.5	10.5	13.510	OT, SC	3	M	3.179	0.183	10.148	1.17	0.235	0.014	-	-	-	-	-	-
	27-Apr-21	RG_GC_RSC-27	10.6	9.4	9.101	OT, SC	3	M	0.025	0.072	9.004	1.10	0.003	0.008	-	-	L	-	0.49	-
	27-Apr-21	RG_GC_RSC-28	10.7	9.5	6.757	OT, SC	2	M	0.072	0.115	6.570	0.79	0.011	0.017	F	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-30	9.9	8.8	8.494	OT, SC	3	M	0.110	0.106	8.278	1.25	0.013	0.012	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-31	11.0	9.7	9.437	OT, SC	3	M	0.086	0.137	9.214	1.03	0.009	0.015	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-33	10.3	9.1	8.641	OT, SC	2	M	0.211	0.093	8.337	1.15	0.024	0.011	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-35	11.2	9.6	10.542	OT, SC	4	M	0.107	0.152	10.283	1.19	0.010	0.014	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-36	11.4	10.0	12.228	OT, SC	3	M	0.036	0.092	12.100	1.22	0.003	0.008	-	L	-	-	2.11	-
	28-Apr-21	RG_GC_RSC-37	11.4	9.7	10.760	OT, SC	3	M	0.107	0.159	10.494	1.18	0.010	0.015	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-38	10.6	9.5	9.164	OT, SC	3	M	0.074	0.130	8.960	1.07	0.008	0.014	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-39	10.3	9.1	8.085	OT, SC	3	M	0.035	0.046	8.004	1.07	0.004	0.006	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-40	11.1	9.8	11.082	OT, SC	3	M	0.261	0.149	10.672	1.18	0.024	0.013	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-42	11.2	9.8	10.284	OT, SC	3	M	0.094	0.155	10.035	1.09	0.009	0.015	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-43	12.3	10.7	14.478	OT, SC	3	M	0.093	0.137	14.248	1.18	0.006	0.009	-	-	L	-	1.466	-
	28-Apr-21	RG_GC_RSC-44	11.2	9.7	11.158	OT, SC	3	M	0.196	0.113	10.849	1.22	0.018	0.010	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-49	11.2	10.1	12.403	OT, SC	3	M	0.044	0.162	12.197	1.20	0.004	0.013	-	-	L	-	0.942	-
	28-Apr-21	RG_GC_RSC-52	11.2	9.9	10.803	OT, SC	3	M	0.552	0.138	10.113	1.11	0.051	0.013	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-54	9.7	8.5	8.954	OT, SC	3	M	0.057	0.090	8.807	1.46	0.006	0.010	-	L	-	-	1.729	-
	28-Apr-21	RG_GC_RSC-55	11.9	10.4	13.318	OT, SC	3	M	0.141	0.103	13.074	1.18	0.011	0.008	-	-	-	-	-	-
	28-Apr-21	RG_GC_RSC-56	9.5	8.4	7.715	OT, SC	3	M	0.019	0.042	7.654	1.30	0.002	0.005	-	-	L	-	1.244	-
	29-Apr-21	RG_GC_RSC-59	11.4	10.1	11.637	OT, SC	3	M	0.194	0.172	11.271	1.13	0.017	0.015	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-60	12.2	10.5	15.053	OT, SC	3	M	0.059	0.133	14.861	1.30	0.004	0.009	L	-	-	-	1.979	-
	29-Apr-21	RG_GC_RSC-61	11.9	10.3	11.644	OT, SC	3	M	0.165	0.168	11.311	1.07	0.014	0.014	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-63	11.7	10.3	10.346	OT, SC	4	M	0.115	0.085	10.146	0.95	0.011	0.008	-	L	-	-	0.01	-
	29-Apr-21	RG_GC_RSC-64	10.9	9.7	9.374	OT, SC	3	M	0.114	0.135	9.125	1.03	0.012	0.014	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-66	10.7	9.6	9.165	OT, SC	3	M	0.115	0.090	8.960	1.04	0.013	0.010	-	L	-	-	0.0006	-
	29-Apr-21	RG_GC_RSC-74	11.0	9.6	9.449	OT, SC	3	M	0.120	0.248	9.081	1.07	0.013	0.026	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-75	12.2	10.6	14.402	OT, SC	4	M	0.086	0.144	14.172	1.21	0.006	0.010	-	L	-	-	2.17	-
	29-Apr-21	RG_GC_RSC-76	11.0	9.5	10.065	OT, SC	3	M	0.109	0.150	9.806	1.17	0.011	0.015	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-79	10.8	9.5	8.430	OT, SC	3	M	0.020	0.100	8.310	0.98	0.002	0.012	-	-	-	-	-	-
	29-Apr-21	RG_GC_RSC-80	10.7	9.3	9.547	OT, SC	3	M	0.091	0.103	9.353	1.19	0.010	0.011	-	L	-	-	0.018	-
	total sample size		**40**	**40**	**40**	**-**	**40**	**-**	**40**	**40**	**40**	**40**	**40**	**40**	**-**	**-**	**-**	-	-	-
	average		**11.1**	**9.7**	**10.381**	**-**	**3.1**	**-**	**0.193**	**0.132**	**10.056**	**1.14**	**0.017**	**0.013**	-	**-**	**-**	-	-	-
	median		**11.1**	**9.7**	**10.265**	**-**	**3**	**-**	**0.108**	**0.134**	**9.995**	**1.15**	**0.011**	**0.013**	-	**-**	**-**	-	-	-
	standard deviation		**0.724**	**0.623**	**2.019**	**-**	**0.50**	**-**	**0.492**	**0.045**	**1.93**	**0.123**	**0.036**	**0.004**	-	**-**	**-**	-	-	-
	standard error		**0.114**	**0.098**	**0.319**	**-**	**0.08**	**-**	**0.078**	**0.007**	**0.305**	**0.020**	**0.006**	**0.001**	-	**-**	**-**	-	-	-
	minimum		**9.5**	**8.4**	**6.757**	**-**	**2**	**-**	**0.019**	**0.042**	**6.570**	**0.79**	**0.002**	**0.005**	-	**-**	**-**	-	-	-
	maximum		**13.0**	**11.2**	**15.053**	**-**	**4**	**-**	**3.179**	**0.248**	**14.861**	**1.46**	**0.235**	**0.026**	**-**	**-**	**-**	-	-	-

Notes: M = Male, F = Female, IF = Immature Female, I = Immature

[a] Age structures collected: sc - scales, oto - otoliths

[b] Adjusted Body Weight = Body Weight - Liver Weight - Gonad Weight

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Table F.21: Fish Meristics Data for Redside Shiner, Koocanusa Reservoir Monitoring Program, June 2021

Area	Processing Date	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Age Structure Collected [a]	Age	Sex	Gonad Weight (g)	Liver Weight (g)	Adjusted Body Weight (g) [b]	Fulton's Condition Factor(K)	Gonado-somatic Index	Hepato-somatic Index	Anomalies[c]				Worm Weight (g)	Tissue Collected
															0	1	2	3		
Sand Creek	25-Jun-21	RG_SC_RSC-01	12.1	10.7	18.518	OT, SC	3	F	3.963	0.398	14.157	1.51	0.214	0.021	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-02	13.0	11.3	21.661	OT, SC	5	F	2.976	0.393	18.292	1.50	0.137	0.018	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-03	10.3	9.6	11.671	OT, SC	5	F	1.733	0.176	9.762	1.32	0.148	0.015	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-04	12.9	11.4	19.611	OT, SC	5	F	2.937	0.385	16.289	1.32	0.150	0.020	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-05	12.2	10.9	17.397	OT, SC	4	F	2.889	0.311	14.197	1.34	0.166	0.018	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-06	10.7	9.2	11.935	OT, SC	4	F	1.980	0.255	9.700	1.53	0.166	0.021	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-07	11.0	9.7	13.960	OT, SC	3	F	2.038	0.224	11.698	1.53	0.146	0.016	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-08	10.7	9.5	11.610	OT, SC	4	F	1.767	0.228	9.615	1.35	0.152	0.020	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-09	11.0	9.6	12.847	OT, SC	4	F	1.388	0.189	11.270	1.45	0.108	0.015	-	-	-	-	-	O,M
	25-Jun-21	RG_SC_RSC-10	10.6	9.8	11.684	OT, SC	4	F	1.496	0.194	9.994	1.24	0.128	0.017	-	-	-	-	-	O,M
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-
average			**11.5**	**10.2**	**15.089**	**-**	**4.1**	**-**	**2.317**	**0.275**	**12.497**	**1.41**	**0.152**	**0.018**	-	-	-	-	-	-
median			**11.0**	**9.8**	**13.404**	**-**	**4.0**	**-**	**2.009**	**0.242**	**11.484**	**1.40**	**0.149**	**0.018**	-	-	-	-	-	-
standard deviation			**1.00**	**0.8**	**3.835**	**-**	**0.74**	**-**	**0.832**	**0.089**	**3.084**	**0.11**	**0.028**	**0.002**	-	-	-	-	-	-
standard error			**0.3**	**0.3**	**1.213**	**-**	**0.233**	**-**	**0.263**	**0.028**	**0.975**	**0.03**	**0.009**	**0.001**	-	-	-	-	-	-
minimum			**10.3**	**9.2**	**11.610**	**-**	**3**	**-**	**1.388**	**0.176**	**9.615**	**1.24**	**0.108**	**0.015**	-	-	-	-	-	-
maximum			**13.0**	**11.4**	**21.661**	**-**	**5**	**-**	**3.963**	**0.398**	**18.292**	**1.53**	**0.214**	**0.021**	-	-	-	-	-	-
Elk River	22-Jun-21	RG_ER_RSC-01	12.2	10.9	17.644	OT, SC	4	F	2.016	0.363	15.265	0.00	0.114	0.021	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-02	11.3	10.2	15.431	OT, SC	3	F	1.860	0.332	13.239	0.00	0.121	0.022	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-03	10.3	9	10.870	OT, SC	3	F	1.192	0.333	9.345	1.49	0.110	0.031	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-04	9.6	8.5	8.768	OT, SC	3	F	0.811	0.181	7.776	1.43	0.092	0.021	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-05	10.5	9	10.745	OT, SC	3	F	0.907	0.26	9.578	1.47	0.084	0.024	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-06	12.3	10.8	18.927	OT, SC	4	F	2.525	0.364	16.038	1.50	0.133	0.019	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-07	11.5	9.9	14.270	OT, SC	4	F	2.271	0.211	11.788	1.47	0.159	0.015	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-08	10.6	9.4	11.702	OT, SC	3	F	0.950	0.233	10.519	1.41	0.081	0.020	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-09	10.6	9.3	12.592	OT, SC	3	F	1.383	0.226	10.983	1.57	0.110	0.018	-	-	-	-	-	O,M
	22-Jun-21	RG_ER_RSC-10	11.2	9.9	12.730	OT, SC	4	F	0.678	0.105	11.947	1.31	0.053	0.008	-	-	-	-	-	O,M
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-
average			**11.0**	**9.7**	**13.368**	**-**	**3.4**	**-**	**1.459**	**0.261**	**11.648**	**1.17**	**0.106**	**0.020**	-	-	-	-	-	-
median			**10.9**	**9.7**	**12.661**	**-**	**3.0**	**-**	**1.288**	**0.247**	**11.386**	**1.45**	**0.110**	**0.020**	-	-	-	-	-	-
standard deviation			**0.85**	**0.79**	**3.203**	**-**	**0.52**	**-**	**0.661**	**0.086**	**2.610**	**0.62**	**0.030**	**0.006**	-	-	-	-	-	-
standard error			**0.269**	**0.251**	**1.013**	**-**	**0.163**	**-**	**0.209**	**0.027**	**0.825**	**0.20**	**0.009**	**0.002**	-	-	-	-	-	-
minimum			**9.6**	**8.5**	**8.768**	**-**	**3**	**-**	**0.678**	**0.105**	**7.776**	**0.00**	**0.053**	**0.008**	-	-	-	-	-	-
maximum			**12.3**	**10.9**	**18.927**	**-**	**4**	**-**	**2.525**	**0.364**	**16.038**	**1.57**	**0.159**	**0.031**	-	-	-	-	-	-
Gold Creek	22-Jun-21	RG_GC_RSC-01	12.2	10.6	17.523	OT, Sc	5	F	1.527	0.297	15.699	1.47	0.087	0.017	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-02	11.7	10.5	16.147	OT, Sc	4	F	1.235	0.322	14.590	1.39	0.076	0.020	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-03	12.4	10.8	18.192	OT, Sc	4	F	1.820	0.210	16.162	1.44	0.100	0.012	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-04	12.5	11.0	18.730	OT, Sc	4	F	1.717	0.226	16.787	1.41	0.092	0.012	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-05	10.2	8.8	8.892	OT, Sc	3	F	0.399	0.171	8.322	1.30	0.045	0.019	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-06	11.6	10.2	13.098	OT, Sc	4	F	0.414	0.176	12.508	1.23	0.032	0.013	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-07	10.4	9.0	10.421	OT, Sc	3	F	0.599	0.137	9.685	1.43	0.057	0.013	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-08	10.6	9.3	10.864	OT, Sc	3	F	1.104	0.163	9.597	1.35	0.102	0.015	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-09	10.3	9.0	10.889	OT, Sc	3	F	1.567	0.205	9.117	1.49	0.144	0.019	-	-	-	-	-	O,M
	22-Jun-21	RG_GC_RSC-10	9.5	8.4	7.999	OT, SC	3	F	0.822	0.135	7.042	1.35	0.103	0.017	-	-	-	-	-	O,M
total sample size			**10**	**10**	**10**	**-**	**10**	**-**	**10**	**10**	**10**	**10**	**10**	**10**	-	-	-	-	-	-
average			**11.1**	**9.8**	**13.276**	**-**	**3.6**	**-**	**1.120**	**0.204**	**11.951**	**1.39**	**0.084**	**0.016**	-	-	-	-	-	-
median			**11.1**	**9.8**	**11.994**	**-**	**3.5**	**-**	**1.170**	**0.191**	**11.097**	**1.40**	**0.089**	**0.016**	-	-	-	-	-	-
standard deviation			**1.06**	**0.95**	**4.041**	**-**	**0.70**	**-**	**0.538**	**0.063**	**3.627**	**0.08**	**0.033**	**0.003**	-	-	-	-	-	-
standard error			**0.337**	**0.302**	**1.278**	**-**	**0.221**	**-**	**0.170**	**0.020**	**1.147**	**0.03**	**0.010**	**0.001**	-	-	-	-	-	-
minimum			**9.5**	**8.4**	**7.999**	**-**	**3**	**-**	**0.399**	**0.135**	**7.042**	**1.23**	**0.032**	**0.012**	-	-	-	-	-	-
maximum			**12.5**	**11.0**	**18.730**	**-**	**5**	**-**	**1.820**	**0.322**	**16.787**	**1.49**	**0.144**	**0.020**	-	-	-	-	-	-

[a] Age structures collected: sc - scales, oto - otoliths

[b] Adjusted Body Weight = Body Weight - Liver Weight - Gonad Weight

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Notes: M = Muscle, O = Ovary, - indicates no data available

Table F.22: Slimy Sculpin Meristics Data, Koocanusa Reservoir Monitoring Program, April 2021

Area	Processing Date	Fish Species	Fish ID	Total Length	Fork Length	Body Weight	Age Structure	Age	Sex	Gonad Weight	Liver Weight	Adjusted Body	Fulton's Condition	Gonado-somatic	Hepato-somatic	Anomalies				Tissue Collected	Comment
																0	1	2	3		
Sand Creek	29-Apr-21	SS	RG_SC_SS-01	4.9	4.7	0.926	-	-	U	-	-	-	0.787	-	-	-	-	-	-	-	body submitted for all further analysis
	29-Apr-21	SS	RG_SC_SS-02	5.3	5.2	1.688	-	-	U	-	-	-	1.134	-	-	-	-	-	-	-	body submitted for all further analysis
			total sample size	**2**	**2**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	**2**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			average	**5.1**	**5.0**	**1.307**	**-**	**-**	**-**	**-**	**-**	**-**	**0.960**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			median	**5.1**	**5.0**	**1.307**	**-**	**-**	**-**	**-**	**-**	**-**	**0.960**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			standard deviation	**0.3**	**0.4**	**0.539**	**-**	**-**	**-**	**-**	**-**	**-**	**0.245**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			standard error	**0.2**	**0.3**	**0.381**	**-**	**-**	**-**	**-**	**-**	**-**	**0.173**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			minimum	**4.9**	**4.7**	**0.926**	**-**	**-**	**-**	**-**	**-**	**-**	**0.787**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
			maximum	**5.3**	**5.2**	**1.688**	**-**	**-**	**-**	**-**	**-**	**-**	**1.134**	**-**	**-**	**-**	**-**	**-**	**-**	-	-
Elk River	29-Apr-21	SS	RG_ER_SS-01	10.3	6.8	13.720	Head	3	M	0.171	0.056	13.493	1.256	0.01	0.00	-	-	-	-	M	-
	30-Apr-21	SS	RG_ER_SS-02	8.4	7.1	7.795	Head	4	M	0.019	0.217	7.559	1.315	0.00	0.03	-	-	-	-	-	-
	30-Apr-21	SS	RG_ER_SS-03	8.6	7.1	10.081	Head	4	F	1.137	0.097	8.847	1.585	0.11	0.01	-	-	-	-	O,M	-
	30-Apr-21	SS	RG_ER_SS-04	6.9	5.6	4.042	Head	3	M	0.022	0.054	3.966	1.230	0.01	0.01	-	-	-	-	-	-
	30-Apr-21	SS	RG_ER_SS-05	4.9	4.1	1.151	-	-	U	-	-	-	0.978	-	-	-	-	-	-	M	-
	30-Apr-21	SS	RG_ER_SS-06	5.2	4.2	1.156	-	-	U	-	-	-	0.822	-	-	-	-	-	-	M	-
	30-Apr-21	SS	RG_ER_SS-07	4.1	3.6	0.978	-	-	U	-	-	-	1.419	-	-	-	-	-	-	M	-
	30-Apr-21	SS	RG_ER_SS-08	3.8	3.0	0.643	-	-	U	-	-	-	1.172	-	-	-	-	-	-	M	-
			total sample size	**8**	**8**	**8**	**-**	**4**	**-**	**4**	**4**	**4**	**8**	**4**	**4**	**-**	**-**	**-**	**-**	-	-
			average	**6.5**	**5.2**	**4.946**	**-**	**3.5**	**-**	**0.337**	**0.106**	**8.466**	**1.222**	**0.03**	**0.01**	**-**	**-**	**-**	**-**	-	-
			median	**6.1**	**4.9**	**2.599**	**-**	**3.5**	**-**	**0.097**	**0.077**	**8.203**	**1.243**	**0.01**	**0.01**	**-**	**-**	**-**	**-**	-	-
			standard deviation	**2.4**	**1.7**	**5.004**	**-**	**0.577**	**-**	**0.538**	**0.077**	**3.937**	**0.240**	**0.05**	**0.01**	**-**	**-**	**-**	**-**	-	-
			standard error	**0.8**	**0.6**	**1.769**	**-**	**0.289**	**-**	**0.269**	**0.038**	**1.968**	**0.085**	**0.03**	**0.01**	**-**	**-**	**-**	**-**	-	-
			minimum	**3.8**	**3.0**	**0.643**	**-**	**3.0**	**-**	**0.019**	**0.054**	**3.966**	**0.822**	**0.00**	**0.00**	**-**	**-**	**-**	**-**	-	-
			maximum	**10.3**	**7.1**	**13.720**	**-**	**4.0**	**-**	**1.137**	**0.217**	**13.493**	**1.585**	**0.11**	**0.03**	**-**	**-**	**-**	**-**	-	-
Gold Creek	20-Apr-21	SS	RG_GC_SS-01	7.8	6.4	6.297	OT	3	F	0.956	0.175	5.166	1.327	0.15	0.03	-	-	-	-	O,M	-
	20-Apr-21	SS	RG_GC_SS-02	8.8	7.2	11.000	OT	-	F	1.700	0.16	9.14	1.614	0.15	0.01	-	-	-	-	O,M	-
	21-Apr-21	SS	RG_GC_SS-03	9.0	7.5	8.439	OT	3	M	0.077	0.164	8.198	1.158	0.01	0.02	-	-	-	-	-	-
	23-Apr-21	SS	RG_GC_SS-04	10.8	9.1	19.010	OT	4	M	0.229	0.369	18.412	1.509	0.01	0.02	-	-	-	-	-	-
	24-Apr-21	SS	RG_GC_SS-05	8.7	7.1	8.674	OT	3	M	0.049	0.195	8.43	1.317	0.01	0.02	-	-	-	-	-	-
	27-Apr-21	SS	RG_GC_SS-06	8.4	7.0	6.913	OT	3	M	0.079	0.247	6.587	1.166	0.01	0.04	-	-	-	-	-	-
	27-Apr-21	SS	RG_GC_SS-07	7.6	6.2	4.856	OT	3	F	0.634	0.116	4.106	1.106	0.13	0.02	-	-	-	-	O,M	-
	28-Apr-21	SS	RG_GC_SS-08	9.0	7.5	8.570	OT	3	M	0.031	0.101	8.438	1.176	0.00	0.01	-	-	-	-	-	-
	28-Apr-21	SS	RG_GC_SS-09	7.3	5.9	5.135	OT	3	F	0.908	0.094	4.133	1.320	0.18	0.02	-	-	-	-	O,M	Fatty Liver
	28-Apr-21	SS	RG_GC_SS-10	7.6	6.3	7.684	OT	3	M	0.053	0.204	7.427	1.750	0.01	0.03	-	-	-	-	-	-
	30-Apr-21	SS	RG_GC_SS-11	10.1	8.1	13.154	OT	3	F	1.822	0.371	10.961	1.277	0.14	0.03	-	-	-	-	O,M	-
	30-Apr-21	SS	RG_GC_SS-12	6.1	5.0	2.578	OT	2	M	0.032	0.033	2.513	1.136	0.01	0.01	-	-	-	-	-	-
	30-Apr-21	SS	RG_GC_SS-13	6.8	5.5	3.137	OT	4	M	0.026	0.022	3.089	0.998	0.01	0.01	-	-	-	-	-	-
			total sample size	**13**	**13**	**13**	**-**	**12**	**-**	**13**	**13**	**13**	**13**	**13**	**13**	**-**	**-**	**-**	**-**	-	-
			average	**8.3**	**6.8**	**8.111**	**-**	**3.1**	**-**	**0.507**	**0.173**	**7.431**	**1.296**	**0.06**	**0.02**	**-**	**-**	**-**	**-**	-	-
			median	**8.4**	**7.0**	**7.684**	**-**	**3.0**	**-**	**0.079**	**0.164**	**7.427**	**1.277**	**0.01**	**0.02**	**-**	**-**	**-**	**-**	-	-
			standard deviation	**1.3**	**1.1**	**4.406**	**-**	**0.515**	**-**	**0.650**	**0.109**	**4.177**	**0.215**	**0.07**	**0.01**	**-**	**-**	**-**	**-**	-	-
			standard error	**0.4**	**0.3**	**1.222**	**-**	**0.149**	**-**	**0.180**	**0.030**	**1.159**	**0.060**	**0.02**	**0.00**	**-**	**-**	**-**	**-**	-	-
			minimum	**6.1**	**5.0**	**2.578**	**-**	**2.0**	**-**	**0.026**	**0.022**	**2.513**	**0.998**	**0.00**	**0.01**	**-**	**-**	**-**	**-**	-	-
			maximum	**10.8**	**9.1**	**19.010**	**-**	**4.0**	**-**	**1.822**	**0.371**	**18.412**	**1.750**	**0.18**	**0.04**	**-**	**-**	**-**	**-**	-	-

Notes: No data collected for fish from RG_SC and RG_ER because they were immature, and the whole body was submitted for tissue analysis. M = Muscle, O = Ovary, OT = Otolith, "-" indicates no data available. Sex includes M = Male, F = Female, U = Undetermined

Table F.23: Sport Fish Meristics Data, Koocanusa Reservoir Monitoring Program, 2021

Area	Month	Processing Date	Fish Species	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Anomalies [c]				Comment	Tissue Collected
								0	1	2	3		
Sand Creek	April	20-Apr-21	BT	RG-SC-BT-01	48.8	46.0	1,150	-	-	-	-	-	Muscle
		20-Apr-21	BT	RG-SC-BT-02	31.4	29.5	245	-	-	-	-	-	Muscle
		21-Apr-21	BT	RG-SC-BT-03	37.4	34.7	410	-	-	-	-	-	Muscle
		22-Apr-21	BT	RG-SC-BT-04	75.3	72.0	-	-	-	-	-	fish dropped before weight taken	Muscle
		23-Apr-21	BT	RG-SC-BT-05	84.6	81.0	4,350	-	-	-	-	-	Muscle
		23-Apr-21	BT	RG-SC-BT-06	50.8	48.4	1,150	-	-	-	-	-	Muscle
		26-Apr-21	BT	RG-SC-BT-07	38.4	36.1	630	-	-	-	-	-	Muscle
		26-Apr-21	BT	RG-SC-BT-08	43.1	41.2	940	-	-	-	-	-	Muscle
		21-Apr-21	KO	RG-SC-KO-01	23.4	21.2	80	-	-	-	-	-	Muscle
		22-Apr-21	KO	RG-SC-KO-02	24.1	22.0	-	-	-	-	-	fish dropped before weight taken	Muscle
		20-Apr-21	MW	RG-SC-MWF-01	30.4	27.6	250	-	-	-	-	-	Muscle
		21-Apr-21	MW	RG-SC-MWF-02	31.7	29.0	240	-	-	-	-	-	Muscle
		21-Apr-21	MW	RG-SC-MWF-03	33.6	31.0	295	-	-	-	-	-	Muscle
		21-Apr-21	MW	RG-SC-MWF-04	33.5	31.0	360	-	-	-	-	-	Muscle
		21-Apr-21	MW	RG-SC-MWF-05	29.2	26.0	190	-	-	-	-	-	Muscle
		20-Apr-21	RB	RG-SC-RBT-01	39.5	36.9	440	-	-	-	-	-	Muscle
		20-Apr-21	WCT	RG-SC-WCT-01	25.0	23.2	110	-	-	-	-	-	Muscle
		20-Apr-21	WCT	RG-SC-WCT-02	24.5	22.2	80	-	-	-	-	-	Muscle
		24-Apr-21	WCT	RG-SC-WCT-03	24.4	22.5	115	-	-	-	-	-	Muscle
		20-Apr-21	YP	RG-SC-YP-01	21.6	20.4	95	-	-	-	-	-	Muscle
		20-Apr-21	YP	RG-SC-YP-02	20.3	17.8	120	-	-	-	-	-	Muscle
		20-Apr-21	YP	RG-SC-YP-03	21.3	18.7	113	-	-	-	-	-	Muscle
		21-Apr-21	YP	RG-SC-YP-04	23.1	22.0	150	-	-	-	-	-	Muscle
		21-Apr-21	YP	RG-SC-YP-05	17.7	17.0	69	-	-	-	-	-	Muscle
	May	28-May-21	WCT	RG-SC-WCT-04	23.4	22.0	104	-	-	-	-	-	Muscle
	August	24-Aug-21	KO	RG_SC_KO-01	23.1	21.0	100	A-R	-	-	-	-	muscle plug
		26-Aug-21	KO	RG_SC_KO-02	21.6	19.8	70	A-L	-	-	-	-	muscle plug
		26-Aug-21	KO	RG_SC_KO-03	20.4	18.8	70	A-L	-	-	-	-	muscle plug
		26-Aug-21	KO	RG_SC_KO-04	21.0	19.1	75	A-L	-	-	-	-	muscle plug
		26-Aug-21	KO	RG_SC_KO-05	23.0	21.2	92	A-L	-	-	-	-	muscle plug
		26-Aug-21	KO	RG_SC_KO-06	22.7	20.4	94	A-L	-	-	-	-	muscle plug; full necropsy completed

Table F.23: Sport Fish Meristics Data, Koocanusa Reservoir Monitoring Program, 2021

Area	Month	Processing Date	Fish Species	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Anomalies [c]				Comment	Tissue Collected
								0	1	2	3		
Elk River	April	21-Apr-21	BT	RG_ER_BT-01	25.5	24.2	140	-	-	-	-	-	Muscle
		23-Apr-21	BT	RG_ER_BT-02	34.2	32.8	610	-	-	-	-	-	Muscle
		24-Apr-21	BT	RG_ER_ BT-03	74.2	70.7	2,600	-	-	-	-	-	Muscle
		25-Apr-21	BT	RG_ER_ BT-04	57.4	54.0	1,600	-	-	-	-	-	Muscle
		25-Apr-21	BT	RG_ER_ BT-05	57.2	54.0	1,450	-	-	-	-	-	Muscle
		25-Apr-21	BT	RG_ER_ BT-06	75.3	71.0	3,800	-	-	-	-	-	Muscle
		26-Apr-21	BT	RG_ER_ BT-07	59.0	55.6	2,000	-	-	-	-	-	Muscle
		26-Apr-21	BT	RG_ER_ BT-08	76.2	72.5	4,450	-	-	-	-	-	Muscle
		21-Apr-21	KO	RG_ER_KO-01	23.6	21.4	100	-	-	-	-	-	Muscle
		27-Apr-21	KO	RG_ER_ KO-02	27.0	24.8	140	-	-	-	-	-	Muscle
		20-Apr-21	MW	RG_ER_MWF-01	11.6	10.8	12	-	-	-	-	-	Muscle
		20-Apr-21	MW	RG_ER_MWF-02	13.1	12.4	15	-	-	-	-	-	Muscle
		20-Apr-21	MW	RG_ER_MWF-03	11.8	11.0	15	-	-	-	-	-	N/A
		21-Apr-21	MW	RG_ER_MWF-04	25.5	23.4	132	-	-	-	-	-	Muscle
		25-Apr-21	MW	RG_ER_ MWF-05	27.9	25.2	170	-	-	-	-	-	Muscle
		25-Apr-21	MW	RG_ER_ MWF-06	31.2	28.7	180	-	-	-	-	-	Muscle
		25-Apr-21	MW	RG_ER_ MWF-07	26.8	24.5	165	-	-	-	-	-	Muscle
		23-Apr-21	RB	RG_ER_ RBT-01	32.7	30.6	340	-	-	-	-	-	Muscle
		21-Apr-21	WCT	RG_ER_WCT-01	26.0	24.3	145	-	-	-	-	-	Muscle
		23-Apr-21	WCT	RG_ER_ WCT-02	30.5	28.7	360	-	-	-	-	-	Muscle
		23-Apr-21	WCT	RG_ER_ WCT-03	30.7	28.9	275	-	-	-	-	-	Muscle
		24-Apr-21	WCT	RG_ER_ WCT-04	33.7	32.0	480	-	-	-	-	-	Muscle
		24-Apr-21	WCT	RG_ER_ WCT-05	41.3	39.0	710	-	-	-	-	-	Muscle
		25-Apr-21	WCT	RG_ER_ WCT-06	32.5	30.4	420	-	-	-	-	-	Muscle
		27-Apr-21	WCT	RG_ER_ WCT-07	23.0	21.6	130	-	-	-	-	-	Muscle
		27-Apr-21	WCT	RG_ER_ WCT-08	35.9	33.7	610	-	-	-	-	-	Muscle
		21-Apr-21	YP	RG_ER_YP-01	19.9	18.8	84	-	-	-	-	-	Muscle
		21-Apr-21	YP	RG_ER_YP-02	20.1	19.4	92	-	-	-	-	-	Muscle
		21-Apr-21	YP	RG_ER_YP-03	19.4	18.5	76	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-04	19.8	18.5	77	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-05	28.3	27.1	264	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-06	17.0	16.3	52	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-07	18.9	17.9	84	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-08	18.6	17.6	84	-	-	-	-	-	Muscle
		23-Apr-21	YP	RG_ER_ YP-09	24.2	23.0	165	-	-	-	-	-	Muscle
	May	29-May-21	RBT	RG-ER-RBT-02	25.3	24.4	120	-	-	-	-	-	Muscle
	June	22-Jun-21	MWF	RG_ER-MWF-08	24.2	22.1	115	-	-	-	-	-	muscle plug
		23-Jun-21	RBT	RG_ER-RBT-03	25.3	23.4	120	-	-	-	-	-	muscle plug
	August	26-Aug-21	KO	RG_ER_KO-01	22.3	20.2	104	A-R				-	muscle plug; full necropsy completed
		26-Aug-21	KO	RG_ER_KO-02	22.5	20.9	95	A-R				-	muscle plug; full necropsy completed
		26-Aug-21	KO	RG_ER_KO-03	21.8	20.0	90	A-H, J-R	I			-	muscle plug; full necropsy completed
		27-Aug-21	KO	RG_ER_KO-04	21.7	20.0	97	A-L				-	muscle plug
		27-Aug-21	KO	RG_ER_KO-05	22.3	20.4	106	A-L				-	muscle plug

Table F.23: Sport Fish Meristics Data, Koocanusa Reservoir Monitoring Program, 2021

Area	Month	Processing Date	Fish Species	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Anomalies [c]				Comment	Tissue Collected
								0	1	2	3		
Gold Creek	April	21-Apr-21	BT	RG_GC_ BT-01	72.5	71	>2500	-	-	-	-	weight estimated (heavier than scales)	Muscle
		22-Apr-21	BT	RG_GC_ BT-02	69	67	>2500	-	-	-	-	weight estimated (heavier than scales)	muscle
		22-Apr-21	BT	RG_GC_ BT-03	58	56	1,800	-	-	-	-	-	Muscle
		23-Apr-21	BT	RG_GC_BT-04	75	10.7	4,105	-	-	-	-	-	muscle plug
		25-Apr-21	BT	RG_GC_BT-05	36.2	34.8	420	-	-	-	-	-	-
		25-Apr-21	BT	RG_GC_BT-06	34.1	32.6	340	-	-	-	-	-	-
		26-Apr-21	BT	RG_GC_BT-07	40.4	38.3	540	-	-	-	-	-	-
		26-Apr-21	BT	RG_GC_BT-08	69.5	60	3,500	-	-	-	-	-	-
		23-Apr-21	MW	RG_GC_ MW -10	13.1	12.5	<10	-	-	-	-	-	-
		23-Apr-21	MW	RG_GC_ MW -11	12.8	12.2	<10	-	-	-	-	-	-
		23-Apr-21	MW	RG_GC_ MW -12	12.1	11.5	<10	-	-	-	-	-	-
		23-Apr-21	MW	RG_GC_ MW -13	13.2	12.1	<10	-	-	-	-	-	-
		23-Apr-21	MW	RG_GC_ MW -14	12.8	11.9	<10	-	-	-	-	-	-
		20-Apr-21	MW	RG_GC_ MW-01	18.3	16.2	41	-	-	-	-	-	muscle plug
		20-Apr-21	MW	RG_GC_ MW-02	26.9	24.5	145	-	-	-	-	-	muscle plug
		22-Apr-21	MW	RG_GC_ MW-03	29.9	27.2	235	-	-	-	-	-	muscle plug
		22-Apr-21	MW	RG_GC_ MW-04	29.1	26.8	130	-	-	-	-	-	muscle plug
		22-Apr-21	MW	RG_GC_ MW-05	24.6	22.8	130	-	-	-	-	-	muscle plug
		22-Apr-21	MW	RG_GC_ MW-06	25.4	22.9	117	-	-	-	-	-	muscle plug
		22-Apr-21	MW	RG_GC_ MW-07	24.1	21.9	121	-	-	-	-	-	muscle plug
		21-Apr-21	MW	RG_GC_ MW-08	30.0	28	224	-	-	-	-	-	Muscle
		22-Apr-21	MW	RG_GC_ MW-09	31.5	28.7	212	-	-	-	-	-	Muscle
		20-Apr-21	WCT	RG_GC_ WCT-01	36.0	32	440	-	-	-	-	-	muscle plug
		20-Apr-21	WCT	RG_GC_ WCT-02	48.0	42	390	-	Fin - caudal	-	-	-	muscle plug
		22-Apr-21	WCT	RG_GC_ WCT-03	32.0	29.8	330	-	-	-	-	-	muscle plug
		22-Apr-21	WCT	RG_GC_ WCT-04	25.9	24.1	130	-	-	-	-	-	muscle plug
		22-Apr-21	WCT	RG_GC_ WCT-05	31.9	30.4	310	-	-	-	-	-	-
		22-Apr-21	WCT	RG_GC_ WCT-06	37.9	33.5	410	-	-	-	-	-	muscle plug
		22-Apr-21	WCT	RG_GC_ WCT-07	33.5	31.8	350	-	-	-	-	-	muscle plug
		23-Apr-21	WCT	RG_GC_WCT-08	31.4	30.3	300	-	-	-	-	-	muscle plug
		23-Apr-21	WCT	RG_GC_WCT-09	33.5	31.9	320	-	-	-	-	-	muscle plug
		23-Apr-21	WCT	RG_GC_WCT-10	28.6	26.3	190	-	-	-	-	-	-
		20-Apr-21	YP	RG_GC_ YP-01	16.7	16.4	50	-	-	-	-	-	muscle plug
		20-Apr-21	YP	RG_GC_ YP-02	19.4	19	70	-	-	-	-	-	muscle plug
		21-Apr-21	YP	RG_GC_ YP-03	19.1	18.2	89	-	-	-	-	-	muscle plug
		21-Apr-21	YP	RG_GC_ YP-04	18.3	17.5	62	-	-	-	-	-	muscle plug
		22-Apr-21	YP	RG_GC_ YP-05	18.9	17.9	67	-	-	-	-	-	muscle plug
		22-Apr-21	YP	RG_GC_ YP-06	21.1	20.0	124	-	-	-	-	-	muscle plug
		23-Apr-21	YP	RG_GC_YP-10	19.4	18.4	82	-	-	-	-	-	Whole Body
		21-Apr-21	YP	RG_GC_YP-11	19.1	18.5	90	-	-	-	-	-	Whole Body
		21-Apr-21	YP	RG_GC_YP-12	18.7	17.4	55	-	-	-	-	-	-
		22-Apr-21	YP	RG_GC_YP-13	22.4	21.4	148	-	-	-	-	-	Whole body
		22-Apr-21	YP	RG_GC_YP-14	16.4	15.8	50	-	-	-	-	-	-
		22-Apr-21	YP	RG_GC_YP-07	22.7	21.8	139	-	-	-	-	-	muscle plug
		22-Apr-21	YP	RG_GC_YP-08	16.6	15.8	53	-	-	-	-	-	muscle plug
		23-Apr-21	YP	RG_GC_YP-09	19.9	18.8	90	-	-	-	-	-	muscle plug

Table F.23: Sport Fish Meristics Data, Koocanusa Reservoir Monitoring Program, 2021

Area	Month	Processing Date	Fish Species	Fish ID	Total Length (cm)	Fork Length (cm)	Body Weight (g)	Anomalies [c]				Comment	Tissue Collected
								0	1	2	3		
Gold Creek	June	22-Jun-21	RBT	RG_GC-RBT-01	28.0	26.4	180	-	-	-	-	-	muscle plug
		22-Jun-21	RBT	RG_GC-RBT-02	27.5	26.1	155	-	-	-	-	-	muscle plug
		23-Jun-21	RBT	RG_GC-RBT-03	30.0	27.5	245	-	-	-	-	-	muscle plug
		23-Jun-21	RBT	RG_GC-RBT-04	27.0	25.0	190	-	-	-	-	-	muscle plug
		25-Jun-21	RBT	RG_GC-RBT-05	32.0	29.7	235	-	-	-	-	-	muscle plug
		23-Jun-21	KO	RG_GC-KO-01	21.0	19.8	80	-	-	-	-	-	muscle plug
		24-Jun-21	KO	RG_GC-KO-02	20.2	18.5	65	-	-	-	-	-	muscle plug
		25-Jun-21	KO	RG_GC-KO-03	23.7	21.4	100	-	-	-	-	-	muscle plug
		25-Jun-21	KO	RG_GC-KO-04	23.4	21.2	105	-	-	-	-	-	muscle plug
		25-Jun-21	KO	RG_GC-KO-05	21.1	19.4	65	-	-	-	-	-	muscle plug
		25-Jun-21	KO	RG_GC-KO-06	20.5	18.8	70	-	-	-	-	-	muscle plug
		25-Jun-21	KO	RG_GC-KO-07	21.9	20.0	85	-	-	-	-	-	muscle plug
	August	24-Aug-21	KO	RG_GC_KO-01	23.5	22.0	100	A-L,M,N,P,R	O,Q	-	-	-	muscle plug; full necropsy completed

Notes: D - deformities, E - erosion, L - lesions, T - tumors, BT = bull trout; WCT = westslope cutthroat trout; MW = mountain whitefish, RB = rainbow trout; KO = kokanee; YP = yellow perch; "-" indicates no data.

[c] Severity assessment for anomalies noted during fish health assessment. Anomalies are rated on a scale of 0 to 3, with 0 being no anomaly, 1 being slight, 2, being moderate, and 3 being severe. Anomalies are categorized based on the characteristic affected, and are noted by a letter (A = body surface, B = body form, C = lesions, D = tumors, F = fins, G = lips/jaws/snout, H = eyes, I = gills, J = opercula, K = bacterial/fungal/viral infection, L = parasites).

Table F.24: Statistical Comparison of Peamouth Chub Health Endpoints, April 2021

Sex	Indicator	Endpoint	Variables		Sample Size			ANCOVA Statistics			Summary Statistics[b]				Overall Test *P*-value (Location)	Pairwise Comparisons[c]					
								Interaction Model	Parallel Slope Model	Covariate Value for Comparisons[a]						RG_SC vs RG_ER		RG_SC vs RG_GC		RG_ER vs RG_GC	
			Response	Covariate	RG_SC	RG_ER	RG_GC	Interaction *p*-value	Covariate *p*-value		Statistic	RG_SC	RG_ER	RG_GC		P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]
Male	Survival/Recruitment	Length-Frequency Distribution	Fork Length (cm)	-	20	20	20	-	-	-	-	-	-	-	-	0.172	ns	0.329	ns	0.819	ns
	Survival/Recruitment	**Age-Frequency Distribution**	**Age (years)**	**-**	**20**	**20**	**20**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.172**	**ns**	**0.819**	**ns**	**0.819**	**ns**
	Survival	**Age**	**log10[Age (years)]**	**-**	**20**	**20**	**20**	**-**	**-**	**-**	**Geometric Mean**	**6.40**	**6.87**	**7.32**	**0.087**	**0.463**	**ns**	**0.071**	**14**	**0.540**	**ns**
	Body Size	Fork Length	Fork Length (cm)	-	20	20	20	-	-	-	Median	21.1	21.6	21.8	0.029	0.020	2.4	0.022	2.8	0.975	ns
	Body Size	Body Weight	Body Weight (g)	-	20	20	20	-	-	-	Median	103	109	112	0.035	0.235	ns	0.010	8.9	0.160	ns
	Energy Usage	Length-at-age (All Ages)	log10[Fork Length (cm)]	log10[Age (years)]	20	20	20	<0.001	<0.001	6.00	Predicted Mean	19.7	21.2	21.6	0.026	0.002	7.9	<0.001	9.6	0.606	ns
										9.00		23.8	22.3	21.8			-6.0		-8.1	0.606	ns
					20	19[f]	20	<0.001	<0.001	6.00	Predicted Mean	19.7	21.8	21.6	<0.001	<0.001	11	<0.001	9.6	0.986	ns
										9.00		23.8	22.0	21.8			-7.5		-8.1	0.986	ns
		Length-at-age (Overlapped Ages only)	log10[Fork Length (cm)]	log10[Age (years)]	19	20	20	0.001	<0.001	6.00	Predicted Mean	19.7	21.2	21.6	0.053	0.009	7.8	0.001	9.5	0.612	ns
										9.00		23.7	22.3	21.8			-5.9		-8.0	0.612	ns
					19	19[g]	20	<0.001	<0.001	6.00	Predicted Mean	19.7	21.8	21.6	0.003	<0.001	11	<0.001	9.5	0.986	ns
										9.00		23.7	22.0	21.8			-7.4		-8.0	0.986	ns
		Weight-at-age (All Ages)	**log10[Body Weight (g)]**	**log10[Age (years)]**	**20**	**20**	**20**	**<0.001**	**<0.001**	**6.00**	**Predicted Mean**	**79.9**	**95.4**	**107**	**0.071**	**0.007**	**19**	**0.002**	**34**	**0.769**	**ns**
										9.00		**144**	**114**	**117**			**-21**		**-19**	**0.769**	**ns**
					19[h]	**19[h]**	**20**	**<0.001**	**<0.001**	**6.00**	**Predicted Mean**	**83.3**	**104**	**107**	**0.023**	**<0.001**	**25**	**<0.001**	**29**	**0.905**	**ns**
										9.00	**Predicted Mean**	**146**	**109**	**117**			**-26**		**-20**	**0.905**	**ns**
		Weight-at-age (Overlapped Ages only)	**log10[Body Weight (g)]**	**log10[Age (years)]**	**19**	**20**	**20**	**0.005**	**<0.001**	**6.00**	**Predicted Mean**	**79.7**	**95.4**	**107**	**0.101**	-	-	-	-	-	-
										9.00		**145**	**114**	**117**		-	-	-	-	-	-
					18[i]	**19[i]**	**20**	**<0.001**	**<0.001**	**6.00**	**Predicted Mean**	**84.0**	**104**	**107**	**0.049**	**<0.001**	**24**	**<0.001**	**27**	**0.906**	**ns**
										9.00		**144**	**109**	**117**			**-24**		**-19**	**0.906**	**ns**
		Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**20**	**20**	**20**	**0.857**	**<0.001**	**99.8**	**Adjusted Mean**	**2.52**	**2.92**	**1.75**	**0.041**	**0.744**	**ns**	**0.212**	**ns**	**0.035**	**-40**

Table F.24: Statistical Comparison of Peamouth Chub Health Endpoints, April 2021

Sex	Indicator	Endpoint	Variables		Sample Size			ANCOVA Statistics			Summary Statistics[b]				Overall Test *P*-value (Location)	Pairwise Comparisons[c]					
								Interaction Model	Parallel Slope Model	Covariate Value for Comparisons[a]						RG_SC vs RG_ER		RG_SC vs RG_GC		RG_ER vs RG_GC	
			Response	Covariate	RG_SC	RG_ER	RG_GC	Interaction *p*-value	Covariate *p*-value		Statistic	RG_SC	RG_ER	RG_GC		P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]
Male	**Energy Storage**	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**20**	**20**	**20**	**0.786**	**<0.001**	**99.8**	**Adjusted Mean**	**1.25**	**1.39**	**1.15**	**0.340**	-	-	-	-	-	-
					20	**20**	**19[j]**	**0.821**	**<0.001**	**99.7**	**Adjusted Mean**	**1.24**	**1.39**	**1.27**	**0.498**	-	-	-	-	-	-
		Condition	**log10[Body Weight (g)]**	**log10[Fork Length (cm)]**	**20**	**20**	**20**	**0.026**	**<0.001**	**19.9**	**Predicted Mean**	**83.1**	**80.2**	**103**	**0.140**	-	-	-	-	-	-
										22.6		**121**	**116**	**116**						-	-
					19[k]	**20**	**19[k]**	**0.238**	**<0.001**	**21.2**	**Adjusted Mean**	**103**	**96.8**	**103**	**0.076**	**0.132**	**ns**	**0.998**	**ns**	**0.124**	**ns**
Female	Survival/Recruitment	Length-Frequency Distribution	Fork Length (cm)	-	15	15	15	-	-	-	-	-	-	-	-	0.925	ns	0.181	ns	0.925	ns
	Survival/Recruitment	**Age-Frequency Distribution**	**Age (years)**	**-**	**15**	**15**	**15**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**0.181**	**ns**	**0.375**	**ns**	**0.375**	**ns**
	Survival	**Age**	**log10[Age (years)]**	**-**	**15**	**15**	**15**	**-**	**-**	**-**	**Geometric Mean**	**7.81**	**7.14**	**8.27**	**0.139**	-	-	-	-	-	-
	Body Size	Fork Length	Fork Length (cm)	-	15	15	15	-	-	-	Mean	23.4	23.1	23.9	0.500	-	-	-	-	-	-
	Body Size	Body Weight	Body Weight (g)	-	15	15	15	-	-	-	Mean	142	126	156	0.063	0.382	ns	0.527	ns	0.050	24
	Energy Usage	Length-at-age (All Ages)	log10[Fork Length (cm)]	log10[Age (years)]	15	15	15	0.309	0.002	7.73	Adjusted Mean	23.2	23.4	23.6	0.873	-	-	-	-	-	-
		Weight-at-age (All Ages)	**log10[Body Weight (g)]**	**log10[Age (years)]**	**15**	**15**	**15**	**0.100**	**0.025**	**7.73**	**Adjusted Mean**	**137**	**126**	**150**	**0.158**	-	-	-	-	-	-
		Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**15**	**15**	**15**	**0.233**	**0.020**	**137**	**Adjusted Mean**	**10.4**	**9.19**	**10.6**	**0.548**	-	-	-	-	-	-
					15	**14[l]**	**15**	**0.368**	**<0.001**	**137**	**Adjusted Mean**	**10.4**	**10.4**	**10.4**	**0.999**	-	-	-	-	-	-
	Energy Storage	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**15**	**15**	**15**	**0.004**	**<0.001**	**127**	**Predicted Mean**	**2.27**	**2.42**	**2.40**	**0.695**	-	-	-	-	-	-
										195		**3.72**	**2.45**	**3.59**						-	-
		Condition	**log10[Body Weight (g)]**	**log10[Fork Length (cm)]**	**15**	**15**	**15**	**0.367**	**<0.001**	**23.4**	**Adjusted Mean**	**139**	**126**	**147**	**0.041**	**0.229**	**ns**	**0.603**	**ns**	**0.034**	**16**
					15	**14[m]**	**15**	**0.742**	**<0.001**	**23.4**	**Adjusted Mean**	**139**	**134**	**146**	**0.066**	**0.559**	**ns**	**0.335**	**ns**	**0.054**	**8.9**

Shading indicates an area p-value less than 0.1 or an interaction p-value less than 0.05.

Indicates a Magnitude of Difference (MOD) outside of applicable Critical Effect Size (i.e., ±25% for all endpoints with the exception of ±10% for condition).

Covariate P-value > 0.05

Bold **EEM triggering endpoints**

Notes: ns = non-significant. "-" indicates the value is not applicable.

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The median, mean (geometric mean for $\log_{10}$-transformed variables), and adjusted mean are reported for Mann-Whitney, t-test and ANCOVA, respectively, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs

[c] Calculated as the difference in measure of central tendency (MCT) between areas (mine-exposed minus reference), expressed as a percentage of the reference area MCT.

[d] Minimum detectable effect size (see methods section of report for formula).

[e] When a non-parametric test was selected only untransformed results are displayed. Results were qualitatively similar when log-10 transformed.

[f] One outlier (RG_ER_PCC-21_2021-04-21 Stdnt resid:-4.899) was removed from analysis

[g] One outliers (RG_ER_PCC-21_2021-04-21 Stdnt resid:-4.853) was removed from analysis

[h] Two outliers (RG_SC_PCC-07_2021-04-19 Stdnt resid:-4.282;RG_ER_PCC-21_2021-04-21 Stdnt resid:-4.327) were removed from analysis

[i] Two outlier (RG_SC_PCC-07_2021-04-19 Stdnt resid:-4.267;RG_ER_PCC-21_2021-04-21 Stdnt resid:-4.287) were removed from analysis

[j] One outlier (RG_GC_PCC-25_2021-04-22 Stdnt resid:-6.192) was removed from analysis

[k] Two outliers (RG_SC_PCC-07_2021-04-19 Stdnt resid:-6.032;RG_GC_PCC-38_2021-04-28 Stdnt resid:4.106) were removed from analysis

[l] One outlier (RG_ER_PCC-5_2021-04-19 Stdnt resid:-5.522) was removed from analysis

[m] One outlier (RG_ER_PCC-1_2021-04-19 Stdnt resid:-8.218) was removed from analysis

Table F:25: Summary Statistics for Peamouth Chub, April 2021

Sex	Variable	Area	Mean	SD	SE	Minimum	Median	Maximum
Male	Age	RG_SC	6.50	1.15	0.26	4.00	7.00	9.00
		RG_ER	7.00	1.34	0.30	5.00	7.00	9.00
		RG_GC	7.45	1.57	0.35	6.00	7.00	13.00
	Total Length (cm)	RG_SC	22.8	2.2	0.5	18.1	23.9	25.2
		RG_ER	24.1	1.5	0.3	18.5	24.4	25.6
		RG_GC	24.5	0.9	0.2	22.6	24.7	25.8
	Fork Length (cm)	RG_SC	20.365	1.997	0.447	15.600	21.150	22.600
		RG_ER	21.625	1.333	0.298	16.800	21.650	23.300
		RG_GC	21.710	0.973	0.218	19.900	21.750	23.100
	Body Weight (g)	RG_SC	92.5	27.3	6.1	40.0	103.0	136.0
		RG_ER	103.3	18.2	4.1	46.0	108.9	128.4
		RG_GC	112.4	12.5	2.8	87.0	112.2	143.2
	Gonad Weight (g)	RG_SC	2.756	1.941	0.434	0.062	2.279	5.996
		RG_ER	3.621	1.711	0.383	0.403	3.785	6.666
		RG_GC	2.802	1.640	0.367	0.770	2.181	6.188
	Liver Weight (g)	RG_SC	1.185	0.501	0.112	0.328	1.171	2.018
		RG_ER	1.540	0.699	0.156	0.557	1.396	3.371
		RG_GC	1.469	0.566	0.127	0.177	1.458	2.392
Female	Age	RG_SC	7.93	1.49	0.38	5.00	8.00	12.00
		RG_ER	7.33	1.91	0.49	5.00	7.00	13.00
		RG_GC	8.40	1.50	0.39	6.00	9.00	11.00
	Total Length (cm)	RG_SC	26.0	2.3	0.6	23.2	25.8	30.1
		RG_ER	25.7	1.9	0.5	22.2	25.7	28.7
		RG_GC	26.9	1.4	0.4	25.0	26.8	30.1
	Fork Length (cm)	RG_SC	23.4	2.2	0.6	20.7	23.0	27.2
		RG_ER	23.1	1.9	0.5	19.6	23.3	26.0
		RG_GC	23.9	1.5	0.4	21.7	23.7	27.2
	Body Weight (g)	RG_SC	142.5	40.7	10.5	94.0	134.0	230.0
		RG_ER	125.8	31.9	8.2	68.0	130.0	195.0
		RG_GC	156.0	28.4	7.3	127.0	149.0	230.0
	Gonad Weight (g)	RG_SC	11.119	4.155	1.073	5.431	9.872	21.252
		RG_ER	9.455	3.527	0.911	2.159	10.709	14.053
		RG_GC	11.551	3.098	0.800	8.441	10.496	21.252
	Liver Weight (g)	RG_SC	2.665	1.098	0.283	1.433	2.421	5.322
		RG_ER	2.481	0.548	0.141	1.469	2.507	3.556
		RG_GC	2.986	0.903	0.233	1.727	2.790	5.322

Table F.25: Statistical Comparison of Redside Shiner Health Endpoints, April 2021

Sex	Indicator	Endpoint	Variables		Sample Size			ANCOVA Statistics			Summary Statistics[b]				Overall Test *P*-value (Location)	Pairwise Comparisons[c]					
								Interaction Model	Parallel Slope Model	Covariate Value for Comparisons[a]						RG_SC vs RG_ER		RG_SC vs RG_GC		RG_ER vs RG_GC	
			Response	Covariate	RG_SC	RG_ER	RG_GC	Interaction *p*-value	Covariate *p*-value		Statistic	RG_SC	RG_ER	RG_GC		P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]	P-value	Magnitude of Difference (%)[c]
Male	Survival/Recruitment	Length-Frequency Distribution	Fork Length (cm)	-	40	40	40	-	-	-	-	-	-	-	-	0.573	ns	0.400	ns	0.988	ns
	Survival/Recruitment	**Age-Frequency Distribution**	**Age (years)**	-	**40**	**40**	**40**	-	-	-	-	-	-	-	-	**0.988**	**ns**	**1.000**	**ns**	**0.988**	**ns**
	Survival	**Age**	**Age (years)**	-	**40**	**40**	**40**	-	-	-	**Median**	**3.00**	**3.00**	**3.00**	**0.120**	-	-	-	-	-	-
	Body Size	Fork Length	Fork Length (cm)	-	40	40	40	-	-	-	Mean	9.89	9.72	9.68	0.322	-	-	-	-	-	-
	Body Size	Body Weight	log10[Body Weight (g)]	-	40	40	40	-	-	-	Geometric Mean	11.5	10.0	10.2	0.006	0.009	-12	0.024	-11	0.932	ns
	Energy Usage	Length-at-age (All Ages)	log10[Fork Length (cm)]	log10[Age (years)]	40	40	40	0.761	0.001	2.99	Adjusted Mean	9.84	9.75	9.64	0.347	-	-	-	-	-	-
		Weight-at-age (All Ages)	**log10[Body Weight (g)]**	**log10[Age (years)]**	**40**	**40**	**40**	**0.680**	**<0.001**	**2.99**	**Adjusted Mean**	**11.3**	**10.2**	**10.1**	**0.009**	**0.041**	**-9.6**	**0.013**	**-11**	**0.916**	**ns**
		Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**40**	**40**	**40**	**0.564**	**<0.001**	**10.6**	**Adjusted Mean**	**0.121**	**0.0977**	**0.107**	**0.279**	-	-	-	-	-	-
					40	**40**	**39[f]**	**0.546**	**<0.001**	**10.5**	**Adjusted Mean**	**0.123**	**0.0965**	**0.0981**	**0.076**	**0.100**	**ns**	**0.134**	**ns**	**0.989**	**ns**
	Energy Storage	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**40**	**40**	**40**	**0.141**	**<0.001**	**10.6**	**Adjusted Mean**	**0.150**	**0.133**	**0.128**	**0.162**	-	-	-	-	-	-
					39[g]	**39[g]**	**40**	**0.310**	**<0.001**	**10.5**	**Adjusted Mean**	**0.154**	**0.127**	**0.128**	**0.009**	**0.018**	**-18**	**0.022**	**-17**	**0.992**	**ns**
		Condition	**log10[Body Weight (g)]**	**log10[Fork Length (cm)]**	**40**	**40**	**40**	**0.701**	**<0.001**	**9.74**	**Adjusted Mean**	**11.1**	**10.2**	**10.4**	**0.001**	**<0.001**	**-8.6**	**0.022**	**-6.3**	**0.572**	**ns**
Female	Survival/Recruitment	Length-Frequency Distribution	Fork Length (cm)	-	40	40	40	-	-	-	-	-	-	-	-	0.759	ns	0.759	ns	0.263	ns
	Survival/Recruitment	**Age-Frequency Distribution**	**Age (years)**	-	**40**	**40**	**40**	-	-	-	-	-	-	-	-	**1.000**	-	**1.000**	**ns**	**1.000**	**ns**
	Survival	**Age**	**Age (years)**	-	**40**	**40**	**40**	-	-	-	**Median**	**3.00**	**3.00**	**3.00**	**0.627**	-	-	-	-	-	-
	Body Size	Fork Length	Fork Length (cm)	-	40	40	40	-	-	-	Mean	10.2	9.86	10.1	0.244	-	-	-	-	-	-
	Body Size	Body Weight	log10[Body Weight (g)]	-	40	40	40	-	-	-	Geometric Mean	12.4	11.1	12.5	0.085	0.156	ns	0.986	ns	0.113	ns
	Energy Usage	Length-at-age (All Ages)	log10[Fork Length (cm)]	log10[Age (years)]	40	40	40	0.144	<0.001	3.18	Adjusted Mean	10.2	9.77	10.1	0.049	0.054	-3.9	0.890	ns	0.146	ns
		Weight-at-age (All Ages)	**log10[Body Weight (g)]**	**log10[Age (years)]**	**40**	**40**	**40**	**0.134**	**<0.001**	**3.18**	**Adjusted Mean**	**12.5**	**10.9**	**12.6**	**0.011**	**0.026**	**-13**	**0.997**	**ns**	**0.021**	**15**
		Relative Gonad Weight	**log10[Gonad Weight (g)]**	**log10[Body Weight (g)]**	**40**	**40**	**40**	**0.674**	**<0.001**	**12.0**	**Adjusted Mean**	**0.467**	**0.526**	**0.270**	**<0.001**	**0.733**	**ns**	**0.002**	**-42**	**<0.001**	**-49**
					39[h]	**40**	**38[h]**	**0.476**	**<0.001**	**12.1**	**Adjusted Mean**	**0.513**	**0.518**	**0.317**	**<0.001**	**0.998**	**ns**	**<0.001**	**-38**	**<0.001**	**-39**
	Energy Storage	**Relative Liver Weight**	**log10[Liver Weight (g)]**	**log10[Body Weight (g)]**	**40**	**40**	**40**	**0.672**	**<0.001**	**12.0**	**Adjusted Mean**	**0.172**	**0.166**	**0.125**	**0.002**	**0.941**	**ns**	**0.004**	**-28**	**0.013**	**-25**
					40	**39[i]**	**40**	**0.576**	**<0.001**	**12.0**	**Adjusted Mean**	**0.172**	**0.159**	**0.125**	**0.002**	**0.675**	**ns**	**0.002**	**-28**	**0.029**	**-22**
		Condition	**log10[Body Weight (g)]**	**log10[Fork Length (cm)]**	**40**	**40**	**40**	**0.235**	**<0.001**	**10.0**	**Adjusted Mean**	**12.0**	**11.7**	**12.3**	**0.198**	-	-	-	-	-	-

Shading indicates an area p-value less than 0.1 or an interaction p-value less than 0.05.

Indicates a Magnitude of Difference (MOD) outside of applicable Critical Effect Size (i.e., ±25% for all endpoints with the exception of ±10% for condition).

Covariate P-value > 0.05

Bold **EEM triggering endpoints**

Notes: ns = non-significant. "-" indicates the value is not applicable.

[a] The mean value of the covariate (that corresponds to the adjusted means for the response variable) for the parallel slope ANCOVA model or the minimum and maximum values of the overlap in covariate values for the interaction ANCOVA model.

[b] The median, mean (geometric mean for log_{10}-transformed variables), and adjusted mean are reported for Mann-Whitney, t-test and ANCOVA, respectively, and the predicted means of the regression line equations for minimum and maximum values of the covariate (where the data sets overlap) for ANCOVAs where a

[c] Calculated as the difference in measure of central tendency (MCT) between areas (mine-exposed minus reference), expressed as a percentage of the reference area MCT.

[d] Minimum detectable effect size (see methods section of report for formula).

[e] When a non-parametric test was selected only untransformed results are displayed. Results were qualitatively similar when log-10 transformed.

[f] One outlier (RG_GC_RSC-24_2021-04-27 Stdnt resid:6.21) was removed from analysis

[g] Two outliers (RG_ER_RSC-28_2021-04-21 Stdnt resid:5.679; and RG_SC_RSC-55_2021-04-21 Stdnt resid:-4.031) were removed from analysis

[h] Three outliers (RG_GC_RSC-45_2021-04-28 Stdnt resid:-4.479;RG_SC_RSC-10_2021-04-19 Stdnt resid:-4.226;RG_GC_RSC-47_2021-04-28 Stdnt resid:-4.226) were removed from analysis

[i] One outlier (RG_ER_RSC-23_2021-04-21 Stdnt resid:4.362) was removed from analysis

Table F.27: Summary Statistics for Redside Shiner, April 2021

Sex	Variable	Area	Mean	SD	SE	Minimum	Median	Maximum
Male	Age	RG_SC	3.10	0.50	0.08	2.00	3.00	4.00
		RG_ER	2.90	0.50	0.08	2.00	3.00	4.00
		RG_GC	3.10	0.50	0.08	2.00	3.00	4.00
	Total Length (cm)	RG_SC	11.3	0.7	0.1	9.9	11.4	12.6
		RG_ER	10.9	0.7	0.1	9.9	10.8	12.5
		RG_GC	11.1	0.7	0.1	9.5	11.1	13.0
	Fork Length (cm)	RG_SC	9.89	0.67	0.11	8.20	9.90	11.30
		RG_ER	9.72	0.69	0.11	8.60	9.70	11.50
		RG_GC	9.68	0.62	0.10	8.40	9.70	11.20
	Body Weight (g)	RG_SC	11.7	2.2	0.3	7.9	11.4	16.6
		RG_ER	10.3	2.3	0.4	6.6	10.1	16.8
		RG_GC	10.4	2.0	0.3	6.8	10.3	15.1
	Gonad Weight (g)	RG_SC	0.143	0.048	0.008	0.050	0.138	0.324
		RG_ER	0.106	0.063	0.010	0.019	0.100	0.355
		RG_GC	0.193	0.492	0.078	0.019	0.108	3.179
	Liver Weight (g)	RG_SC	0.170	0.053	0.008	0.056	0.159	0.280
		RG_ER	0.149	0.130	0.021	0.045	0.123	0.898
		RG_GC	0.132	0.045	0.007	0.042	0.134	0.248
Female	Age	RG_SC	3.18	0.50	0.08	2.00	3.00	4.00
		RG_ER	3.30	0.56	0.09	2.00	3.00	5.00
		RG_GC	3.20	0.52	0.08	2.00	3.00	4.00
	Total Length (cm)	RG_SC	11.5	0.8	0.1	10.1	11.4	13.5
		RG_ER	11.2	1.0	0.2	9.2	11.4	13.9
		RG_GC	11.5	0.9	0.1	9.6	11.4	13.9
	Fork Length (cm)	RG_SC	10.15	0.73	0.12	8.80	10.10	12.00
		RG_ER	9.86	0.87	0.14	7.90	10.00	12.20
		RG_GC	10.10	0.90	0.14	8.20	10.00	12.20
	Body Weight (g)	RG_SC	12.8	3.2	0.5	7.7	12.0	21.2
		RG_ER	11.5	2.8	0.4	6.5	11.7	17.3
		RG_GC	13.0	3.9	0.6	7.9	11.7	26.8
	Gonad Weight (g)	RG_SC	0.581	0.245	0.039	0.016	0.551	1.112
		RG_ER	0.520	0.209	0.033	0.061	0.545	0.898
		RG_GC	0.432	0.291	0.046	0.013	0.435	0.859
	Liver Weight (g)	RG_SC	0.194	0.086	0.014	0.053	0.178	0.470
		RG_ER	0.177	0.134	0.021	0.050	0.140	0.934
		RG_GC	0.151	0.092	0.015	0.027	0.123	0.434

APPENDIX G
TISSUE

Table G.1: Tissue Metals Analysis for Benthic Invertebrates and Zooplankton Samples Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Unit	Benthic Invertebrates				Zooplankton											
		April		August		June										August	
		RG_TN	RG_T4	RG_TN	RG_T4	RG_TN					RG_T4					RG_TN	
		RG_TN_INV_20210427	RG_T4_INV_20210428	RG_TN_INV_2021-08-26	RG_T4_INV_2021-08-24	RG_TN_ZOOT-01_2021-06-24	RG_TN_ZOOT-02_2021-06-24	RG_TN_ZOOT-03_2021-06-24	RG_TN_ZOOT-04_2021-06-24	RG_TN_ZOOT-05_2021-06-24	RG_T4_ZOOT-01_2021-06-24	RG_T4_ZOOT-02_2021-06-24	RG_T4_ZOOT-03_2021-06-24	RG_T4_ZOOT-04_2021-06-24	RG_T4_ZOOT-05_2021-06-24	RG_TN_ZOOT-01_2021-08-24	RG_TN_ZOOT-02_2021-08-24
Wet Weight	g	0.0633	0.3262	0.1072	0.2224	1.08	0.8915	1.1261	1.0725	1.0244	0.9934	0.8882	1.0215	0.9334	1.1057	0.9599	1.2401
Dry Weight	g	0.0119	0.0974	0.0247	0.045	0.096	0.0721	0.0912	0.0708	0.0537	0.0668	0.055	0.0581	0.0589	0.0651	0.0032	0.0228
Moisture	%	81.2	70.1	77	79.8	91.1	91.9	91.9	93.4	94.8	93.3	93.8	94.3	93.7	94.1	99.7	98.2
Aluminum	mg/kg	16032	12288	26109	14785	651	826	788	1557	1459	1205	1608	1396	2037	1018	1399	1446
Antimony	mg/kg	0.479	0.389	0.235	0.256	0.044	0.044	0.094	0.099	0.143	0.175	0.055	0.425	0.275	0.242	0.148	0.14
Arsenic	mg/kg	13	18	11	12	3.4	3.3	3.9	3.1	3.6	4.1	4.2	4	4	4.5	0.592	2.4
Barium	mg/kg	369	395	542	722	47	64	58	73	95	122	116	137	141	100	68	144
Boron	mg/kg	9.4	33	11	9.8	0.478	0.51	1.1	2	1	1.1	1.3	1.1	1.5	0.847	1.9	2.2
Cadmium	mg/kg	1.2	3.3	0.448	3.8	0.394	0.436	0.519	0.415	0.602	1.1	0.944	0.902	0.851	0.768	0.085	0.488
Calcium	mg/kg	17006	31527	29439	18925	14480	19687	17730	24337	33770	43205	40966	47894	50382	35034	10247	28095
Chromium	mg/kg	516	76	283	150	4	7.5	5.6	7	9.9	3.4	15	6	20	8.3	53	49
Cobalt	mg/kg	19	6.7	15	11	0.546	0.752	0.739	0.793	0.937	1	1.5	0.972	1.4	1.1	1.6	1.4
Copper	mg/kg	48	41	26	49	7.7	8.2	9.5	7.7	8.8	10	9.4	9.1	9.5	9.7	2.7	9.4
Iron	mg/kg	17950	10945	17533	14485	336	467	468	657	762	655	878	740	1314	538	1419	1244
Lead	mg/kg	12	7.2	12	8	0.327	0.47	0.461	1.1	0.676	1.6	0.934	1	0.966	0.607	2.6	1.3
Lithium	mg/kg	8.5	6.8	11	7.7	0.445	0.474	0.488	0.654	0.758	0.658	0.793	0.662	0.972	0.521	1.1	1
Magnesium	mg/kg	5517	3646	6054	3980	1326	1495	1516	1647	1927	1930	1883	2008	2126	1860	1372	3818
Manganese	mg/kg	222	129	230	249	29	48	35	31	44	68	50	59	55	52	29	33
Mercury	mg/kg	0.11	0.094	0.11	0.204	<0.036	<0.036	0.044	<0.036	0.044	0.076	0.048	0.067	0.082	0.055	<0.025	0.082
Molybdenum	mg/kg	6	1.2	0.938	0.896	0.269	0.332	0.348	0.364	0.348	0.355	0.377	0.385	0.395	0.38	0.174	0.435
Nickel	mg/kg	933	179	380	249	3.2	6.8	5.1	7.1	9.1	5	20	8	21	8.5	60	52
Phosphorus	mg/kg	10334	9141	11102	12679	12449	13650	13828	12808	16562	20527	16999	17243	19101	15708	1429	11116
Potassium	mg/kg	12729	12521	15552	13648	11700	11558	12562	8504	11600	12068	13643	12076	11743	12343	1266	3287
Selenium	mg/kg	5	10	3.9	10	2.1	2.2	2.8	1.8	2.4	2.9	2.7	2.6	2.7	2.7	0.43	3.2
Silver	mg/kg	0.072	0.171	0.082	0.311	0.023	0.026	0.034	0.019	0.026	0.029	0.036	0.032	0.03	0.034	0.012	0.029
Sodium	mg/kg	4930	5190	7589	6413	3320	3418	4109	2916	4317	4712	5165	4596	4565	4473	978	1149
Strontium	mg/kg	52	60	83	50	33	44	40	57	71	85	80	96	93	75	34	85
Thallium	mg/kg	0.169	0.239	0.232	0.333	0.043	0.034	0.043	0.038	0.046	0.05	0.06	0.063	0.052	0.047	0.016	0.019
Tin	mg/kg	2.8	1.1	1.7	1.4	1.3	1.2	1.2	4.2	1.6	3.1	1.6	1.4	1.6	1.2	5.1	4.5
Titanium	mg/kg	1534	1265	1698	986	25	53	48	108	84	70	81	74	93	44	102	115
Uranium	mg/kg	0.489	0.392	0.437	0.375	0.027	0.033	0.038	0.065	0.047	0.066	0.053	0.069	0.067	0.045	0.124	0.427
Vanadium	mg/kg	23	16	25	20	0.488	0.706	0.666	1.1	1.2	0.869	1.4	1.1	1.9	0.891	1.9	1.8
Zinc	mg/kg	125	104	75	138	50	59	59	51	64	135	72	79	71	63	46	92

Table G.1: Tissue Metals Analysis for Benthic Invertebrates and Zooplankton Samples Downstream (RG_T4) and Upstream (RG_TN) of the Elk River, Koocanusa Reservoir Monitoring Program, 2021

Parameter	Unit	Zooplankton							
		August							
		RG_TN			RG_T4				
		RG_TN_ZOOT-03_2021-08-24	RG_TN_ZOOT-04_2021-08-24	RG_TN_ZOOT-05_2021-08-24	RG_T4_ZOOT-01_2021-08-25	RG_T4_ZOOT-02_2021-08-25	RG_T4_ZOOT-03_2021-08-25	RG_T4_ZOOT-04_2021-08-25	RG_T4_ZOOT-05_2021-08-25
Wet Weight	g	0.9108	1.0497	1.1216	0.8334	1.0624	0.9677	1.0673	1.2033
Dry Weight	g	0.0177	0.0201	0.0157	0.0258	0.0187	0.0251	0.0288	0.0263
Moisture	%	98.1	98.1	98.6	96.9	98.2	97.4	97.3	97.8
Aluminum	mg/kg	1666	1705	2184	1524	4045	3953	4212	23215
Antimony	mg/kg	0.268	0.071	0.078	0.052	0.169	0.193	0.152	0.593
Arsenic	mg/kg	2	2.2	2.1	1.6	2.7	2.9	2.8	5.4
Barium	mg/kg	108	119	173	86	217	239	205	583
Boron	mg/kg	3.1	1.7	2.6	1.5	3.7	3.4	3.3	17
Cadmium	mg/kg	0.34	0.34	0.403	0.297	0.446	0.435	0.446	0.446
Calcium	mg/kg	19671	22519	33423	14220	29959	30386	28626	52048
Chromium	mg/kg	55	87	61	83	92	37	127	177
Cobalt	mg/kg	1.6	0.976	1.8	2.2	1.4	1.4	3.6	7.5
Copper	mg/kg	6.1	8.3	6.9	5.8	11	10	9.6	15
Iron	mg/kg	1381	1785	1626	1598	2815	2193	3426	12070
Lead	mg/kg	1.9	0.719	0.86	0.516	1.4	1.5	1.5	7.5
Lithium	mg/kg	1.1	1	1.3	0.753	2.1	2	2.1	13
Magnesium	mg/kg	2594	2710	3474	1608	3408	3345	3133	6392
Manganese	mg/kg	33	41	43	34	69	77	74	397
Mercury	mg/kg	0.045	0.082	0.074	0.037	0.059	0.074	0.067	0.089
Molybdenum	mg/kg	0.305	0.74	0.37	0.174	0.957	0.348	0.326	0.609
Nickel	mg/kg	59	92	60	89	94	39	154	184
Phosphorus	mg/kg	7866	9222	10939	5945	9391	11586	10378	9825
Potassium	mg/kg	3598	3930	2593	1700	3725	2895	3302	6519
Selenium	mg/kg	2.2	2.7	2.4	1.6	2.6	2.5	2.7	2.9
Silver	mg/kg	0.02	0.029	0.023	0.017	0.029	0.029	0.029	0.073
Sodium	mg/kg	1080	1112	825	486	1144	761	849	790
Strontium	mg/kg	64	70	98	40	84	85	79	132
Thallium	mg/kg	0.018	0.019	0.019	0.011	0.03	0.032	0.031	0.143
Tin	mg/kg	17	3.7	5.2	2.3	5.2	2.9	4	4.3
Titanium	mg/kg	163	109	153	107	313	327	351	2282
Uranium	mg/kg	0.325	0.282	0.45	0.2	0.452	0.466	0.45	0.818
Vanadium	mg/kg	2	1.7	2.3	1.9	3.5	4	4.4	21
Zinc	mg/kg	68	70	76	44	76	90	83	105

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Muscle	RG_SC	RG_SC_PCC-M-01_2021-04-19	10.9480	2.8596	73.9	2.6	<0.007	<0.514	1.5	0.130	<0.067	921	1.5	0.022	1.2	21
			RG_SC_PCC-M-04_2021-04-19	8.0022	2.0707	74.1	0.887	<0.007	<0.514	2.2	<0.082	<0.067	747	1.4	0.026	1.3	25
			RG_SC_PCC-M-16_2021-04-20	9.9980	2.6964	73.0	1.1	<0.007	<0.514	1.1	<0.082	<0.067	990	1.4	0.018	1.1	20
			RG_SC_PCC-M-17_2021-04-20	9.5277	2.2961	75.9	2.5	<0.007	<0.514	2.5	<0.082	<0.067	656	1.6	0.029	1.6	30
			RG_SC_PCC-M-18_2021-04-20	9.4248	2.1257	77.4	4.4	<0.007	<0.514	4.3	<0.082	<0.067	872	1.5	0.022	1.3	36
			RG_SC_PCC-M-19_2021-04-20	11.1095	2.8318	74.5	2.9	<0.007	<0.514	2.7	<0.082	<0.067	1,001	1.4	0.020	1.6	29
			RG_SC_PCC-M-20_2021-04-20	7.7393	1.8473	76.1	3.3	<0.007	<0.514	3.8	<0.082	<0.067	909	1.6	0.027	1.5	33
			RG_SC_PCC-M-22_2021-04-20	4.9202	1.1862	75.9	3.2	<0.007	<0.514	1.1	<0.082	<0.067	951	1.5	0.020	1.2	19
			RG_SC_PCC-M-24_2021-04-21	4.3109	1.1030	74.4	4.2	<0.007	<0.514	1.5	<0.082	<0.067	1,035	1.5	0.020	1.2	19
			RG_SC_PCC-M-26_2021-04-21	6.2496	1.4559	76.7	3.3	0.008	<0.514	1.2	<0.082	<0.067	1,019	1.4	0.016	1.1	18
			RG_SC_PCC-M-28_2021-04-21	3.7873	0.9541	74.8	2.9	<0.007	<0.514	1.8	<0.082	<0.067	1,059	1.3	0.018	1.2	20
			RG_SC_PCC-M-29_2021-04-21	6.0429	1.4340	76.3	3.0	<0.007	<0.514	1.1	<0.082	<0.067	935	1.4	0.023	1.3	17
			RG_SC_PCC-M-30_2021-04-21	5.2755	1.2189	76.9	0.563	<0.007	<0.514	1.1	<0.082	<0.067	845	1.3	0.008	0.772	14
			RG_SC_PCC-M-31_2021-04-21	3.8903	0.9593	75.3	1.8	<0.007	<0.514	2.9	<0.082	<0.067	673	1.3	0.058	12	47
		RG_ER	RG_ER_PCC-M-01_2021-04-19	8.5481	1.9283	77.4	1.6	<0.007	<0.514	1.5	<0.082	<0.067	620	1.2	0.020	0.824	15
			RG_ER_PCC-M-03_2021-04-19	9.6376	2.2942	76.2	0.699	<0.007	<0.514	1.1	<0.082	<0.067	743	1.3	0.016	1.1	15
			RG_ER_PCC-M-04_2021-04-19	7.9754	1.9043	76.1	3.6	<0.007	<0.514	1.8	<0.082	<0.067	893	1.6	0.033	1.1	22
			RG_ER_PCC-M-05_2021-04-19	5.7789	1.2709	78.0	6.4	0.010	<0.514	1.9	0.114	<0.067	900	1.8	0.049	0.912	25
			RG_ER_PCC-M-06_2021-04-19	14.8777	3.2764	78.0	0.559	<0.007	<0.514	1.1	<0.082	<0.067	964	1.3	0.022	0.971	17
			RG_ER_PCC-M-07_2021-04-19	4.6544	0.9808	78.9	5.6	<0.007	<0.514	1.7	0.154	<0.067	990	1.6	0.022	1.1	20
			RG_ER_PCC-M-08_2021-04-19	5.9455	1.3750	76.9	5.3	<0.007	<0.514	1.8	<0.082	<0.067	1,006	1.4	0.026	1.7	24
			RG_ER_PCC-M-10_2021-04-19	11.7125	2.6596	77.3	0.499	<0.007	<0.514	1.5	<0.082	<0.067	747	1.3	0.009	0.797	13
			RG_ER_PCC-M-11_2021-04-19	7.4105	1.7442	76.5	0.839	<0.007	<0.514	1.7	<0.082	<0.067	957	1.5	0.017	1.5	23
			RG_ER_PCC-M-12_2021-04-19	6.7872	1.4895	78.1	7.0	0.008	<0.514	2.0	0.121	<0.067	1,093	1.8	0.031	2.0	36
			RG_ER_PCC-M-13_2021-04-19	9.2266	2.0898	77.4	2.8	<0.007	<0.514	1.4	0.088	<0.067	946	1.4	0.017	1.1	16
		RG_GC	RG_GC_PCC-M-05_2021-04-20	10.4144	2.4082	76.9	1.3	<0.007	<0.514	0.546	<0.082	<0.067	769	1.1	0.013	0.793	11
			RG_GC_PCC-M-08_2021-04-21	7.9172	1.8266	76.9	1.6	<0.007	<0.514	1.0	<0.082	<0.067	726	1.3	0.018	0.769	16
			RG_GC_PCC-M-09_2021-04-21	4.9476	1.1213	77.3	1.8	<0.007	<0.514	2.7	<0.082	<0.067	826	1.3	0.022	1.4	23
			RG_GC_PCC-M-10_2021-04-21	9.3595	2.2073	76.4	1.9	<0.007	<0.514	0.717	<0.082	<0.067	661	1.2	0.013	0.859	14
			RG_GC_PCC-M-11_2021-04-21	5.7468	1.3789	76.0	3.6	<0.007	<0.514	1.2	<0.082	<0.067	882	1.4	0.018	1.1	21
			RG_GC_PCC-M-12_2021-04-21	5.8021	1.3785	76.2	2.4	<0.007	<0.514	2.9	0.083	<0.067	856	1.4	0.022	1.1	20
			RG_GC_PCC-M-13_2021-04-21	4.2025	1.0092	76.0	0.756	<0.007	<0.514	2.3	<0.082	<0.067	771	1.3	0.027	1.3	21
			RG_GC_PCC-M-14_2021-04-21	3.4171	0.7965	76.7	0.562	<0.007	<0.514	0.683	<0.082	<0.067	809	1.2	0.013	1.2	16
			RG_GC_PCC-M-15_2021-04-21	5.2299	1.2794	75.5	1.0	<0.007	<0.514	1.6	<0.082	<0.067	794	1.5	0.027	1.5	17
			RG_GC_PCC-M-16_2021-04-21	3.8979	0.9661	75.2	9.9	0.011	<0.514	1.7	0.100	<0.067	1,092	2.2	0.038	1.4	36
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-04-19	10.2054	4.2914	57.9	0.692	<0.007	<0.514	3.6	<0.082	<0.067	480	1.4	0.059	3.4	67
			RG_SC_PCC-O-04_2021-04-19	7.5229	2.7998	62.8	0.883	<0.007	<0.514	3.5	<0.082	<0.067	479	1.4	0.080	3.6	93
			RG_SC_PCC-O-16_2021-04-20	9.9040	4.2547	57.0	0.501	<0.007	<0.514	3.0	<0.082	<0.067	315	1.3	0.048	3.2	59
			RG_SC_PCC-O-17_2021-04-20	20.1314	7.5523	62.5	0.532	<0.007	<0.514	4.9	<0.082	<0.067	512	1.5	0.063	3.0	102
			RG_SC_PCC-O-18_2021-04-20	11.4071	4.2133	63.1	0.394	<0.007	<0.514	6.3	<0.082	<0.067	509	1.4	0.052	2.8	65
			RG_SC_PCC-O-19_2021-04-20	9.1735	3.8132	58.4	0.454	<0.007	<0.514	1.9	<0.082	<0.067	344	1.5	0.026	3.2	55
			RG_SC_PCC-O-20_2021-04-20	11.3920	4.2113	63.0	0.352	<0.007	<0.514	4.4	<0.082	<0.067	444	1.5	0.065	5.2	83
			RG_SC_PCC-O-22_2021-04-20	8.0293	3.0785	61.7	0.680	<0.007	<0.514	2.6	<0.082	<0.067	518	1.4	0.068	3.7	56
			RG_SC_PCC-O-24_2021-04-21	7.6720	3.0937	59.7	1.9	<0.007	<0.514	2.6	<0.082	<0.067	331	1.4	0.071	2.4	63
			RG_SC_PCC-O-26_2021-04-21	5.8611	1.8942	67.7	1.4	<0.007	<0.514	0.946	<0.082	<0.067	868	1.5	0.077	3.4	142
			RG_SC_PCC-O-28_2021-04-21	8.8305	3.4331	61.1	2.7	<0.007	<0.514	3.3	<0.082	<0.067	353	1.3	0.049	2.4	58
			RG_SC_PCC-O-29_2021-04-21	13.0034	5.0201	61.4	0.680	<0.007	<0.514	2.3	<0.082	<0.067	386	1.3	0.064	2.5	49
			RG_SC_PCC-O-30_2021-04-21	4.8491	1.5500	68.0	0.769	<0.007	<0.514	6.1	<0.082	<0.067	849	1.5	0.063	3.8	85
			RG_SC_PCC-O-31_2021-04-21	6.3999	2.4046	62.4	1.3	<0.007	<0.514	1.9	<0.082	<0.067	350	1.3	0.069	3.1	57
		RG_ER	RG_ER_PCC-O-01_2021-04-19	13.5257	4.8089	64.4	1.1	<0.007	<0.514	1.7	<0.082	<0.067	371	1.2	0.066	2.9	66
			RG_ER_PCC-O-03_2021-04-19	11.5363	4.0946	64.5	1.3	<0.007	<0.514	2.4	<0.082	<0.067	478	1.3	0.060	2.3	81
			RG_ER_PCC-O-04_2021-04-19	9.3375	3.4776	62.8	0.584	<0.007	<0.514	2.6	<0.082	<0.067	383	1.3	0.050	3.0	53

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Ovary	RG_ER	RG_ER_PCC-O-05_2021-04-19	2.0400	0.5205	74.5	19	<0.007	<0.514	15	0.627	0.083	1,216	2.4	0.150	3.2	239
			RG_ER_PCC-O-06_2021-04-19	11.6825	4.6255	60.4	0.347	<0.007	<0.514	3.2	<0.082	<0.067	403	1.3	0.043	4.1	45
			RG_ER_PCC-O-07_2021-04-19	6.5713	2.0744	68.4	0.932	0.008	<0.514	5.1	<0.082	<0.067	620	1.3	0.066	2.5	67
			RG_ER_PCC-O-08_2021-04-19	9.8279	3.9032	60.3	0.274	<0.007	<0.514	2.7	<0.082	<0.067	268	1.2	0.050	2.9	52
			RG_ER_PCC-O-10_2021-04-19	10.6383	4.1649	60.8	0.675	<0.007	<0.514	3.0	<0.082	<0.067	312	1.2	0.050	2.4	38
			RG_ER_PCC-O-11_2021-04-19	11.1402	4.5997	58.7	0.347	<0.007	<0.514	2.3	<0.082	<0.067	311	1.3	0.054	1.8	50
			RG_ER_PCC-O-12_2021-04-19	11.9849	4.6184	61.5	1.5	<0.007	<0.514	2.3	<0.082	<0.067	412	1.2	0.050	3.1	45
			RG_ER_PCC-O-13_2021-04-19	6.6329	2.6367	60.2	0.524	<0.007	<0.514	4.0	<0.082	<0.067	376	1.3	0.082	3.0	68
		RG_GC	RG_GC_PCC-O-05_2021-04-20	9.4625	3.2886	65.2	1.4	<0.007	<0.514	4.4	<0.082	0.090	553	1.7	0.076	3.7	76
			RG_GC_PCC-O-08_2021-04-21	4.3555	1.5251	65.0	3.6	<0.007	<0.514	3.3	<0.082	0.090	631	1.5	0.062	2.6	72
			RG_GC_PCC-O-09_2021-04-21	12.4405	4.4933	63.9	0.551	<0.007	<0.514	6.6	<0.082	<0.067	527	1.3	0.066	2.2	92
			RG_GC_PCC-O-10_2021-04-21	11.2669	4.2208	62.5	1.2	<0.007	<0.514	1.9	<0.082	<0.067	437	1.5	0.062	3.5	85
			RG_GC_PCC-O-11_2021-04-21	8.1819	3.2009	60.9	4.1	<0.007	<0.514	4.5	<0.082	<0.067	439	1.4	0.069	3.1	83
			RG_GC_PCC-O-12_2021-04-21	9.1422	3.4281	62.5	3.0	0.007	<0.514	3.8	<0.082	<0.067	450	1.4	0.071	3.9	79
			RG_GC_PCC-O-13_2021-04-21	12.3898	4.8755	60.6	1.1	0.007	<0.514	3.3	<0.082	<0.067	517	1.3	0.062	2.4	62
			RG_GC_PCC-O-14_2021-04-21	9.8825	3.4380	65.2	0.318	<0.007	<0.514	1.3	<0.082	<0.067	487	1.3	0.052	3.7	70
			RG_GC_PCC-O-15_2021-04-21	9.4858	3.6861	61.1	0.352	<0.007	<0.514	8.1	<0.082	<0.067	464	1.4	0.081	3.3	64
			RG_GC_PCC-O-16_2021-04-21	8.3950	3.0481	63.7	2.3	<0.007	<0.514	1.6	<0.082	<0.067	436	1.5	0.062	3.5	85
May	Muscle	RG_SC	RG_SC_PCC-M-01_2021-05-27	3.0182	0.6678	77.9	6.5	<0.008	<0.477	3.0	<0.077	0.182	1,166	1.3	0.034	1.3	27
			RG_SC_PCC-M-02_2021-05-27	4.7845	1.0641	77.8	8.1	<0.008	<0.477	2.5	<0.077	<0.063	1,067	1.4	0.056	1.4	49
			RG_SC_PCC-M-03_2021-05-28	4.1860	0.8670	79.3	3.3	<0.008	<0.477	4.4	0.117	<0.063	1,029	1.3	0.050	2.8	61
			RG_SC_PCC-M-04_2021-05-28	5.5323	1.1208	79.7	0.410	<0.008	<0.477	0.814	0.078	0.182	801	0.969	0.017	0.809	13
			RG_SC_PCC-M-05_2021-05-28	5.1057	1.0975	78.5	1.6	<0.008	<0.477	1.5	<0.077	<0.063	825	0.861	0.025	1.1	24
			RG_SC_PCC-M-06_2021-05-28	2.7725	0.6009	78.3	6.4	0.010	<0.477	2.6	<0.077	<0.063	826	1.2	0.037	1.4	33
			RG_SC_PCC-M-07_2021-05-28	6.2285	1.3149	78.9	2.2	<0.008	<0.477	1.4	<0.077	<0.063	708	0.863	0.022	0.896	18
			RG_SC_PCC-M-08_2021-05-28	4.2467	0.9326	78.0	8.0	0.009	<0.477	2.1	<0.077	<0.063	978	1.3	0.049	1.2	29
			RG_SC_PCC-M-09_2021-05-28	5.5873	1.2767	77.1	2.8	<0.008	<0.477	1.4	<0.077	<0.063	819	0.917	0.025	1.0	25
			RG_SC_PCC-M-10_2021-05-28	3.1480	0.6929	78.0	0.566	<0.008	<0.477	1.3	<0.077	0.584	665	0.769	0.023	0.824	16
		RG_ER	RG_ER_PCC-M-01_2021-05-28	4.4492	0.9426	78.8	0.419	0.010	<0.477	0.817	<0.077	<0.063	795	0.955	0.014	1.0	16
			RG_ER_PCC-M-02_2021-05-28	6.2836	1.3772	78.1	7.4	0.012	<0.477	2.1	0.078	<0.063	835	0.958	0.027	1.8	22
			RG_ER_PCC-M-03_2021-05-28	7.9431	1.7543	77.9	4.8	0.057	<0.477	2.6	0.090	<0.063	894	1.4	0.038	2.1	34
			RG_ER_PCC-M-04_2021-05-29	3.5135	0.7539	78.5	0.431	<0.008	<0.477	1.4	<0.077	<0.063	684	1.1	0.010	0.761	19
			RG_ER_PCC-M-05_2021-05-29	6.9538	1.6257	76.6	0.503	<0.008	<0.477	2.6	<0.077	<0.063	667	1.2	0.015	1.7	21
			RG_ER_PCC-M-06_2021-05-29	5.9725	1.3313	77.7	0.503	<0.008	<0.477	2.1	0.136	0.201	914	1.1	0.030	1.1	33
			RG_ER_PCC-M-07_2021-05-29	6.8042	1.5656	77.0	0.383	<0.008	<0.477	1.4	<0.077	<0.063	472	0.828	0.020	0.981	12
			RG_ER_PCC-M-08_2021-05-29	3.3034	0.6997	78.8	2.0	0.013	<0.477	0.836	<0.077	0.128	958	1.3	0.017	1.1	18
			RG_ER_PCC-M-09_2021-05-29	5.3897	1.1955	77.8	1.4	<0.008	<0.477	1.1	<0.077	0.119	667	1.1	0.017	1.2	21
			RG_ER_PCC-M-10_2021-05-29	5.4203	1.1776	78.3	1.5	<0.008	<0.477	2.0	<0.077	<0.063	1,046	1.3	0.021	1.5	28
		RG_GC	RG_GC_PCC-M-01_2021-05-25	3.7395	0.7871	79.0	1.2	<0.008	<0.477	1.7	<0.077	<0.063	744	0.722	0.018	0.868	19
			RG_GC_PCC-M-02_2021-05-25	2.3322	0.5095	78.2	0.674	<0.008	<0.477	2.8	0.082	<0.063	751	0.800	0.023	1.4	25
			RG_GC_PCC-M-03_2021-05-25	2.1950	0.5041	77.0	0.643	<0.008	<0.477	1.3	<0.077	<0.063	712	0.673	0.023	1.5	16
			RG_GC_PCC-M-04_2021-05-25	2.5438	0.5078	80.0	4.2	<0.008	<0.477	3.5	<0.077	<0.063	1,028	0.873	0.019	0.984	19
			RG_GC_PCC-M-05_2021-05-28	8.3090	1.8135	78.2	0.620	<0.008	<0.477	2.2	<0.077	<0.063	725	0.771	0.019	1.3	21
			RG_GC_PCC-M-06_2021-05-28	3.4254	0.7952	76.8	3.6	<0.008	<0.477	2.3	0.090	<0.063	1,201	1.2	0.038	1.9	42
			RG_GC_PCC-M-07_2021-05-28	3.4542	0.7476	78.4	0.958	<0.008	<0.477	3.8	<0.077	<0.063	1,162	0.929	0.019	1.4	23
			RG_GC_PCC-M-08_2021-05-28	4.1572	0.9391	77.4	0.760	<0.008	<0.477	1.1	<0.077	<0.063	1,151	0.974	0.025	1.5	17
			RG_GC_PCC-M-09_2021-05-28	4.2982	0.8873	79.4	3.3	<0.008	<0.477	6.8	0.093	<0.063	1,017	0.850	0.037	1.0	42
			RG_GC_PCC-M-10_2021-05-28	3.4652	0.7494	78.4	2.1	<0.008	<0.477	1.4	<0.077	<0.063	1,084	0.835	0.014	0.844	19
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-05-27	19.7866	8.0420	59.4	0.717	<0.008	<0.477	4.2	<0.077	<0.063	388	1.6	0.067	5.0	64
			RG_SC_PCC-O-02_2021-05-27	10.9933	3.8569	64.9	2.4	<0.008	<0.477	3.3	0.078	0.091	312	1.2	0.227	4.0	256
			RG_SC_PCC-O-03_2021-05-28	30.9503	11.9662	61.3	0.743	<0.008	<0.477	3.1	<0.077	<0.063	462	1.6	0.084	6.1	105
			RG_SC_PCC-O-04_2021-05-28	22.7165	8.9763	60.5	0.333	<0.008	<0.477	3.8	<0.077	<0.063	361	1.2	0.062	3.5	57

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
May	Ovary	RG_SC	RG_SC_PCC-O-05_2021-05-28	32.9946	12.9643	60.7	3.3	<0.008	<0.477	2.4	<0.077	<0.063	323	0.932	0.056	2.6	63
			RG_SC_PCC-O-06_2021-05-28	16.4792	6.6073	59.9	0.270	<0.008	<0.477	3.2	<0.077	<0.063	273	0.940	0.062	3.1	50
			RG_SC_PCC-O-07_2021-05-28	6.4978	2.1639	66.7	1.3	0.011	<0.477	5.2	<0.077	<0.063	692	1.1	0.092	4.0	92
			RG_SC_PCC-O-08_2021-05-28	16.3925	6.3984	61.0	0.594	<0.008	<0.477	3.6	<0.077	<0.063	355	0.976	0.062	3.5	48
			RG_SC_PCC-O-09_2021-05-28	7.0847	2.6689	62.3	0.378	<0.008	<0.477	6.3	<0.077	<0.063	483	0.976	0.068	4.2	56
			RG_SC_PCC-O-10_2021-05-28	14.8773	5.9162	60.2	0.129	<0.008	<0.477	2.6	<0.077	<0.063	189	0.772	0.064	2.6	47
		RG_ER	RG_ER_PCC-O-01_2021-05-28	24.7342	9.5320	61.5	0.279	<0.008	<0.477	2.2	<0.077	<0.063	279	0.858	0.061	3.0	52
			RG_ER_PCC-O-02_2021-05-28	21.7795	8.4436	61.2	2.5	0.009	<0.477	2.7	<0.077	<0.063	275	0.984	0.075	2.2	62
			RG_ER_PCC-O-03_2021-05-28	22.0524	8.7262	60.4	0.391	<0.008	<0.477	2.2	<0.077	<0.063	223	0.757	0.048	2.5	48
			RG_ER_PCC-O-04_2021-05-29	21.5398	8.2514	61.7	0.216	<0.008	<0.477	2.2	<0.077	0.353	280	1.2	0.040	0.905	45
			RG_ER_PCC-O-05_2021-05-29	10.2491	3.7922	63.0	0.407	0.010	<0.477	3.5	<0.077	<0.063	370	1.0	0.061	2.9	66
			RG_ER_PCC-O-06_2021-05-29	18.9741	7.6068	59.9	0.264	<0.008	<0.477	1.6	<0.077	<0.063	229	1.2	0.066	3.3	46
			RG_ER_PCC-O-07_2021-05-29	18.6532	7.5981	59.3	0.240	<0.008	<0.477	1.8	<0.077	<0.063	191	1.0	0.050	2.5	42
			RG_ER_PCC-O-08_2021-05-29	10.3842	3.7507	63.9	4.3	0.011	<0.477	3.8	<0.077	<0.063	526	1.5	0.051	3.4	60
			RG_ER_PCC-O-09_2021-05-29	5.9405	1.9070	67.9	0.508	<0.008	<0.477	2.3	<0.077	1.2	406	0.994	0.077	3.2	83
			RG_ER_PCC-O-10_2021-05-29	11.4076	4.5000	60.6	0.643	0.010	<0.477	3.1	<0.077	<0.063	286	1.3	0.059	3.2	50
		RG_GC	RG_GC_PCC-O-01_2021-05-25	4.0204	1.0087	74.9	2.2	0.011	<0.477	6.4	0.082	0.159	1,457	0.715	0.123	3.5	258
			RG_GC_PCC-O-02_2021-05-25	17.1474	6.3857	62.8	0.643	<0.008	<0.477	3.8	<0.077	<0.063	438	0.830	0.047	2.8	48
			RG_GC_PCC-O-03_2021-05-25	17.6229	6.8103	61.4	0.964	<0.008	<0.477	3.4	<0.077	<0.063	273	0.737	0.053	2.7	51
			RG_GC_PCC-O-04_2021-05-25	12.6308	4.3656	65.4	0.849	<0.008	<0.477	5.3	<0.077	<0.063	383	0.674	0.041	2.6	45
			RG_GC_PCC-O-05_2021-05-28	7.5282	2.3414	68.9	0.591	<0.008	<0.477	7.4	<0.077	0.107	1,474	0.846	0.102	4.6	174
			RG_GC_PCC-O-06_2021-05-28	6.5186	1.6803	74.2	0.704	<0.008	<0.477	3.6	<0.077	<0.063	1,293	0.775	0.115	5.1	167
			RG_GC_PCC-O-07_2021-05-28	5.1941	1.5689	69.8	0.958	<0.008	<0.477	10	<0.077	<0.063	1,340	1.1	0.083	5.3	121
			RG_GC_PCC-O-08_2021-05-28	6.2004	2.3434	62.2	1.5	0.009	<0.477	6.2	<0.077	<0.063	503	1.1	0.089	5.0	95
			RG_GC_PCC-O-09_2021-05-28	12.9763	5.0701	60.9	0.978	<0.008	<0.477	3.2	<0.077	<0.063	377	0.917	0.048	3.0	63
			RG_GC_PCC-O-10_2021-05-28	15.9466	6.2711	60.7	0.279	<0.008	<0.477	2.7	<0.077	<0.063	251	0.841	0.048	2.2	52
June	Muscle	RG_SC	RG_SC_PCC-M-01_2021-06-23	2.3472	0.4913	79.1	2.5	<0.005	<0.495	4.9	<0.108	<0.045	857	1.3	0.043	1.9	40
			RG_SC_PCC-M-02_2021-06-23	3.0729	0.6179	79.9	0.690	<0.005	<0.495	2.0	<0.108	<0.045	911	1.3	0.017	0.963	21
			RG_SC_PCC-M-03_2021-06-23	2.0419	0.4669	77.1	3.9	<0.005	<0.495	3.3	<0.108	<0.045	859	1.5	0.040	1.7	38
			RG_SC_PCC-M-05_2021-06-23	1.1532	0.2905	74.8	0.981	0.008	<0.495	5.2	<0.108	0.915	729	1.3	0.032	2.3	34
			RG_SC_PCC-M-06_2021-06-25	1.9745	0.4887	75.2	4.5	0.008	<0.495	1.3	0.210	<0.045	849	1.3	0.023	1.5	20
			RG_SC_PCC-M-07_2021-06-25	3.4462	0.7553	78.1	0.361	<0.005	<0.495	0.556	<0.108	<0.045	1,060	1.3	0.014	0.792	11
			RG_SC_PCC-M-08_2021-06-25	2.6677	0.6107	77.1	0.845	0.009	<0.495	0.587	0.225	<0.045	911	1.3	0.013	0.788	10
			RG_SC_PCC-M-09_2021-06-25	3.5977	0.8183	77.3	0.634	<0.005	<0.495	0.734	<0.108	<0.045	1,072	1.4	0.013	0.955	13
			RG_SC_PCC-M-10_2021-06-25	2.9531	0.6562	77.8	6.2	<0.005	<0.495	3.1	0.291	<0.045	1,071	1.4	0.023	1.3	21
			RG_SC_PCC-M-11_2021-06-25	2.8921	0.6517	77.5	0.885	0.014	<0.495	0.422	0.319	<0.045	1,044	1.3	0.013	1.0	11
		RG_ER	RG_ER_PCC-M-01_2021-06-22	3.2293	0.6814	78.9	0.473	<0.005	<0.495	3.5	0.119	0.064	788	1.3	0.021	1.6	19
			RG_ER_PCC-M-02_2021-06-22	2.1785	0.4956	77.3	0.613	<0.005	<0.495	2.8	<0.108	0.064	917	1.3	0.030	2.0	29
			RG_ER_PCC-M-03_2021-06-22	3.5660	0.7397	79.3	0.923	<0.005	<0.495	1.9	<0.108	<0.045	700	1.1	0.017	1.3	22
			RG_ER_PCC-M-04_2021-06-22	3.9177	0.8408	78.5	0.619	<0.005	<0.495	2.2	<0.108	<0.045	952	1.4	0.022	1.4	16
			RG_ER_PCC-M-05_2021-06-23	4.8595	1.1154	77.0	1.6	0.007	<0.495	1.6	<0.108	<0.045	1,132	1.2	0.022	1.1	18
			RG_ER_PCC-M-06_2021-06-23	1.2155	0.2425	80.0	1.5	<0.005	<0.495	2.0	<0.108	<0.045	991	1.3	0.019	1.0	24
			RG_ER_PCC-M-07_2021-06-23	4.0879	0.9552	76.6	1.3	<0.005	<0.495	2.1	<0.108	0.154	810	1.2	0.017	1.3	16
			RG_ER_PCC-M-08_2021-06-23	3.8370	0.8988	76.6	1.2	0.007	<0.495	2.7	<0.108	<0.045	525	1.0	0.019	1.3	24
			RG_ER_PCC-M-09_2021-06-23	1.4469	0.3371	76.7	1.2	0.005	<0.495	2.9	<0.108	<0.045	752	1.2	0.023	2.0	33
			RG_ER_PCC-M-10_2021-06-23	3.6016	0.8107	77.5	3.6	0.005	<0.495	1.9	<0.108	<0.045	859	1.2	0.019	1.5	28
		RG_GC	RG_GC_PCC-M-01_2021-06-23	0.7466	0.1997	73.3	0.939	<0.005	<0.495	4.6	<0.108	<0.045	845	1.3	0.036	2.1	28
			RG_GC_PCC-M-02_2021-06-24	2.5852	0.6074	76.5	3.6	<0.005	<0.495	3.5	0.240	<0.045	1,037	1.3	0.030	1.6	39
			RG_GC_PCC-M-03_2021-06-24	4.4099	1.0683	75.8	1.5	<0.005	<0.495	2.9	0.148	<0.045	961	1.3	0.033	1.7	37
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-06-23	16.3943	6.3401	61.3	1.1	<0.005	<0.495	4.0	<0.108	0.872	336	1.2	0.058	4.1	67
			RG_SC_PCC-O-02_2021-06-23	16.1908	5.7506	64.5	0.361	<0.005	<0.495	2.5	<0.108	0.395	355	1.1	0.035	3.7	42
			RG_SC_PCC-O-03_2021-06-23	2.1001	0.5028	76.1	11	0.005	<0.495	7.7	<0.108	0.115	1,430	1.1	0.113	5.0	204

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
June	Ovary	RG_SC	RG_SC_PCC-O-05_2021-06-23	4.3077	1.1680	72.9	0.903	0.011	<0.495	7.5	<0.108	0.049	1,095	1.4	0.109	4.2	136
			RG_SC_PCC-O-06_2021-06-25	16.7073	7.0039	58.1	<0.296	<0.005	<0.495	1.2	<0.108	0.296	237	1.2	0.047	4.6	48
			RG_SC_PCC-O-07_2021-06-25	14.0617	5.4513	61.2	0.394	<0.005	<0.495	2.7	<0.108	0.049	239	1.2	0.039	3.3	59
			RG_SC_PCC-O-08_2021-06-25	7.8812	2.8343	64.0	0.722	<0.005	<0.495	3.6	<0.108	<0.045	670	1.3	0.066	3.5	101
			RG_SC_PCC-O-09_2021-06-25	19.5715	7.6007	61.2	0.322	<0.005	<0.495	3.6	<0.108	<0.045	384	1.4	0.061	3.0	49
			RG_SC_PCC-O-10_2021-06-25	7.4889	2.7865	62.8	0.735	<0.005	<0.495	1.1	<0.108	<0.045	416	1.5	0.055	4.0	89
			RG_SC_PCC-O-11_2021-06-25	12.3013	4.9636	59.6	0.574	<0.005	<0.495	1.7	<0.108	<0.045	246	1.4	0.064	3.2	58
		RG_ER	RG_ER_PCC-O-01_2021-06-22	9.4353	3.7543	60.2	0.561	<0.005	<0.495	5.3	<0.108	0.072	336	1.4	0.047	3.7	54
			RG_ER_PCC-O-02_2021-06-22	12.2445	5.0099	59.1	0.352	<0.005	<0.495	2.3	<0.108	0.229	277	1.5	0.049	4.4	52
			RG_ER_PCC-O-03_2021-06-22	5.8837	2.2713	61.4	<0.296	<0.005	<0.495	2.4	<0.108	0.374	316	1.4	0.042	3.3	39
			RG_ER_PCC-O-04_2021-06-22	10.6639	4.1255	61.3	0.383	<0.005	<0.495	5.4	<0.108	0.145	355	1.3	0.059	3.3	51
			RG_ER_PCC-O-05_2021-06-23	1.0869	0.2334	78.5	1.3	0.006	<0.495	9.0	0.124	0.096	535	1.5	0.175	4.5	372
			RG_ER_PCC-O-06_2021-06-23	16.0764	6.4947	59.6	0.346	<0.005	<0.495	1.3	<0.108	<0.045	279	1.5	0.056	4.0	68
			RG_ER_PCC-O-07_2021-06-23	12.3781	4.9947	59.6	0.525	<0.005	<0.495	2.1	<0.108	<0.045	275	1.4	0.042	2.7	60
			RG_ER_PCC-O-08_2021-06-23	7.9382	3.1531	60.3	0.331	<0.005	<0.495	4.1	<0.108	0.259	311	1.3	0.063	2.8	63
			RG_ER_PCC-O-09_2021-06-23	5.4510	2.1574	60.4	<0.296	<0.005	<0.495	1.7	<0.108	<0.045	258	1.4	0.040	2.3	40
			RG_ER_PCC-O-10_2021-06-23	9.2997	3.2596	64.9	2.5	<0.005	<0.495	4.0	<0.108	0.103	466	1.5	0.085	3.3	76
		RG_GC	RG_GC_PCC-O-01_2021-06-23	7.2643	3.0424	58.1	0.395	<0.005	<0.495	2.7	<0.108	<0.045	316	1.4	0.072	3.9	52
			RG_GC_PCC-O-02_2021-06-24	0.8958	0.2278	74.6	1.6	<0.005	0.548	15	<0.108	0.185	834	1.4	0.151	4.9	342
			RG_GC_PCC-O-03_2021-06-24	1.2136	0.3263	73.1	1.3	0.007	<0.495	15	<0.108	0.139	530	1.0	0.113	3.6	161

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Muscle	RG_SC	RG_SC_PCC-M-01_2021-04-19	0.007	<0.007	865	0.418	0.673	<0.014	0.281	8,145	19,860	1.5	<0.001	778	0.553	0.007
			RG_SC_PCC-M-04_2021-04-19	0.010	<0.007	990	0.322	0.561	<0.014	0.234	8,431	17,646	3.1	<0.001	734	0.559	0.007
			RG_SC_PCC-M-16_2021-04-20	0.010	<0.007	964	0.316	1.1	<0.014	0.094	8,930	21,996	1.4	<0.001	635	0.527	0.012
			RG_SC_PCC-M-17_2021-04-20	0.007	<0.007	1,130	0.348	0.673	<0.014	0.305	8,807	19,409	2.6	<0.001	835	0.491	0.011
			RG_SC_PCC-M-18_2021-04-20	0.010	<0.007	1,194	0.549	1.7	<0.014	0.287	11,560	25,556	2.5	<0.001	1,068	0.575	0.005
			RG_SC_PCC-M-19_2021-04-20	0.016	<0.007	1,193	0.551	0.629	<0.014	0.212	9,052	18,821	1.7	<0.001	804	0.533	0.013
			RG_SC_PCC-M-20_2021-04-20	0.010	<0.007	1,376	0.445	1.1	<0.014	0.325	9,234	19,322	2.1	<0.001	909	0.632	0.007
			RG_SC_PCC-M-22_2021-04-20	0.013	0.010	975	0.374	0.656	<0.014	0.225	10,633	23,359	1.9	<0.001	838	0.491	0.023
			RG_SC_PCC-M-24_2021-04-21	0.010	0.010	1,472	0.455	0.438	<0.014	0.175	10,899	24,355	2.8	<0.001	1,074	0.625	0.027
			RG_SC_PCC-M-26_2021-04-21	0.006	0.010	1,470	0.344	0.547	<0.014	0.125	10,592	23,933	1.6	<0.001	993	0.697	0.009
			RG_SC_PCC-M-28_2021-04-21	0.008	0.010	1,451	0.516	0.459	<0.014	0.125	10,766	22,745	4.5	<0.001	892	0.474	0.013
			RG_SC_PCC-M-29_2021-04-21	0.013	<0.007	1,434	0.436	0.536	<0.014	0.200	10,524	22,425	3.1	<0.001	652	0.612	0.005
			RG_SC_PCC-M-30_2021-04-21	<0.006	<0.007	1,113	0.357	0.919	<0.014	0.100	7,791	18,057	1.8	<0.001	837	0.565	0.010
			RG_SC_PCC-M-31_2021-04-21	0.007	0.017	1,204	0.765	0.528	<0.014	0.162	14,895	33,465	2.0	<0.001	1,334	0.379	0.021
		RG_ER	RG_ER_PCC-M-01_2021-04-19	<0.006	0.009	1,143	0.354	0.834	<0.014	0.204	9,322	21,774	3.1	<0.001	1,010	0.399	0.010
			RG_ER_PCC-M-03_2021-04-19	<0.006	0.009	1,327	0.328	0.484	<0.014	0.127	10,559	26,479	2.6	<0.001	1,180	0.467	0.009
			RG_ER_PCC-M-04_2021-04-19	0.008	0.009	1,303	0.530	0.542	<0.014	0.561	9,822	22,388	2.5	<0.001	814	0.614	0.012
			RG_ER_PCC-M-05_2021-04-19	0.019	0.014	1,346	0.698	0.817	<0.014	0.994	10,547	25,305	4.6	<0.001	1,202	0.941	0.009
			RG_ER_PCC-M-06_2021-04-19	0.012	<0.007	1,332	0.378	1.0	<0.014	0.085	10,630	23,534	2.0	<0.001	1,113	0.777	0.013
			RG_ER_PCC-M-07_2021-04-19	0.045	0.066	1,241	0.470	1.4	<0.014	0.169	11,795	28,896	2.6	<0.001	1,507	0.647	0.006
			RG_ER_PCC-M-08_2021-04-19	0.025	0.010	1,318	0.507	0.832	<0.014	0.085	9,484	21,746	1.8	<0.001	896	0.860	0.012
			RG_ER_PCC-M-10_2021-04-19	<0.006	0.010	894	0.313	0.775	<0.014	0.056	6,595	14,638	4.8	<0.001	626	0.352	0.006
			RG_ER_PCC-M-11_2021-04-19	0.012	<0.007	1,515	0.344	0.511	<0.014	0.085	10,875	24,250	4.9	<0.001	1,004	0.561	0.010
			RG_ER_PCC-M-12_2021-04-19	0.027	0.020	1,855	0.685	1.5	<0.014	0.141	10,949	21,944	2.4	<0.001	1,154	0.925	0.025
			RG_ER_PCC-M-13_2021-04-19	0.016	0.015	1,145	0.472	0.492	<0.014	0.141	9,793	22,526	4.4	<0.001	965	0.514	0.011
		RG_GC	RG_GC_PCC-M-05_2021-04-20	0.012	<0.007	974	0.244	1.1	<0.014	0.055	10,112	26,010	2.1	<0.001	1,254	0.350	0.008
			RG_GC_PCC-M-08_2021-04-21	0.012	<0.007	859	0.308	1.6	<0.014	0.138	8,161	18,735	1.5	<0.001	1,116	0.367	0.009
			RG_GC_PCC-M-09_2021-04-21	0.012	0.010	1,215	0.378	0.785	<0.014	0.138	10,720	24,208	2.9	<0.001	993	0.442	0.008
			RG_GC_PCC-M-10_2021-04-21	0.008	0.010	1,132	0.348	0.753	<0.014	0.110	12,299	26,298	4.0	<0.001	1,449	0.275	0.007
			RG_GC_PCC-M-11_2021-04-21	0.015	0.010	1,285	0.361	0.921	<0.014	0.110	8,924	19,471	2.1	<0.001	932	0.559	0.009
			RG_GC_PCC-M-12_2021-04-21	0.012	0.010	1,462	0.491	0.657	<0.014	0.165	13,026	29,317	4.3	<0.001	1,631	0.435	0.006
			RG_GC_PCC-M-13_2021-04-21	0.012	0.010	1,313	0.319	0.785	<0.014	0.083	9,744	19,687	2.6	<0.001	942	0.534	0.017
			RG_GC_PCC-M-14_2021-04-21	<0.006	0.010	1,073	0.282	1.6	<0.014	0.083	9,752	22,931	1.9	<0.001	1,212	0.425	0.015
			RG_GC_PCC-M-15_2021-04-21	0.009	<0.007	1,091	0.310	0.718	<0.014	0.098	9,949	20,074	3.8	<0.001	913	0.411	0.017
			RG_GC_PCC-M-16_2021-04-21	0.030	0.017	1,415	0.606	1.1	<0.014	0.716	11,909	23,637	3.0	<0.001	1,071	0.738	0.011
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-04-19	0.024	<0.007	1,099	6.4	<0.071	0.124	0.063	11,346	8,009	6.3	0.019	1,044	0.388	0.008
			RG_SC_PCC-O-04_2021-04-19	0.024	<0.007	859	3.7	<0.071	0.155	0.095	12,035	7,491	8.7	0.019	1,392	0.386	0.006
			RG_SC_PCC-O-16_2021-04-20	0.010	<0.007	769	3.8	<0.071	0.093	0.032	8,793	6,724	5.9	0.019	714	0.282	0.008
			RG_SC_PCC-O-17_2021-04-20	0.013	<0.007	995	6.7	<0.071	0.115	<0.027	14,299	13,049	14	0.024	1,888	0.438	0.007
			RG_SC_PCC-O-18_2021-04-20	0.010	<0.007	1,008	5.1	0.093	0.092	0.047	10,537	6,671	7.8	0.016	914	0.432	0.002
			RG_SC_PCC-O-19_2021-04-20	0.010	<0.007	738	4.4	<0.071	0.092	<0.027	12,197	6,800	6.7	0.016	839	0.299	0.005
			RG_SC_PCC-O-20_2021-04-20	0.012	<0.007	853	5.5	<0.071	0.090	0.033	18,389	15,198	9.8	0.019	1,956	0.401	0.005
			RG_SC_PCC-O-22_2021-04-20	0.014	<0.007	852	6.1	<0.071	0.120	0.065	13,080	9,369	12	0.019	1,185	0.442	0.020
			RG_SC_PCC-O-24_2021-04-21	0.014	0.023	799	3.2	<0.071	0.090	0.033	11,417	5,762	11	0.019	695	0.332	0.015
			RG_SC_PCC-O-26_2021-04-21	0.013	0.009	1,359	16	<0.071	0.207	0.082	10,233	10,831	15	0.016	1,690	0.487	0.006
			RG_SC_PCC-O-28_2021-04-21	0.014	0.029	764	5.8	<0.071	0.060	0.065	10,918	7,051	12	0.019	1,018	0.290	0.006
			RG_SC_PCC-O-29_2021-04-21	0.015	<0.007	800	5.8	<0.071	0.093	0.063	12,042	7,410	9.9	0.019	1,140	0.274	0.003
			RG_SC_PCC-O-30_2021-04-21	0.007	0.018	1,202	16	<0.071	0.184	0.070	12,206	12,677	11	0.016	1,776	0.655	0.013
			RG_SC_PCC-O-31_2021-04-21	0.020	0.028	768	6.8	<0.071	0.124	0.063	10,789	6,508	11	0.009	978	0.324	0.005
		RG_ER	RG_ER_PCC-O-01_2021-04-19	0.018	0.009	710	5.3	<0.071	0.103	0.098	13,421	14,235	15	0.019	1,644	0.271	0.007
			RG_ER_PCC-O-03_2021-04-19	0.014	0.014	819	5.7	<0.071	0.155	0.073	10,587	10,090	8.4	0.008	1,666	0.339	0.007
			RG_ER_PCC-O-04_2021-04-19	0.007	0.009	779	5.0	<0.071	0.103	0.073	10,411	6,733	9.8	0.016	1,131	0.304	0.008

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Ovary	RG_ER	RG_ER_PCC-O-05_2021-04-19	0.051	0.027	1,795	19	<0.071	0.204	1.8	11,395	17,646	21	0.016	2,378	0.915	0.014
			RG_ER_PCC-O-06_2021-04-19	<0.006	0.009	850	5.8	<0.071	0.103	<0.027	8,892	5,914	5.0	0.023	1,025	0.269	0.014
			RG_ER_PCC-O-07_2021-04-19	0.008	0.014	1,201	6.7	<0.071	0.113	0.102	8,833	8,431	11	0.016	1,374	0.488	0.010
			RG_ER_PCC-O-08_2021-04-19	0.007	<0.007	687	3.6	<0.071	0.077	<0.027	9,607	7,261	6.7	0.016	1,171	0.171	0.006
			RG_ER_PCC-O-10_2021-04-19	0.011	<0.007	743	4.6	<0.071	0.077	0.049	8,973	6,726	12	0.023	972	0.253	0.005
			RG_ER_PCC-O-11_2021-04-19	0.011	<0.007	736	3.5	<0.071	0.077	0.073	11,117	7,495	12	0.023	962	0.211	0.005
			RG_ER_PCC-O-12_2021-04-19	0.011	<0.007	713	5.4	<0.071	0.077	0.049	7,397	3,943	8.3	0.023	631	0.333	0.010
			RG_ER_PCC-O-13_2021-04-19	0.008	0.009	803	5.3	<0.071	0.068	0.102	10,651	6,979	14	0.039	1,003	0.316	0.013
		RG_GC	RG_GC_PCC-O-05_2021-04-20	0.009	0.015	1,102	6.1	<0.071	0.136	0.090	13,938	12,332	8.4	0.022	2,034	0.417	0.013
			RG_GC_PCC-O-08_2021-04-21	0.020	0.010	1,143	8.4	0.103	0.136	0.060	12,375	8,732	7.2	0.007	1,317	0.414	0.008
			RG_GC_PCC-O-09_2021-04-21	0.009	<0.007	912	11	<0.071	0.136	0.030	10,966	10,454	8.4	0.007	1,439	0.321	0.003
			RG_GC_PCC-O-10_2021-04-21	0.013	<0.007	1,021	4.0	<0.071	0.136	0.090	12,920	12,281	16	0.022	1,399	0.334	0.006
			RG_GC_PCC-O-11_2021-04-21	0.017	<0.007	869	5.4	<0.071	0.081	0.179	7,751	6,535	7.7	0.014	1,042	0.349	0.002
			RG_GC_PCC-O-12_2021-04-21	0.013	<0.007	892	7.9	<0.071	0.108	0.060	11,619	5,942	11	0.014	889	0.340	0.004
			RG_GC_PCC-O-13_2021-04-21	0.011	<0.007	850	5.3	<0.071	0.108	0.060	10,509	7,161	7.9	0.014	1,066	0.387	0.010
			RG_GC_PCC-O-14_2021-04-21	<0.006	0.010	914	6.6	0.086	0.108	0.060	9,147	7,118	5.8	0.014	1,222	0.247	0.009
			RG_GC_PCC-O-15_2021-04-21	0.009	<0.007	932	7.4	<0.071	0.060	0.033	10,099	5,920	11	0.019	781	0.373	0.009
			RG_GC_PCC-O-16_2021-04-21	0.014	<0.007	1,020	6.1	<0.071	0.150	0.130	13,926	9,264	15	0.009	1,385	0.284	0.006
May	Muscle	RG_SC	RG_SC_PCC-M-01_2021-05-27	0.018	<0.007	1,640	0.828	1.1	<0.001	0.277	12,820	24,788	2.2	<0.001	1,294	0.754	0.023
			RG_SC_PCC-M-02_2021-05-27	0.022	0.025	1,225	0.819	1.3	<0.001	0.955	11,554	24,385	1.6	<0.001	1,498	1.3	0.007
			RG_SC_PCC-M-03_2021-05-28	0.027	0.049	1,633	1.0	1.8	<0.001	0.246	14,834	32,221	3.0	<0.001	1,958	0.749	0.033
			RG_SC_PCC-M-04_2021-05-28	0.009	<0.007	1,124	0.302	1.1	<0.001	0.062	9,284	26,135	1.3	<0.001	978	0.456	0.005
			RG_SC_PCC-M-05_2021-05-28	0.015	0.011	1,124	0.411	1.3	<0.001	0.100	10,828	24,497	1.5	<0.001	1,194	0.531	0.008
			RG_SC_PCC-M-06_2021-05-28	0.015	0.017	1,073	0.542	1.3	<0.001	0.565	11,101	28,550	1.5	<0.001	1,398	0.554	0.009
			RG_SC_PCC-M-07_2021-05-28	0.010	0.011	960	0.330	0.660	<0.001	0.133	10,120	23,197	2.1	<0.001	1,132	0.450	0.006
			RG_SC_PCC-M-08_2021-05-28	0.031	0.037	1,360	0.778	1.4	<0.001	0.964	14,421	30,334	1.8	<0.001	1,535	0.869	0.006
			RG_SC_PCC-M-09_2021-05-28	0.010	<0.007	1,303	0.515	0.667	<0.001	0.133	9,825	20,927	2.9	<0.001	1,018	0.486	0.007
			RG_SC_PCC-M-10_2021-05-28	0.005	<0.007	974	0.303	0.724	<0.001	0.193	8,512	19,832	2.5	<0.001	918	0.293	0.008
		RG_ER	RG_ER_PCC-M-01_2021-05-28	0.005	0.013	1,236	0.320	1.4	<0.001	0.035	11,193	25,771	3.5	<0.001	1,235	0.365	0.008
			RG_ER_PCC-M-02_2021-05-28	0.027	0.019	1,447	0.515	0.707	<0.001	0.174	8,931	17,622	4.2	<0.001	957	0.471	0.007
			RG_ER_PCC-M-03_2021-05-28	0.050	0.034	1,648	0.873	0.632	0.026	0.164	12,999	26,336	6.1	0.007	1,693	0.747	0.026
			RG_ER_PCC-M-04_2021-05-29	0.014	0.014	1,026	0.348	1.4	<0.001	0.082	9,364	21,223	2.6	<0.001	1,160	0.413	0.007
			RG_ER_PCC-M-05_2021-05-29	0.009	0.010	1,402	0.424	0.523	<0.001	0.055	10,496	23,393	4.1	<0.001	1,098	0.395	0.022
			RG_ER_PCC-M-06_2021-05-29	0.016	0.019	1,338	0.567	0.983	<0.001	0.055	8,794	17,594	1.6	<0.001	852	0.612	0.016
			RG_ER_PCC-M-07_2021-05-29	0.005	0.010	1,151	0.295	0.364	<0.001	0.027	10,008	22,363	3.3	<0.001	1,057	0.287	0.005
			RG_ER_PCC-M-08_2021-05-29	0.007	0.026	1,232	0.321	1.6	<0.001	0.080	12,402	23,812	2.8	<0.001	1,334	0.524	0.018
			RG_ER_PCC-M-09_2021-05-29	0.012	0.014	1,169	0.401	0.707	<0.001	0.094	10,378	23,369	2.0	<0.001	1,207	0.348	0.021
			RG_ER_PCC-M-10_2021-05-29	0.011	0.010	1,502	0.465	0.750	<0.001	0.080	12,379	21,153	3.2	<0.001	1,355	0.489	0.030
		RG_GC	RG_GC_PCC-M-01_2021-05-25	0.010	0.018	936	0.325	1.3	<0.001	0.110	8,827	20,989	3.2	<0.001	1,125	0.483	0.004
			RG_GC_PCC-M-02_2021-05-25	0.019	0.012	1,297	0.587	0.974	<0.001	0.303	12,697	30,190	2.0	<0.001	1,482	0.390	0.016
			RG_GC_PCC-M-03_2021-05-25	0.010	0.012	1,106	0.371	0.919	<0.001	0.083	10,155	25,420	2.4	<0.001	1,270	0.310	0.017
			RG_GC_PCC-M-04_2021-05-25	0.021	0.013	1,522	0.495	2.6	<0.001	0.151	13,559	29,897	2.9	<0.001	1,715	0.832	0.005
			RG_GC_PCC-M-05_2021-05-28	0.005	<0.007	1,333	0.437	0.537	<0.001	0.060	9,818	20,153	9.7	<0.001	893	0.430	0.007
			RG_GC_PCC-M-06_2021-05-28	0.010	0.013	2,305	0.726	1.2	<0.001	0.302	19,290	40,255	2.6	<0.001	1,828	0.712	0.010
			RG_GC_PCC-M-07_2021-05-28	<0.003	<0.007	1,876	0.402	0.928	<0.001	0.060	17,489	33,480	3.5	<0.001	1,301	0.602	0.013
			RG_GC_PCC-M-08_2021-05-28	0.005	<0.007	1,758	0.382	0.847	<0.001	0.060	18,271	43,918	6.1	<0.001	1,702	0.365	0.012
			RG_GC_PCC-M-09_2021-05-28	0.038	0.025	1,864	0.738	1.4	<0.001	0.174	12,981	20,217	2.4	<0.001	1,640	1.6	0.009
			RG_GC_PCC-M-10_2021-05-28	0.011	<0.007	1,385	0.432	0.841	<0.001	0.069	10,539	19,283	2.2	<0.001	925	0.899	0.008
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-05-27	0.009	<0.007	1,007	3.7	<0.043	0.079	0.031	19,769	11,629	9.1	0.039	1,699	0.350	0.014
			RG_SC_PCC-O-02_2021-05-27	0.040	0.012	737	0.822	0.066	0.126	0.092	16,421	13,258	5.6	0.019	2,871	0.456	0.003
			RG_SC_PCC-O-03_2021-05-28	0.009	<0.007	1,215	7.3	0.073	0.126	0.062	23,172	12,938	16	0.039	2,234	0.359	0.008
			RG_SC_PCC-O-04_2021-05-28	0.004	<0.007	822	6.3	0.044	0.063	0.031	12,072	7,709	6.4	0.019	1,071	0.285	0.004

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
May	Ovary	RG_SC	RG_SC_PCC-O-05_2021-05-28	0.018	<0.007	720	3.5	0.044	0.063	0.062	11,793	7,964	5.5	0.019	1,298	0.320	0.004
			RG_SC_PCC-O-06_2021-05-28	0.005	<0.007	752	4.5	<0.043	0.060	0.033	9,718	5,746	4.4	0.022	883	0.238	0.003
			RG_SC_PCC-O-07_2021-05-28	0.010	<0.007	1,055	8.9	<0.043	0.270	0.299	12,942	13,255	11	0.032	2,036	0.369	0.010
			RG_SC_PCC-O-08_2021-05-28	0.015	<0.007	808	5.5	0.050	0.090	0.033	12,314	7,456	5.2	0.022	1,229	0.328	0.003
			RG_SC_PCC-O-09_2021-05-28	0.010	<0.007	1,023	6.2	<0.043	0.090	0.033	10,480	7,311	16	0.022	1,196	0.423	0.005
			RG_SC_PCC-O-10_2021-05-28	0.010	<0.007	798	2.4	<0.043	0.083	0.028	12,847	10,131	7.0	0.022	1,299	0.186	0.004
		RG_ER	RG_ER_PCC-O-01_2021-05-28	0.011	<0.007	946	3.6	0.050	0.062	0.035	11,289	5,015	14	0.025	785	0.212	0.001
			RG_ER_PCC-O-02_2021-05-28	0.021	<0.007	847	4.1	<0.043	0.062	0.069	13,255	9,551	11	0.025	1,436	0.232	0.002
			RG_ER_PCC-O-03_2021-05-28	0.005	0.013	708	3.1	<0.043	0.031	0.035	9,164	6,797	11	0.025	1,027	0.169	0.001
			RG_ER_PCC-O-04_2021-05-29	0.009	0.014	812	2.8	0.051	0.077	0.027	11,260	7,763	11	0.007	1,209	0.165	0.003
			RG_ER_PCC-O-05_2021-05-29	0.009	0.010	817	8.8	<0.043	0.077	0.055	9,878	6,572	13	0.015	1,125	0.280	0.011
			RG_ER_PCC-O-06_2021-05-29	0.009	0.010	795	3.8	<0.043	0.051	0.027	12,271	8,176	7.8	0.022	1,357	0.251	0.008
			RG_ER_PCC-O-07_2021-05-29	0.009	<0.007	632	3.3	<0.043	0.051	0.027	9,574	4,981	8.4	0.015	907	0.165	0.002
			RG_ER_PCC-O-08_2021-05-29	0.015	<0.007	973	7.0	0.090	0.132	0.107	12,678	10,188	15	0.034	1,399	0.386	0.012
			RG_ER_PCC-O-09_2021-05-29	0.004	<0.007	768	6.8	0.066	0.112	0.047	9,677	5,815	8.8	0.013	2,641	0.351	0.010
			RG_ER_PCC-O-10_2021-05-29	0.011	<0.007	733	4.0	<0.043	0.079	0.053	11,730	6,972	23	0.014	1,031	0.266	0.011
		RG_GC	RG_GC_PCC-O-01_2021-05-25	0.076	0.048	761	2.5	0.097	0.055	0.138	15,029	9,260	7.2	0.011	9,119	2.0	0.007
			RG_GC_PCC-O-02_2021-05-25	0.014	<0.007	802	8.2	0.070	0.083	0.028	10,728	7,790	13	0.022	1,092	0.346	0.009
			RG_GC_PCC-O-03_2021-05-25	0.014	0.012	671	4.5	<0.043	0.055	0.028	10,681	6,689	5.2	0.011	1,161	0.262	0.008
			RG_GC_PCC-O-04_2021-05-25	0.019	<0.007	794	6.8	<0.043	0.055	0.028	9,960	7,201	11	0.022	1,291	0.328	0.003
			RG_GC_PCC-O-05_2021-05-28	0.021	<0.007	1,553	14	<0.043	0.084	0.060	8,893	8,937	22	0.038	2,417	0.963	0.011
			RG_GC_PCC-O-06_2021-05-28	0.010	0.025	785	10	0.065	0.056	0.030	8,898	4,860	6.1	0.025	7,428	1.8	0.006
			RG_GC_PCC-O-07_2021-05-28	0.016	0.013	1,694	23	0.081	0.195	0.091	20,563	19,298	17	0.050	6,990	0.918	0.014
			RG_GC_PCC-O-08_2021-05-28	0.016	0.013	1,303	8.5	0.065	0.139	0.091	20,193	17,702	18	0.050	2,167	0.318	0.013
			RG_GC_PCC-O-09_2021-05-28	0.011	<0.007	827	4.8	0.050	0.062	<0.001	11,398	6,762	6.6	0.025	1,047	0.295	0.003
			RG_GC_PCC-O-10_2021-05-28	0.005	<0.007	797	4.1	0.050	0.062	0.035	10,647	7,557	7.1	0.019	1,180	0.174	0.002
June	Muscle	RG_SC	RG_SC_PCC-M-01_2021-06-23	0.029	0.016	1,111	0.722	1.0	0.013	0.164	9,305	20,757	2.0	<0.001	1,942	0.336	0.015
			RG_SC_PCC-M-02_2021-06-23	0.014	0.012	1,259	0.471	1.4	<0.001	0.099	12,092	27,861	1.7	<0.001	1,715	0.499	0.005
			RG_SC_PCC-M-03_2021-06-23	0.027	0.016	1,372	0.694	0.900	0.013	0.279	11,797	21,760	2.0	<0.001	2,076	0.503	0.008
			RG_SC_PCC-M-05_2021-06-23	0.014	<0.008	1,269	0.652	0.871	0.013	0.287	9,535	17,782	1.8	<0.001	1,258	0.592	0.011
			RG_SC_PCC-M-06_2021-06-25	0.048	0.012	1,427	0.721	0.605	<0.001	0.197	11,596	23,872	1.8	<0.001	1,252	0.396	0.017
			RG_SC_PCC-M-07_2021-06-25	0.007	0.008	1,200	0.328	0.668	<0.001	<0.041	10,936	23,141	2.0	<0.001	1,108	0.580	0.005
			RG_SC_PCC-M-08_2021-06-25	0.032	0.016	1,327	0.433	1.2	<0.001	0.114	11,914	27,598	3.5	<0.001	1,509	0.435	0.003
			RG_SC_PCC-M-09_2021-06-25	0.009	0.016	1,343	0.324	1.1	<0.001	0.114	12,210	27,133	3.5	<0.001	1,232	0.519	0.006
			RG_SC_PCC-M-10_2021-06-25	0.033	0.012	1,433	0.801	1.1	0.015	0.180	10,767	19,839	1.8	<0.001	1,242	0.469	0.006
			RG_SC_PCC-M-11_2021-06-25	0.044	0.012	1,515	0.545	0.755	<0.001	0.095	12,400	26,064	2.2	<0.001	1,410	0.487	0.007
		RG_ER	RG_ER_PCC-M-01_2021-06-22	0.016	0.021	1,065	0.365	1.1	<0.001	0.085	9,486	21,966	2.9	<0.001	1,256	0.388	0.012
			RG_ER_PCC-M-02_2021-06-22	0.014	0.034	1,347	0.480	0.510	0.014	0.136	10,632	22,885	2.4	<0.001	1,500	0.365	0.026
			RG_ER_PCC-M-03_2021-06-22	0.016	0.042	805	0.406	1.5	<0.001	0.068	9,634	21,580	2.2	<0.001	1,394	0.230	0.007
			RG_ER_PCC-M-04_2021-06-22	0.016	0.042	1,641	0.291	1.1	<0.001	0.051	16,818	34,167	4.2	<0.001	1,816	0.458	0.017
			RG_ER_PCC-M-05_2021-06-23	0.023	0.013	1,517	0.492	0.440	<0.001	0.085	8,123	14,117	5.2	<0.001	723	0.501	0.004
			RG_ER_PCC-M-06_2021-06-23	0.016	0.023	1,157	0.524	1.5	<0.001	0.153	12,473	28,582	2.5	<0.001	1,714	0.473	0.008
			RG_ER_PCC-M-07_2021-06-23	0.012	0.034	1,068	0.512	0.436	0.014	0.085	8,563	18,067	3.0	<0.001	982	0.281	0.012
			RG_ER_PCC-M-08_2021-06-23	0.012	0.042	1,024	0.423	0.412	0.014	0.094	9,746	22,672	4.8	<0.001	1,243	0.220	0.016
			RG_ER_PCC-M-09_2021-06-23	0.010	0.057	1,608	0.646	0.867	<0.001	0.091	11,937	21,328	5.5	<0.001	1,515	0.272	0.022
			RG_ER_PCC-M-10_2021-06-23	0.024	0.052	992	0.561	0.730	<0.001	0.091	11,780	24,609	4.5	<0.001	1,733	0.300	0.012
		RG_GC	RG_GC_PCC-M-01_2021-06-23	0.009	0.016	1,524	0.671	0.634	<0.001	0.125	14,218	26,801	3.4	<0.001	1,735	0.332	0.041
			RG_GC_PCC-M-02_2021-06-24	0.027	0.013	1,423	0.712	1.1	0.015	0.154	12,808	23,725	1.9	<0.001	1,566	0.558	0.017
			RG_GC_PCC-M-03_2021-06-24	0.016	0.009	1,287	0.456	0.279	<0.001	0.134	10,324	15,846	3.3	0.007	830	0.556	0.008
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-06-23	0.010	0.010	932	6.3	0.054	0.066	<0.041	11,750	7,337	7.6	0.028	998	0.287	0.006
			RG_SC_PCC-O-02_2021-06-23	0.002	0.010	815	4.2	0.054	0.066	<0.041	10,223	6,641	5.4	0.016	1,917	0.322	0.003
			RG_SC_PCC-O-03_2021-06-23	0.033	0.014	1,580	16	0.123	0.206	0.160	14,218	13,823	20	0.020	2,321	1.1	0.012

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
June	Ovary	RG_SC	RG_SC_PCC-O-05_2021-06-23	0.020	0.019	705	4.9	0.094	0.033	0.114	11,565	8,254	6.8	0.016	7,710	1.3	0.009
			RG_SC_PCC-O-06_2021-06-25	0.002	<0.008	859	4.5	<0.036	0.066	<0.041	12,136	6,516	6.0	0.024	851	0.167	0.008
			RG_SC_PCC-O-07_2021-06-25	0.007	<0.008	888	4.7	<0.036	0.066	<0.041	11,958	8,921	9.7	0.016	1,101	0.204	0.004
			RG_SC_PCC-O-08_2021-06-25	0.010	0.048	551	2.7	0.072	0.033	0.068	12,104	2,831	8.3	0.020	3,780	0.682	0.003
			RG_SC_PCC-O-09_2021-06-25	0.009	0.008	974	7.7	<0.036	0.060	0.082	12,619	8,254	13	0.018	1,245	0.315	0.004
			RG_SC_PCC-O-10_2021-06-25	0.009	0.008	984	9.9	0.051	0.079	<0.041	10,447	5,299	8.1	0.021	1,082	0.277	0.004
			RG_SC_PCC-O-11_2021-06-25	0.009	<0.008	844	5.0	<0.036	0.079	0.049	15,180	9,209	8.4	0.021	1,148	0.188	0.006
		RG_ER	RG_ER_PCC-O-01_2021-06-22	0.018	0.019	827	5.2	0.044	0.090	0.043	13,593	10,279	15	0.017	1,731	0.229	0.005
			RG_ER_PCC-O-02_2021-06-22	0.008	0.015	802	2.2	<0.036	0.090	0.043	12,045	8,160	8.5	0.023	1,214	0.205	0.008
			RG_ER_PCC-O-03_2021-06-22	0.007	0.054	756	4.2	0.089	0.064	<0.041	11,888	8,239	9.3	0.014	1,859	0.220	0.003
			RG_ER_PCC-O-04_2021-06-22	0.007	0.015	716	4.4	<0.036	0.064	<0.041	9,969	6,009	11	0.026	1,224	0.306	0.007
			RG_ER_PCC-O-05_2021-06-23	0.069	0.027	1,037	2.6	0.078	0.128	0.820	18,210	27,127	29	0.009	5,317	0.481	0.021
			RG_ER_PCC-O-06_2021-06-23	0.005	0.015	752	3.5	0.066	0.077	<0.041	14,788	10,627	9.2	0.029	1,670	0.187	0.007
			RG_ER_PCC-O-07_2021-06-23	0.007	0.025	735	4.5	<0.036	0.077	0.043	13,238	10,077	13	0.020	1,061	0.221	0.005
			RG_ER_PCC-O-08_2021-06-23	0.007	0.023	718	4.3	<0.036	0.090	0.058	12,880	8,793	14	0.023	1,416	0.229	0.005
			RG_ER_PCC-O-09_2021-06-23	0.005	0.046	722	3.6	0.039	0.064	<0.041	10,474	6,507	12	0.021	1,470	0.182	0.005
			RG_ER_PCC-O-10_2021-06-23	0.033	0.061	1,049	5.7	<0.036	0.113	0.085	14,474	10,908	12	0.032	2,473	0.532	0.008
		RG_GC	RG_GC_PCC-O-01_2021-06-23	0.007	<0.008	970	5.1	<0.036	0.059	<0.041	13,725	8,369	15	0.040	1,381	0.275	0.011
			RG_GC_PCC-O-02_2021-06-24	0.021	0.018	1,177	4.8	0.190	0.178	0.442	20,094	27,876	14	0.014	5,521	0.789	0.062
			RG_GC_PCC-O-03_2021-06-24	0.034	0.013	866	6.7	0.066	0.118	0.134	12,806	16,769	15	0.010	3,676	0.367	0.030

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Muscle	RG_SC	RG_SC_PCC-M-01_2021-04-19	0.079	0.949	<0.001	<0.053	41
			RG_SC_PCC-M-04_2021-04-19	0.101	0.949	<0.001	<0.053	37
			RG_SC_PCC-M-16_2021-04-20	0.085	1.3	<0.001	<0.053	32
			RG_SC_PCC-M-17_2021-04-20	0.102	1.3	<0.001	<0.053	23
			RG_SC_PCC-M-18_2021-04-20	0.143	1.2	<0.001	<0.053	43
			RG_SC_PCC-M-19_2021-04-20	0.079	1.3	<0.001	<0.053	34
			RG_SC_PCC-M-20_2021-04-20	0.209	1.3	<0.001	<0.053	37
			RG_SC_PCC-M-22_2021-04-20	0.095	1.3	<0.001	<0.053	23
			RG_SC_PCC-M-24_2021-04-21	0.050	1.3	<0.001	<0.053	22
			RG_SC_PCC-M-26_2021-04-21	0.187	1.3	<0.001	<0.053	21
			RG_SC_PCC-M-28_2021-04-21	0.043	1.3	<0.001	<0.053	19
			RG_SC_PCC-M-29_2021-04-21	0.112	1.3	<0.001	<0.053	20
			RG_SC_PCC-M-30_2021-04-21	0.038	0.992	<0.001	<0.053	23
			RG_SC_PCC-M-31_2021-04-21	0.066	1.1	<0.001	<0.053	90
		RG_ER	RG_ER_PCC-M-01_2021-04-19	0.097	0.813	<0.001	<0.053	20
			RG_ER_PCC-M-03_2021-04-19	0.139	0.813	<0.001	<0.053	19
			RG_ER_PCC-M-04_2021-04-19	0.100	1.1	<0.001	<0.053	26
			RG_ER_PCC-M-05_2021-04-19	0.106	1.1	0.002	<0.053	20
			RG_ER_PCC-M-06_2021-04-19	0.113	0.851	<0.001	<0.053	21
			RG_ER_PCC-M-07_2021-04-19	0.217	1.1	0.001	<0.053	23
			RG_ER_PCC-M-08_2021-04-19	0.144	1.1	<0.001	<0.053	18
			RG_ER_PCC-M-10_2021-04-19	0.109	0.425	<0.001	<0.053	16
			RG_ER_PCC-M-11_2021-04-19	0.354	0.851	<0.001	<0.053	22
			RG_ER_PCC-M-12_2021-04-19	0.108	1.4	<0.001	0.061	35
			RG_ER_PCC-M-13_2021-04-19	0.175	1.1	<0.001	<0.053	26
		RG_GC	RG_GC_PCC-M-05_2021-04-20	0.167	0.851	<0.001	<0.053	13
			RG_GC_PCC-M-08_2021-04-21	0.208	0.709	<0.001	<0.053	19
			RG_GC_PCC-M-09_2021-04-21	0.172	0.567	<0.001	<0.053	23
			RG_GC_PCC-M-10_2021-04-21	0.112	0.567	<0.001	<0.053	15
			RG_GC_PCC-M-11_2021-04-21	0.289	1.1	<0.001	<0.053	25
			RG_GC_PCC-M-12_2021-04-21	0.295	0.851	<0.001	<0.053	23
			RG_GC_PCC-M-13_2021-04-21	0.241	0.851	<0.001	<0.053	22
			RG_GC_PCC-M-14_2021-04-21	0.143	0.567	<0.001	<0.053	21
			RG_GC_PCC-M-15_2021-04-21	0.196	1.2	<0.001	<0.053	25
			RG_GC_PCC-M-16_2021-04-21	0.140	1.9	<0.001	0.072	33
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-04-19	0.141	0.709	0.002	<0.053	124
			RG_SC_PCC-O-04_2021-04-19	0.167	1.1	0.017	<0.053	142
			RG_SC_PCC-O-16_2021-04-20	0.037	0.709	0.002	<0.053	102
			RG_SC_PCC-O-17_2021-04-20	0.096	0.949	0.004	<0.053	119
			RG_SC_PCC-O-18_2021-04-20	<0.037	0.949	0.004	<0.053	138
			RG_SC_PCC-O-19_2021-04-20	0.140	0.949	0.001	<0.053	102
			RG_SC_PCC-O-20_2021-04-20	0.042	1.2	0.003	<0.053	122
			RG_SC_PCC-O-22_2021-04-20	0.096	0.773	0.002	<0.053	129
			RG_SC_PCC-O-24_2021-04-21	0.061	0.773	0.002	<0.053	79
			RG_SC_PCC-O-26_2021-04-21	0.225	0.949	0.006	<0.053	133
			RG_SC_PCC-O-28_2021-04-21	0.077	0.773	0.003	<0.053	81
			RG_SC_PCC-O-29_2021-04-21	0.094	0.709	0.002	<0.053	94
			RG_SC_PCC-O-30_2021-04-21	0.156	1.3	0.001	<0.053	191
			RG_SC_PCC-O-31_2021-04-21	<0.037	0.709	0.002	<0.053	102
		RG_ER	RG_ER_PCC-O-01_2021-04-19	<0.037	0.762	0.003	0.061	105
			RG_ER_PCC-O-03_2021-04-19	0.050	0.762	0.005	0.061	111
			RG_ER_PCC-O-04_2021-04-19	0.077	0.508	0.001	<0.053	103

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
April	Ovary	RG_ER	RG_ER_PCC-O-05_2021-04-19	<0.037	1.6	0.006	0.109	226
			RG_ER_PCC-O-06_2021-04-19	<0.037	0.508	0.003	<0.053	80
			RG_ER_PCC-O-07_2021-04-19	<0.037	0.813	0.003	<0.053	118
			RG_ER_PCC-O-08_2021-04-19	0.078	<0.335	0.003	<0.053	84
			RG_ER_PCC-O-10_2021-04-19	0.057	0.508	0.003	<0.053	74
			RG_ER_PCC-O-11_2021-04-19	<0.037	0.508	0.003	<0.053	89
			RG_ER_PCC-O-12_2021-04-19	<0.037	0.762	0.001	<0.053	80
			RG_ER_PCC-O-13_2021-04-19	0.081	0.542	0.005	<0.053	112
		RG_GC	RG_GC_PCC-O-05_2021-04-20	0.205	1.3	0.002	0.125	134
			RG_GC_PCC-O-08_2021-04-21	0.134	0.950	0.005	<0.053	108
			RG_GC_PCC-O-09_2021-04-21	0.115	0.633	0.003	<0.053	95
			RG_GC_PCC-O-10_2021-04-21	<0.037	0.950	0.003	<0.053	107
			RG_GC_PCC-O-11_2021-04-21	0.091	0.633	0.003	<0.053	92
			RG_GC_PCC-O-12_2021-04-21	0.052	0.950	0.005	<0.053	94
			RG_GC_PCC-O-13_2021-04-21	0.056	0.633	0.003	<0.053	77
			RG_GC_PCC-O-14_2021-04-21	0.064	0.633	0.002	<0.053	89
			RG_GC_PCC-O-15_2021-04-21	0.152	1.2	0.003	<0.053	135
			RG_GC_PCC-O-16_2021-04-21	0.278	1.2	0.003	<0.053	117
May	Muscle	RG_SC	RG_SC_PCC-M-01_2021-05-27	0.073	1.7	<0.001	<0.059	33
			RG_SC_PCC-M-02_2021-05-27	0.105	1.3	0.002	<0.059	27
			RG_SC_PCC-M-03_2021-05-28	0.272	1.3	<0.001	<0.059	55
			RG_SC_PCC-M-04_2021-05-28	0.082	0.871	<0.001	<0.059	14
			RG_SC_PCC-M-05_2021-05-28	0.126	1.3	<0.001	<0.059	16
			RG_SC_PCC-M-06_2021-05-28	0.304	1.3	<0.001	<0.059	27
			RG_SC_PCC-M-07_2021-05-28	0.136	0.885	<0.001	<0.059	21
			RG_SC_PCC-M-08_2021-05-28	0.279	1.3	0.002	<0.059	26
			RG_SC_PCC-M-09_2021-05-28	0.118	0.885	<0.001	<0.059	16
			RG_SC_PCC-M-10_2021-05-28	0.093	0.813	<0.001	<0.059	18
		RG_ER	RG_ER_PCC-M-01_2021-05-28	0.130	0.954	<0.001	<0.059	15
			RG_ER_PCC-M-02_2021-05-28	0.206	1.4	<0.001	<0.059	20
			RG_ER_PCC-M-03_2021-05-28	0.426	1.9	0.003	0.101	32
			RG_ER_PCC-M-04_2021-05-29	0.168	1.1	<0.001	<0.059	17
			RG_ER_PCC-M-05_2021-05-29	0.158	1.1	<0.001	<0.059	34
			RG_ER_PCC-M-06_2021-05-29	0.132	1.9	<0.001	<0.059	21
			RG_ER_PCC-M-07_2021-05-29	0.138	0.749	<0.001	<0.059	15
			RG_ER_PCC-M-08_2021-05-29	0.427	1.9	<0.001	<0.059	19
			RG_ER_PCC-M-09_2021-05-29	0.224	1.3	<0.001	<0.059	31
			RG_ER_PCC-M-10_2021-05-29	0.181	1.6	<0.001	<0.059	36
		RG_GC	RG_GC_PCC-M-01_2021-05-25	0.116	0.813	<0.001	<0.059	19
			RG_GC_PCC-M-02_2021-05-25	0.220	1.2	<0.001	<0.059	31
			RG_GC_PCC-M-03_2021-05-25	0.033	1.2	<0.001	<0.059	21
			RG_GC_PCC-M-04_2021-05-25	0.231	0.913	<0.001	<0.059	23
			RG_GC_PCC-M-05_2021-05-28	0.219	0.913	<0.001	<0.059	19
			RG_GC_PCC-M-06_2021-05-28	0.288	1.4	<0.001	<0.059	41
			RG_GC_PCC-M-07_2021-05-28	0.379	1.4	<0.001	<0.059	31
			RG_GC_PCC-M-08_2021-05-28	0.275	1.4	<0.001	<0.059	27
			RG_GC_PCC-M-09_2021-05-28	0.459	1.4	0.004	0.064	25
			RG_GC_PCC-M-10_2021-05-28	0.134	0.954	<0.001	<0.059	15
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-05-27	0.454	1.1	0.005	<0.059	135
			RG_SC_PCC-O-02_2021-05-27	0.451	1.3	0.032	0.076	165
			RG_SC_PCC-O-03_2021-05-28	0.226	1.3	0.004	<0.059	147
			RG_SC_PCC-O-04_2021-05-28	0.132	0.871	0.004	<0.059	84

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
May	Ovary	RG_SC	RG_SC_PCC-O-05_2021-05-28	0.062	0.871	0.002	<0.059	73
			RG_SC_PCC-O-06_2021-05-28	0.117	0.885	0.004	<0.059	62
			RG_SC_PCC-O-07_2021-05-28	0.293	1.3	0.004	0.073	104
			RG_SC_PCC-O-08_2021-05-28	0.250	0.885	0.002	<0.059	82
			RG_SC_PCC-O-09_2021-05-28	0.147	0.885	0.004	<0.059	117
			RG_SC_PCC-O-10_2021-05-28	0.154	0.813	0.002	<0.059	80
		RG_ER	RG_ER_PCC-O-01_2021-05-28	0.094	0.954	0.002	<0.059	68
			RG_ER_PCC-O-02_2021-05-28	0.230	0.954	0.002	<0.059	72
			RG_ER_PCC-O-03_2021-05-28	0.267	0.954	0.002	<0.059	56
			RG_ER_PCC-O-04_2021-05-29	0.073	0.749	0.002	<0.059	79
			RG_ER_PCC-O-05_2021-05-29	0.061	0.749	0.007	<0.059	92
			RG_ER_PCC-O-06_2021-05-29	0.211	0.749	0.002	<0.059	86
			RG_ER_PCC-O-07_2021-05-29	0.345	0.749	0.003	<0.059	65
			RG_ER_PCC-O-08_2021-05-29	0.334	1.9	0.005	<0.059	105
			RG_ER_PCC-O-09_2021-05-29	0.327	0.979	0.002	<0.059	129
			RG_ER_PCC-O-10_2021-05-29	0.260	1.3	0.003	<0.059	85
		RG_GC	RG_GC_PCC-O-01_2021-05-25	0.432	0.813	0.022	0.207	196
			RG_GC_PCC-O-02_2021-05-25	0.173	0.813	0.002	<0.059	98
			RG_GC_PCC-O-03_2021-05-25	0.097	0.813	0.004	<0.059	77
			RG_GC_PCC-O-04_2021-05-25	0.177	0.813	0.005	0.066	84
			RG_GC_PCC-O-05_2021-05-28	0.148	1.4	0.004	<0.059	99
			RG_GC_PCC-O-06_2021-05-28	0.294	0.913	0.002	<0.059	118
			RG_GC_PCC-O-07_2021-05-28	0.221	1.4	0.008	0.065	204
			RG_GC_PCC-O-08_2021-05-28	0.238	1.8	0.004	0.059	169
			RG_GC_PCC-O-09_2021-05-28	0.158	0.954	0.002	<0.059	68
			RG_GC_PCC-O-10_2021-05-28	0.249	0.954	0.002	<0.059	66
June	Muscle	RG_SC	RG_SC_PCC-M-01_2021-06-23	0.203	3.4	<0.001	<0.070	44
			RG_SC_PCC-M-02_2021-06-23	0.099	2.1	<0.001	<0.070	39
			RG_SC_PCC-M-03_2021-06-23	0.138	4.1	<0.001	<0.070	30
			RG_SC_PCC-M-05_2021-06-23	<0.043	1.8	<0.001	<0.070	43
			RG_SC_PCC-M-06_2021-06-25	0.099	9.2	<0.001	<0.070	39
			RG_SC_PCC-M-07_2021-06-25	<0.043	1.5	<0.001	<0.070	14
			RG_SC_PCC-M-08_2021-06-25	0.066	1.3	<0.001	<0.070	17
			RG_SC_PCC-M-09_2021-06-25	0.073	1.4	<0.001	<0.070	18
			RG_SC_PCC-M-10_2021-06-25	0.109	10	<0.001	<0.070	45
			RG_SC_PCC-M-11_2021-06-25	0.091	1.3	<0.001	<0.070	21
		RG_ER	RG_ER_PCC-M-01_2021-06-22	0.121	1.3	<0.001	<0.070	25
			RG_ER_PCC-M-02_2021-06-22	0.185	1.6	<0.001	<0.070	38
			RG_ER_PCC-M-03_2021-06-22	0.076	1.2	<0.001	<0.070	25
			RG_ER_PCC-M-04_2021-06-22	0.076	1.6	<0.001	<0.070	25
			RG_ER_PCC-M-05_2021-06-23	0.066	4.6	<0.001	<0.070	20
			RG_ER_PCC-M-06_2021-06-23	0.209	2.4	<0.001	<0.070	37
			RG_ER_PCC-M-07_2021-06-23	0.145	2.4	<0.001	<0.070	22
			RG_ER_PCC-M-08_2021-06-23	0.128	3.1	<0.001	<0.070	30
			RG_ER_PCC-M-09_2021-06-23	0.161	2.5	<0.001	<0.070	42
			RG_ER_PCC-M-10_2021-06-23	0.343	11	<0.001	<0.070	21
		RG_GC	RG_GC_PCC-M-01_2021-06-23	0.221	1.8	<0.001	<0.070	59
			RG_GC_PCC-M-02_2021-06-24	0.221	6.7	<0.001	<0.070	51
			RG_GC_PCC-M-03_2021-06-24	0.067	1.3	<0.001	<0.070	23
	Ovary	RG_SC	RG_SC_PCC-O-01_2021-06-23	0.074	1.1	0.002	<0.070	66
			RG_SC_PCC-O-02_2021-06-23	0.105	0.941	0.003	<0.070	72
			RG_SC_PCC-O-03_2021-06-23	0.142	4.7	0.008	<0.070	226

Table G.2: Total Metal Analysis for Peamouth Chub Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Month	Tissue	Area	Sample ID	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
June	Ovary	RG_SC	RG_SC_PCC-O-05_2021-06-23	0.216	1.3	0.003	<0.070	123
			RG_SC_PCC-O-06_2021-06-25	0.062	0.941	0.003	<0.070	70
			RG_SC_PCC-O-07_2021-06-25	0.083	1.1	0.003	<0.070	75
			RG_SC_PCC-O-08_2021-06-25	0.087	1.3	0.003	<0.070	84
			RG_SC_PCC-O-09_2021-06-25	0.286	1.0	0.006	<0.070	68
			RG_SC_PCC-O-10_2021-06-25	0.273	2.6	0.003	<0.070	83
			RG_SC_PCC-O-11_2021-06-25	0.068	1.3	0.002	<0.070	71
		RG_ER	RG_ER_PCC-O-01_2021-06-22	0.149	1.1	0.003	<0.070	67
			RG_ER_PCC-O-02_2021-06-22	0.209	1.3	0.003	<0.070	75
			RG_ER_PCC-O-03_2021-06-22	0.165	1.1	0.002	<0.070	47
			RG_ER_PCC-O-04_2021-06-22	0.167	0.850	0.001	<0.070	56
			RG_ER_PCC-O-05_2021-06-23	0.409	2.1	0.001	0.126	276
			RG_ER_PCC-O-06_2021-06-23	0.356	1.3	0.003	<0.070	58
			RG_ER_PCC-O-07_2021-06-23	0.296	1.5	0.003	<0.070	58
			RG_ER_PCC-O-08_2021-06-23	0.111	1.3	0.001	<0.070	56
			RG_ER_PCC-O-09_2021-06-23	0.254	1.3	0.002	<0.070	44
			RG_ER_PCC-O-10_2021-06-23	0.142	4.6	0.003	<0.070	75
		RG_GC	RG_GC_PCC-O-01_2021-06-23	0.049	1.3	<0.001	<0.070	77
			RG_GC_PCC-O-02_2021-06-24	0.521	2.3	0.003	0.122	404
			RG_GC_PCC-O-03_2021-06-24	0.066	1.1	0.002	0.085	237

Table G.3: Total Metal Analysis for Redside Shiner Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, June 2021

Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese
			g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Ovary	RG_SC	RG_SC_RSC-O-01_2021-06-25	0.8067	0.3589	55.5	0.539	<0.005	<0.495	0.804	<0.108	0.347	557	1.7	0.080	5.3	91	0.010	0.009	1,085	3.8
		RG_SC_RSC-O-02_2021-06-25	1.8501	0.7578	59.0	0.824	0.007	0.617	1.8	<0.108	0.066	617	1.9	0.087	3.5	71	0.008	0.009	909	8.2
		RG_SC_RSC-O-03_2021-06-25	0.7503	0.3061	59.2	0.330	0.009	0.505	1.2	0.110	0.132	583	1.8	0.072	4.3	68	0.021	<0.008	1,146	11
		RG_SC_RSC-O-04_2021-06-25	1.9045	0.7786	59.1	0.448	<0.005	0.662	1.2	<0.108	0.066	640	1.8	0.066	4.6	61	0.007	<0.008	1,052	8.3
		RG_SC_RSC-O-05_2021-06-25	1.8442	0.7290	60.5	0.590	<0.005	0.662	1.2	<0.108	0.083	498	1.7	0.077	4.9	66	0.007	0.009	931	5.9
		RG_SC_RSC-O-06_2021-06-25	1.2597	0.5029	60.1	0.499	<0.005	<0.495	0.683	<0.108	0.066	481	1.6	0.060	4.7	50	0.005	<0.008	1,002	8.6
		RG_SC_RSC-O-07_2021-06-25	1.3993	0.5403	61.4	0.443	<0.005	0.640	1.3	<0.108	<0.045	492	1.7	0.069	4.5	54	0.008	0.013	859	6.5
		RG_SC_RSC-O-08_2021-06-25	1.1313	0.4276	62.2	<0.296	<0.005	<0.495	0.587	<0.108	0.099	547	1.5	0.059	6.9	71	0.002	0.008	903	4.9
		RG_SC_RSC-O-09_2021-06-25	0.6855	0.2811	59.0	0.462	<0.005	<0.495	1.5	<0.108	1.3	419	1.3	0.052	3.6	49	0.004	0.012	727	4.0
		RG_SC_RSC-O-10_2021-06-25	0.8685	0.3346	61.5	0.548	<0.005	<0.495	0.881	<0.108	<0.045	503	1.6	0.051	5.1	45	0.004	<0.008	861	7.3
	RG_ER	RG_ER_RSC-O-01_2021-06-22	1.0426	0.4322	58.5	1.5	<0.005	<0.495	1.1	<0.108	0.251	587	1.4	0.064	4.5	64	0.015	0.009	732	4.3
		RG_ER_RSC-O-02_2021-06-22	0.7243	0.2488	65.6	1.1	<0.005	0.520	1.9	0.182	1.1	763	1.5	0.064	6.2	98	0.027	0.019	985	6.0
		RG_ER_RSC-O-03_2021-06-22	0.4990	0.2028	59.4	2.0	<0.005	0.593	1.4	0.145	0.226	559	1.6	0.064	3.9	73	0.008	0.014	765	4.6
		RG_ER_RSC-O-04_2021-06-22	0.2610	0.1185	54.6	2.1	<0.005	0.600	2.2	<0.108	0.100	381	1.4	0.054	4.0	82	0.008	<0.008	671	4.9
		RG_ER_RSC-O-05_2021-06-22	0.1508	0.0707	53.1	1.2	<0.005	<0.495	1.8	<0.108	0.050	401	1.4	0.040	3.8	61	0.025	0.009	776	4.8
		RG_ER_RSC-O-06_2021-06-22	1.5449	0.6285	59.3	0.368	<0.005	<0.495	1.4	<0.108	0.067	508	1.4	0.045	3.2	53	0.002	0.009	749	5.2
		RG_ER_RSC-O-07_2021-06-22	1.1726	0.4798	59.1	0.354	<0.005	<0.495	0.952	<0.108	<0.045	402	1.4	0.029	4.0	43	0.006	0.009	753	5.7
		RG_ER_RSC-O-08_2021-06-22	0.2995	0.1230	58.9	1.2	<0.005	0.766	3.4	<0.108	0.084	549	1.4	0.088	3.7	62	0.019	0.009	754	6.9
		RG_ER_RSC-O-09_2021-06-22	0.3755	0.1581	57.9	6.1	<0.005	<0.495	2.0	<0.108	0.134	727	1.4	0.057	4.8	68	0.021	0.009	861	5.3
		RG_ER_RSC-O-10_2021-06-22	0.2963	0.1100	62.9	5.7	0.012	0.965	2.6	0.203	0.166	995	2.5	0.112	4.9	143	0.035	0.020	1,227	8.4
	RG_GC	RG_GC_RSC-O-01_2021-06-22	0.5725	0.2215	61.3	3.3	0.005	0.497	2.4	<0.108	0.062	402	1.5	0.047	3.2	48	0.005	0.009	683	4.0
		RG_GC_RSC-O-02_2021-06-22	0.5069	0.1631	67.8	4.4	0.005	0.677	1.7	0.130	0.062	1,000	1.6	0.074	4.1	95	0.037	0.028	1,060	9.0
		RG_GC_RSC-O-03_2021-06-22	0.6039	0.1947	67.8	1.1	<0.005	<0.495	1.4	<0.108	<0.045	939	1.5	0.089	4.0	138	0.010	0.024	986	7.8
		RG_GC_RSC-O-04_2021-06-22	0.9560	0.3118	67.4	1.0	<0.005	0.508	3.3	0.111	0.083	833	1.4	0.081	4.9	78	0.012	0.019	1,001	10
		RG_GC_RSC-O-05_2021-06-22	0.2685	0.0907	66.2	1.2	<0.005	0.734	6.8	0.111	0.145	840	1.8	0.092	4.4	160	0.005	0.010	1,099	12
		RG_GC_RSC-O-06_2021-06-22	0.2956	0.0861	70.9	3.1	<0.005	0.574	5.0	0.288	0.166	1,137	1.6	0.100	5.0	119	0.054	0.027	1,170	12
		RG_GC_RSC-O-07_2021-06-22	0.4940	0.1556	68.5	0.643	<0.005	<0.495	3.0	<0.108	0.062	1,006	1.4	0.083	3.2	98	0.002	0.010	1,137	9.8
		RG_GC_RSC-O-08_2021-06-22	0.6530	0.2243	65.7	1.4	<0.005	0.621	4.6	<0.108	0.124	785	1.5	0.092	4.9	70	0.027	0.034	1,015	7.6
		RG_GC_RSC-O-09_2021-06-22	0.6754	0.2686	60.2	<0.296	<0.005	0.602	1.4	<0.108	0.062	390	1.4	0.058	4.1	55	0.002	0.010	859	4.8
		RG_GC_RSC-O-10_2021-06-22	0.3113	0.1254	59.7	0.824	<0.005	0.545	1.5	<0.108	0.104	530	1.6	0.077	5.2	77	0.005	0.010	1,071	7.5
Muscle	RG_SC	RG_SC_RSC-M-01_2021-06-25	0.8348	0.2376	71.5	<0.296	<0.005	<0.495	0.440	<0.108	0.057	1,103	1.3	0.010	0.993	13	0.004	<0.008	1,062	0.493
		RG_SC_RSC-M-02_2021-06-25	0.5847	0.1784	69.5	2.1	0.005	<0.495	4.9	0.332	<0.045	1,054	1.5	0.022	2.7	32	0.019	0.012	1,585	0.938
		RG_SC_RSC-M-03_2021-06-25	0.7467	0.2139	71.4	1.6	0.011	<0.495	1.1	0.435	<0.045	1,141	1.4	0.015	1.8	21	0.024	0.010	1,158	0.565
		RG_SC_RSC-M-04_2021-06-25	0.3507	0.1049	70.1	0.316	<0.005	<0.495	0.474	<0.108	<0.045	1,123	1.2	0.007	1.1	15	0.002	0.008	1,325	0.498
		RG_SC_RSC-M-05_2021-06-25	0.7983	0.2278	71.5	1.5	0.005	<0.495	0.632	0.394	<0.045	1,213	1.3	0.018	1.6	21	0.015	0.008	1,222	0.538
		RG_SC_RSC-M-06_2021-06-25	0.5758	0.1578	72.6	<0.296	<0.005	<0.495	0.434	<0.108	0.048	1,065	1.3	0.013	1.2	14	0.002	<0.008	1,054	0.479
		RG_SC_RSC-M-07_2021-06-25	0.5957	0.1670	72.0	1.5	0.005	<0.495	1.6	0.415	<0.045	1,087	1.4	0.018	1.8	22	0.022	0.008	1,379	0.536
		RG_SC_RSC-M-08_2021-06-25	0.2481	0.0751	69.7	2.1	0.005	<0.495	1.9	0.228	0.048	1,411	1.6	0.026	2.8	34	0.022	0.012	1,334	0.745
		RG_SC_RSC-M-09_2021-06-25	0.3564	0.1161	67.4	2.8	0.005	<0.495	1.2	0.352	<0.045	1,101	1.3	0.018	1.6	28	0.022	0.012	1,161	0.708
		RG_SC_RSC-M-10_2021-06-25	0.7245	0.1995	72.5	0.527	0.005	<0.495	1.2	0.601	<0.045	1,042	1.2	0.015	1.7	17	0.012	0.008	1,159	0.510
	RG_ER	RG_ER_RSC-M-01_2021-06-22	0.5133	0.1315	74.4	2.2	0.020	<0.495	0.907	0.281	0.066	1,631	1.7	0.036	1.1	20	0.046	0.018	1,594	1.1
		RG_ER_RSC-M-02_2021-06-22	0.8616	0.2120	75.4	6.1	0.048	<0.495	1.4	0.391	0.066	1,372	2.0	0.053	2.3	29	0.257	0.042	1,561	1.3
		RG_ER_RSC-M-03_2021-06-22	0.9532	0.2332	75.5	4.7	0.007	<0.495	1.0	0.289	0.066	1,334	1.6	0.020	1.4	22	0.035	0.014	1,360	0.978
		RG_ER_RSC-M-04_2021-06-22	0.9195	0.2168	76.4	7.4	0.030	<0.495	0.976	0.281	0.066	1,373	2.2	0.039	1.6	25	0.117	0.025	1,753	1.0
		RG_ER_RSC-M-05_2021-06-22	0.3545	0.0857	75.8	9.7	0.036	<0.495	1.6	0.406	0.116	1,647	2.4	0.067	1.8	37	0.265	0.044	2,151	1.3
		RG_ER_RSC-M-06_2021-06-22	0.5148	0.1191	76.9	5.7	0.014	<0.495	0.418	0.141	0.066	1,300	1.8	0.035	1.4	22	0.056	0.014	1,509	1.2
		RG_ER_RSC-M-07_2021-06-22	0.4982	0.1140	77.1	4.0	0.023	<0.495	0.558	0.438	0.365	1,526	2.3	0.039	1.8	26	0.142	0.030	1,499	1.2
		RG_ER_RSC-M-08_2021-06-22	0.9274	0.2117	77.2	9.1	0.018	<0.495	2.9	0.250	0.050	1,315	1.9	0.043	2.1	40	0.150	0.027	1,727	1.2
		RG_ER_RSC-M-09_2021-06-22	0.7151	0.1665	76.7	1.4	0.009	<0.495	0.902	0.110	0.050	1,748	1.8	0.023	1.4	21	0.013	0.013	1,905	1.2
		RG_ER_RSC-M-10_2021-06-22	0.4524	0.1088	76.0	8.6	0.025	<0.495	2.1	0.360	0.066	1,407	2.3	0.054	4.1	53	0.258	0.022	1,739	1.2
	RG_GC	RG_GC_RSC-M-01_2021-06-22	0.7563	0.1886	75.1	0.610	<0.005	<0.495	0.257	<0.108	<0.045	1,204	1.5	0.015	1.1	8.8	0.010	0.014	1,282	0.404
		RG_GC_RSC-M-02_2021-06-22	1.2374	0.3021	75.6	3.3	0.011	<0.495	1.3	<0.108	<0.045	1,184	1.4	0.026	1.8	24	0.106	0.022	1,400	0.746
		RG_GC_RSC-M-03_2021-06-22	0.4994	0.1183	76.3	0.400	<0.005	<0.495	0.259	<0.108	<0.045	1,174	1.3	0.010	1.1	9.2	0.008	<0.008	1,027	0.369
		RG_GC_RSC-M-04_2021-06-22	1.0384	0.2437	76.5	2.2	0.005	<0.495	1.7	<0.108	<0.045	1,138	1.3	0.020	1.5	21	0.071	0.016	1,376	0.568
		RG_GC_RSC-M-05_2021-06-22	0.7619	0.1871	75.4	0.556	<0.005	<0.495	0.496	<0.108	<0.045	1,005	1.2	0.008	1.4	10	0.005	<0.008	1,257	0.408
		RG_GC_RSC-M-06_2021-06-22	0.8371	0.2073	75.2	3.6	0.005	<0.495	1.9	0.119	<0.045	1,498	1.3	0.032	2.7	33	0.041	0.027	1,358	0.672
		RG_GC_RSC-M-07_2021-06-22	0.7434	0.1812	75.6	1.4	0.005	<0.495	0.216	<0.108	<0.045	1,055	1.2	0.008	1.1	14	0.010	0.011	902	0.421
		RG_GC_RSC-M-08_2021-06-22	0.3912	0.0932	76.2	1.1	0.005	<0.495	7.0	<0.108	<0.045	1,095	1.3	0.028	2.5	30	0.026	0.022	1,213	0.744
		RG_GC_RSC-M-09_2021-06-22	0.6793	0.1577	76.8	0.330	<0.005	<0.495	0.561	<0.108	<0.045	996	1.2	0.012	1.2	13	0.003	0.014	1,039	0.458
		RG_GC_RSC-M-10_2021-06-22	0.4873	0.1094	77.5	0.320	<0.005	<0.495	1.1	<0.108	<0.045	1,025	1.1	0.014	1.6	13	0.002	0.011	1,257	0.440

Table G.3: Total Metal Analysis for Redside Shiner Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, June 2021

Tissue	Area	Sample ID	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Ovary	RG_SC	RG_SC_RSC-O-01_2021-06-25	0.041	0.103	0.048	17,275	10,037	13	0.022	1,554	0.373	0.013	0.400	1.2	<0.001	<0.070	102
		RG_SC_RSC-O-02_2021-06-25	0.055	0.092	0.178	17,389	10,797	7.1	0.022	1,948	0.382	0.027	0.306	1.7	<0.001	<0.070	93
		RG_SC_RSC-O-03_2021-06-25	0.041	0.057	0.073	17,949	9,966	17	0.019	1,432	0.384	0.019	0.301	1.7	<0.001	<0.070	131
		RG_SC_RSC-O-04_2021-06-25	0.055	0.069	0.048	15,712	8,993	8.7	0.019	1,572	0.446	0.022	0.407	1.0	<0.001	<0.070	98
		RG_SC_RSC-O-05_2021-06-25	0.037	0.080	<0.041	19,642	12,319	9.4	0.013	1,914	0.420	0.023	0.356	1.4	<0.001	<0.070	116
		RG_SC_RSC-O-06_2021-06-25	<0.036	0.069	<0.041	12,501	7,291	14	0.019	937	0.308	0.009	0.082	0.874	<0.001	<0.070	108
		RG_SC_RSC-O-07_2021-06-25	0.037	0.046	<0.041	16,430	10,807	8.7	0.016	2,455	0.337	0.029	0.170	1.0	<0.001	<0.070	103
		RG_SC_RSC-O-08_2021-06-25	<0.036	0.104	<0.041	12,177	9,679	12	0.022	1,270	0.277	0.009	0.073	1.3	<0.001	<0.070	105
		RG_SC_RSC-O-09_2021-06-25	0.046	0.045	<0.041	13,234	10,192	7.5	0.009	1,325	0.347	0.016	0.505	1.3	<0.001	<0.070	86
		RG_SC_RSC-O-10_2021-06-25	<0.036	0.045	0.057	13,989	10,559	8.0	0.016	1,595	0.266	0.014	0.212	1.0	<0.001	<0.070	90
	RG_ER	RG_ER_RSC-O-01_2021-06-22	<0.036	0.045	0.114	14,978	11,790	17	0.027	1,645	0.486	0.029	0.293	1.1	<0.001	<0.070	84
		RG_ER_RSC-O-02_2021-06-22	0.054	0.090	0.095	12,598	9,401	21	0.024	2,147	0.551	0.041	0.280	1.4	<0.001	<0.070	112
		RG_ER_RSC-O-03_2021-06-22	0.044	0.045	0.341	14,152	9,022	8.1	0.014	1,392	0.540	0.031	0.291	1.4	<0.001	<0.070	91
		RG_ER_RSC-O-04_2021-06-22	<0.036	0.060	0.151	13,088	9,050	10	0.024	1,077	0.282	0.021	0.385	1.1	<0.001	<0.070	86
		RG_ER_RSC-O-05_2021-06-22	<0.036	0.045	0.076	13,617	9,487	15	0.014	1,086	0.304	0.020	0.105	1.4	<0.001	<0.070	84
		RG_ER_RSC-O-06_2021-06-22	<0.036	0.060	<0.041	12,252	6,280	11	0.014	1,059	0.297	0.018	0.113	0.831	<0.001	<0.070	74
		RG_ER_RSC-O-07_2021-06-22	<0.036	0.045	<0.041	12,313	7,728	19	0.020	1,109	0.275	0.020	0.108	1.1	<0.001	<0.070	67
		RG_ER_RSC-O-08_2021-06-22	<0.036	0.030	0.047	13,570	8,835	7.7	0.020	1,373	0.526	0.025	0.565	1.2	<0.001	<0.070	103
		RG_ER_RSC-O-09_2021-06-22	0.040	0.090	0.246	13,278	8,691	9.9	0.020	1,141	0.725	0.020	0.361	1.2	<0.001	<0.070	107
		RG_ER_RSC-O-10_2021-06-22	0.082	0.128	0.758	23,081	16,110	11	0.025	3,097	0.808	0.036	0.365	1.7	0.003	<0.070	207
	RG_GC	RG_GC_RSC-O-01_2021-06-22	<0.036	0.032	0.386	10,922	8,410	6.8	0.011	1,336	0.270	0.012	0.327	0.828	<0.001	<0.070	90
		RG_GC_RSC-O-02_2021-06-22	0.049	0.079	0.417	11,678	11,503	13	0.008	2,877	0.530	0.026	0.346	0.828	<0.001	0.075	132
		RG_GC_RSC-O-03_2021-06-22	0.081	0.104	0.112	13,987	15,531	6.5	0.013	3,544	0.569	0.020	0.203	1.5	<0.001	<0.070	121
		RG_GC_RSC-O-04_2021-06-22	0.041	0.086	0.090	12,612	14,879	15	0.021	3,710	0.422	0.027	0.157	1.7	<0.001	<0.070	123
		RG_GC_RSC-O-05_2021-06-22	0.049	0.086	0.359	12,994	14,181	26	0.021	2,153	0.471	0.031	0.184	1.3	<0.001	<0.070	270
		RG_GC_RSC-O-06_2021-06-22	0.073	0.086	0.157	14,175	18,245	16	0.013	2,981	0.694	0.045	0.218	1.7	<0.001	<0.070	286
		RG_GC_RSC-O-07_2021-06-22	0.057	0.104	0.067	12,451	11,142	19	0.008	2,010	0.412	0.028	0.175	1.0	<0.001	<0.070	187
		RG_GC_RSC-O-08_2021-06-22	0.053	0.104	0.067	14,160	14,497	13	0.021	3,221	0.447	0.039	0.258	1.3	<0.001	<0.070	143
		RG_GC_RSC-O-09_2021-06-22	<0.036	0.035	<0.041	11,675	9,329	12	0.017	1,257	0.351	0.022	0.098	1.3	<0.001	<0.070	104
		RG_GC_RSC-O-10_2021-06-22	<0.036	0.052	0.090	15,222	13,349	16	0.027	1,464	0.317	0.025	0.571	1.7	<0.001	<0.070	127
Muscle	RG_SC	RG_SC_RSC-M-01_2021-06-25	0.460	<0.001	0.057	13,457	31,564	2.8	<0.001	1,456	0.304	0.011	0.054	1.5	<0.001	<0.070	34
		RG_SC_RSC-M-02_2021-06-25	0.833	0.016	0.208	13,005	26,389	2.1	<0.001	1,498	0.589	0.023	0.170	3.5	<0.001	<0.070	55
		RG_SC_RSC-M-03_2021-06-25	0.425	<0.001	0.125	11,550	25,954	3.0	<0.001	1,740	0.443	0.016	0.086	1.8	<0.001	<0.070	51
		RG_SC_RSC-M-04_2021-06-25	0.950	<0.001	0.125	12,356	26,600	1.6	<0.001	1,338	0.545	0.016	0.074	1.3	<0.001	<0.070	28
		RG_SC_RSC-M-05_2021-06-25	0.439	<0.001	0.104	10,993	22,132	1.2	<0.001	1,351	0.591	0.014	0.191	4.0	<0.001	<0.070	38
		RG_SC_RSC-M-06_2021-06-25	0.480	<0.001	0.042	11,787	26,092	2.5	<0.001	1,298	0.349	0.008	0.056	1.3	<0.001	<0.070	36
		RG_SC_RSC-M-07_2021-06-25	0.576	<0.001	0.166	11,471	23,959	2.9	<0.001	1,311	0.575	0.019	0.234	1.5	<0.001	<0.070	47
		RG_SC_RSC-M-08_2021-06-25	0.405	0.016	0.291	12,452	25,396	2.4	<0.001	2,189	0.989	0.013	0.065	1.4	<0.001	<0.070	92
		RG_SC_RSC-M-09_2021-06-25	0.357	0.016	0.208	9,920	21,909	2.7	<0.001	1,544	0.427	0.012	0.450	5.5	<0.001	<0.070	39
		RG_SC_RSC-M-10_2021-06-25	0.473	<0.001	0.125	10,825	22,934	4.5	<0.001	1,385	0.413	0.012	0.130	1.3	<0.001	<0.070	40
	RG_ER	RG_ER_RSC-M-01_2021-06-22	0.723	0.011	0.241	13,906	19,242	4.5	0.005	1,547	1.4	0.037	0.060	2.1	0.003	<0.070	40
		RG_ER_RSC-M-02_2021-06-22	0.647	0.021	0.525	15,703	27,337	7.7	0.005	1,868	0.658	0.047	0.156	2.2	0.003	<0.070	37
		RG_ER_RSC-M-03_2021-06-22	0.465	0.011	0.160	13,260	22,840	3.2	<0.001	1,323	0.540	0.031	0.274	1.5	<0.001	<0.070	46
		RG_ER_RSC-M-04_2021-06-22	0.447	0.021	0.715	18,123	25,911	3.9	0.007	1,448	0.664	0.047	0.297	2.1	0.003	<0.070	37
		RG_ER_RSC-M-05_2021-06-22	0.667	0.021	0.457	18,845	32,491	4.5	0.005	1,947	0.898	0.036	0.241	3.0	0.003	0.072	47
		RG_ER_RSC-M-06_2021-06-22	0.737	0.011	0.481	13,915	21,323	3.2	0.002	1,224	0.611	0.033	0.190	1.9	0.001	<0.070	22
		RG_ER_RSC-M-07_2021-06-22	0.679	0.032	0.948	17,253	27,804	8.3	0.005	2,437	0.643	0.029	0.350	2.1	<0.001	<0.070	41
		RG_ER_RSC-M-08_2021-06-22	0.459	0.021	0.292	17,547	30,632	3.4	0.002	1,802	0.668	0.038	0.384	2.5	0.002	<0.070	62
		RG_ER_RSC-M-09_2021-06-22	0.663	0.011	0.210	16,056	23,522	1.8	0.003	1,162	0.819	0.035	0.085	1.6	0.001	<0.070	40
		RG_ER_RSC-M-10_2021-06-22	0.615	0.023	0.736	16,445	27,353	1.8	0.003	1,558	0.873	0.039	0.191	2.1	0.002	<0.070	69
	RG_GC	RG_GC_RSC-M-01_2021-06-22	0.727	<0.001	0.112	9,948	21,418	3.1	<0.001	874	0.487	0.012	<0.043	1.7	<0.001	<0.070	22
		RG_GC_RSC-M-02_2021-06-22	0.694	<0.001	0.254	10,443	22,030	3.4	<0.001	1,404	0.596	0.029	0.068	1.9	<0.001	<0.070	46
		RG_GC_RSC-M-03_2021-06-22	0.794	<0.001	0.048	10,373	23,374	2.3	<0.001	1,033	0.417	0.012	0.115	0.950	<0.001	<0.070	17
		RG_GC_RSC-M-04_2021-06-22	0.794	<0.001	0.193	9,748	19,494	2.4	<0.001	964	0.508	0.015	0.086	1.3	<0.001	<0.070	35
		RG_GC_RSC-M-05_2021-06-22	0.375	<0.001	0.073	11,596	24,773	3.5	<0.001	692	0.340	0.018	0.115	0.950	<0.001	<0.070	34
		RG_GC_RSC-M-06_2021-06-22	0.759	<0.001	0.218	9,863	19,629	2.6	<0.001	1,554	0.913	0.022	0.115	1.6	<0.001	<0.070	66
		RG_GC_RSC-M-07_2021-06-22	0.454	<0.001	0.073	8,520	21,564	2.0	<0.001	955	0.354	0.010	0.093	1.6	<0.001	<0.070	30
		RG_GC_RSC-M-08_2021-06-22	0.589	<0.001	0.145	12,213	25,103	3.7	<0.001	2,031	0.468	0.035	0.108	1.3	<0.001	<0.070	51
		RG_GC_RSC-M-09_2021-06-22	0.475	<0.001	0.097	9,431	20,970	2.9	<0.001	910	0.378	0.017	0.086	1.1	<0.001	<0.070	28
		RG_GC_RSC-M-10_2021-06-22	0.362	<0.001	0.090	10,129	20,863	2.7	<0.001	1,031	0.342	0.022	0.091	1.1	<0.001	<0.070	38

Table G.4: Total Metal Analysis for Slimy Sculpin Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, April 2021

Tissue	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron
			g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Ovary	RG_ER	RG_ER_SS-O-03_2021-04-30	0.8883	0.3068	65.5	0.695	<0.007	<0.514	3.0	<0.082	<0.067	486	1.3	0.145	1.7	41
	RG_GC	RG_GC_SS-O-01_2021-04-20	0.8999	0.3069	65.9	0.764	<0.007	<0.514	2.2	<0.082	<0.067	590	1.4	0.165	2.3	34
		RG_GC_SS-O-02_2021-04-20	1.4968	0.5286	64.7	0.568	<0.007	<0.514	3.7	<0.082	<0.067	614	1.4	0.139	3.1	33
		RG_GC_SS-O-07_2021-04-27	0.5337	0.1962	63.2	0.561	<0.007	<0.514	2.4	<0.082	0.776	528	1.5	0.241	2.8	40
		RG_GC_SS-O-09_2021-04-28	0.7767	0.2797	64.0	0.906	<0.007	<0.514	2.2	<0.082	<0.067	534	1.5	0.250	2.6	41
		RG_GC_SS-O-11_2021-04-30	1.6307	0.5692	65.1	0.399	<0.007	<0.514	2.4	<0.082	<0.067	617	1.4	0.161	2.4	42
Muscle	RG_SC	RG_SC_SS-M-01_2021-04-29	0.0909	0.0247	72.8	29	0.020	<0.514	10	0.123	<0.067	8,041	3.3	0.234	2.6	131
		RG_SC_SS-M-02_2021-04-29	0.2328	0.0544	76.6	7.8	0.015	<0.514	1.1	0.098	<0.067	2,651	1.6	0.122	1.7	79
	RG_ER	RG_ER_SS-M-01_2021-04-29	0.8308	0.1943	76.6	2.0	<0.007	<0.514	0.203	<0.082	<0.067	972	1.4	0.047	1.5	17
		RG_ER_SS-M-03_2021-04-30	0.7391	0.1815	75.4	0.949	<0.007	<0.514	0.271	0.123	<0.067	1,372	1.5	0.043	1.1	14
		RG_ER_SS-M-05_2021-04-30	0.1456	0.0381	73.8	11	0.009	<0.514	1.2	0.207	0.090	1,806	2.7	0.158	1.8	84
		RG_ER_SS-M-06_2021-04-30	0.2452	0.0626	74.5	27	0.009	<0.514	4.8	0.316	0.090	4,310	2.1	0.220	2.8	136
		RG_ER_SS-M-07_2021-04-30	0.1400	0.0350	75.0	9.0	0.018	<0.514	2.1	0.243	0.179	2,438	2.1	0.383	2.7	98
		RG_ER_SS-M-08_2021-04-30	0.0990	0.0247	75.1	24	0.011	<0.514	4.0	0.292	0.224	3,165	2.3	0.238	2.6	82
	RG_GC	RG_GC_SS-M-01_2021-04-20	0.6514	0.1516	76.7	1.5	<0.007	<0.514	0.646	0.089	<0.067	1,706	1.7	0.070	1.4	19
		RG_GC_SS-M-02_2021-04-20	0.9894	0.2375	76.0	2.7	<0.007	<0.514	1.5	0.082	<0.067	2,137	2.0	0.080	1.6	36
		RG_GC_SS-M-07_2021-04-27	0.2220	0.0667	70.0	6.0	<0.007	<0.514	0.744	<0.082	<0.067	1,068	1.9	0.054	1.2	42
		RG_GC_SS-M-09_2021-04-29	0.3303	0.0813	75.4	50	<0.007	<0.514	1.6	0.103	<0.067	1,753	2.4	0.137	1.4	75
		RG_GC_SS-M-11_2021-04-30	1.5055	0.3564	76.3	1.1	<0.007	<0.514	0.338	0.103	<0.067	1,198	1.5	0.043	1.5	18

Table G.4: Total Metal Analysis for Slimy Sculpin Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, April 2021

Tissue	Area	Sample ID	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium	Strontium	Thallium
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Ovary	RG_ER	RG_ER_SS-O-03_2021-04-30	0.012	0.022	782	4.6	<0.071	0.028	0.314	13,851	12,761	12	<0.001	2,273	1.8	0.023
	RG_GC	RG_GC_SS-O-01_2021-04-20	0.009	0.011	771	4.8	<0.071	<0.014	0.455	14,300	13,795	8.3	<0.001	2,922	2.0	0.045
		RG_GC_SS-O-02_2021-04-20	0.010	<0.007	727	4.7	<0.071	<0.014	0.186	14,275	12,345	9.0	<0.001	2,427	1.8	0.027
		RG_GC_SS-O-07_2021-04-27	0.012	0.010	638	6.0	<0.071	<0.014	0.383	14,088	13,500	7.7	<0.001	2,780	1.6	0.024
		RG_GC_SS-O-09_2021-04-28	0.012	<0.007	644	4.3	<0.071	<0.014	0.493	15,381	13,584	8.2	<0.001	2,638	1.5	0.018
		RG_GC_SS-O-11_2021-04-30	0.006	<0.007	827	6.3	<0.071	<0.014	0.164	14,526	10,516	9.0	<0.001	2,344	1.8	0.012
Muscle	RG_SC	RG_SC_SS-M-01_2021-04-29	0.062	0.040	1,342	2.7	0.203	0.032	3.2	15,708	23,022	8.9	<0.001	3,692	13	0.026
		RG_SC_SS-M-02_2021-04-29	0.022	0.017	1,272	0.818	0.388	0.032	0.455	11,319	20,722	4.0	<0.001	2,964	2.2	0.031
	RG_ER	RG_ER_SS-M-01_2021-04-29	0.012	0.010	910	0.890	0.308	<0.014	0.082	10,985	23,174	5.8	<0.001	1,218	0.261	0.022
		RG_ER_SS-M-03_2021-04-30	0.016	0.025	1,088	0.841	0.274	<0.014	0.164	12,549	22,057	7.9	<0.001	1,783	0.544	0.029
		RG_ER_SS-M-05_2021-04-30	0.017	0.044	1,032	1.7	0.101	0.028	2.5	9,131	16,378	9.6	0.011	2,313	1.7	0.025
		RG_ER_SS-M-06_2021-04-30	0.029	0.066	1,325	2.5	0.127	0.055	1.5	13,403	19,931	16	0.011	2,804	5.6	0.026
		RG_ER_SS-M-07_2021-04-30	0.012	0.061	1,226	3.9	0.101	0.028	1.4	10,429	16,509	13	0.011	2,649	2.5	0.033
		RG_ER_SS-M-08_2021-04-30	0.029	0.061	1,117	3.2	0.114	0.028	2.0	10,820	17,289	11	0.011	2,879	3.7	0.038
	RG_GC	RG_GC_SS-M-01_2021-04-20	0.010	0.026	1,639	1.2	0.313	<0.014	0.409	12,660	23,254	5.1	<0.001	3,215	1.0	0.040
		RG_GC_SS-M-02_2021-04-20	0.020	0.015	1,500	1.4	0.661	<0.014	0.821	13,025	23,575	5.0	<0.001	2,560	1.4	0.057
		RG_GC_SS-M-07_2021-04-27	0.024	0.015	1,314	2.0	0.673	0.029	1.4	9,927	19,315	3.5	<0.001	849	0.589	0.036
		RG_GC_SS-M-09_2021-04-29	0.065	0.030	1,569	2.5	0.439	0.029	1.4	12,985	25,759	5.8	<0.001	2,527	1.0	0.029
		RG_GC_SS-M-11_2021-04-30	0.012	<0.007	1,459	1.0	0.479	<0.014	0.192	11,326	19,952	4.3	<0.001	1,259	0.388	0.019

Table G.4: Total Metal Analysis for Slimy Sculpin Muscle and Ovary Tissue Samples, Koocanusa Reservoir Monitoring Program, April 2021

Tissue	Area	Sample ID	Tin	Titanium	Uranium	Vanadium	Zinc
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Ovary	RG_ER	RG_ER_SS-O-03_2021-04-30	0.350	1.1	<0.001	<0.053	136
	RG_GC	RG_GC_SS-O-01_2021-04-20	0.043	0.757	<0.001	<0.053	120
		RG_GC_SS-O-02_2021-04-20	0.047	0.781	<0.001	<0.053	112
		RG_GC_SS-O-07_2021-04-27	0.194	0.814	<0.001	<0.053	131
		RG_GC_SS-O-09_2021-04-28	0.150	0.814	<0.001	<0.053	127
		RG_GC_SS-O-11_2021-04-30	0.143	0.814	<0.001	<0.053	156
Muscle	RG_SC	RG_SC_SS-M-01_2021-04-29	0.364	1.5	0.002	0.114	63
		RG_SC_SS-M-02_2021-04-29	0.370	1.5	<0.001	<0.053	62
	RG_ER	RG_ER_SS-M-01_2021-04-29	<0.037	1.2	<0.001	<0.053	29
		RG_ER_SS-M-03_2021-04-30	0.081	1.4	<0.001	<0.053	33
		RG_ER_SS-M-05_2021-04-30	0.664	1.3	<0.001	0.068	66
		RG_ER_SS-M-06_2021-04-30	0.180	1.8	0.002	0.106	65
		RG_ER_SS-M-07_2021-04-30	0.153	1.4	0.002	<0.053	60
		RG_ER_SS-M-08_2021-04-30	0.230	1.8	0.002	0.099	52
	RG_GC	RG_GC_SS-M-01_2021-04-20	0.178	1.2	<0.001	<0.053	31
		RG_GC_SS-M-02_2021-04-20	0.233	1.1	<0.001	<0.053	49
		RG_GC_SS-M-07_2021-04-27	0.117	1.6	<0.001	0.054	40
		RG_GC_SS-M-09_2021-04-29	0.255	3.0	0.001	0.058	58
		RG_GC_SS-M-11_2021-04-30	0.162	1.1	<0.001	<0.053	40

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bull Trout	April	RG_SC	RG_SC_BT-M-01_2021-04-20	0.0777	0.0212	72.7	70	0.017	<0.514	3.8	0.256	<0.067	1,243	3.1	0.122	0.967
			RG_SC_BT-M-02_2021-04-20	0.0302	0.0112	62.9	8.2	<0.007	<0.514	0.316	<0.082	<0.067	1,219	3.2	0.090	1.2
			RG_SC_BT-M-03_2021-04-21	0.0904	0.0238	73.7	160	0.010	<0.514	3.7	0.246	<0.067	1,386	7.6	0.393	1.8
			RG_SC_BT-M-04_2021-04-22	0.0741	0.0196	73.5	30	<0.007	<0.514	0.752	<0.082	<0.067	1,078	1.9	0.058	1.2
			RG_SC_BT-M-05_2021-04-23	0.0990	0.0251	74.6	235	0.018	<0.514	4.5	0.197	<0.067	1,288	8.6	0.239	1.7
			RG_SC_BT-M-06_2021-04-23	0.0861	0.0231	73.2	45	<0.007	<0.514	0.923	0.089	<0.067	1,250	3.0	0.087	1.3
			RG_SC_BT-M-07_2021-04-26	0.0258	0.0114	55.8	34	<0.007	<0.514	0.923	0.089	<0.067	971	6.2	0.214	1.7
			RG_SC_BT-M-08_2021-04-26	0.0101	0.0082	18.8	114	0.008	<0.514	3.4	0.215	<0.067	1,451	3.4	0.115	0.999
		RG_ER	RG_ER_BT-M-01_2021-04-21	0.0490	0.0131	73.3	3.1	<0.007	<0.514	0.195	<0.082	<0.067	755	1.4	0.040	1.1
			RG_ER_BT-M-02_2021-04-23	0.1200	0.0297	75.3	10	<0.007	<0.514	0.390	<0.082	<0.067	635	1.3	0.024	1.2
			RG_ER_BT-M-03_2021-04-24	0.0739	0.0153	79.3	224	0.015	<0.514	5.6	0.337	<0.067	1,062	4.4	0.140	1.6
			RG_ER_BT-M-04_2021-04-25	0.1644	0.0325	80.2	117	<0.007	<0.514	5.4	0.175	<0.067	1,222	1.9	0.090	1.2
			RG_ER_BT-M-05_2021-04-25	0.0468	0.0123	73.7	12	<0.007	<0.514	0.699	0.100	<0.067	564	1.5	0.036	1.2
			RG_ER_BT-M-06_2021-04-25	0.2493	0.0635	74.5	8.2	<0.007	<0.514	0.388	<0.082	<0.067	377	1.5	0.027	1.5
			RG_ER_BT-M-07_2021-04-26	0.0487	0.0173	64.5	16	<0.007	<0.514	0.621	0.150	<0.067	608	2.5	0.038	1.2
			RG_ER_BT-M-08_2021-04-26	0.0194	0.0143	26.3	344	0.035	<0.514	5.5	0.344	<0.067	1,579	92	4.0	4.1
		RG_GC	RG_GC_BT-M-01_2021-04-21	0.0346	0.0037	89.3	3.6	<0.007	<0.514	0.695	0.175	<0.067	877	2.3	0.061	1.2
			RG_GC_BT-M-02_2021-04-22	0.0121	0.0016	86.8	30	0.041	<0.514	1.2	1.1	<0.067	434	4.3	0.086	1.2
			RG_GC_BT-M-03_2021-04-22	0.0171	0.0031	81.9	17	0.012	<0.514	0.434	0.233	<0.067	567	2.2	0.021	0.680
			RG_GC_BT-M-04_2021-04-23	0.0178	0.0038	78.7	192	0.025	<0.514	3.7	0.379	<0.067	1,773	35	1.6	5.1
			RG_GC_BT-M-05_2021-04-25	0.0201	0.0041	79.6	38	0.011	<0.514	1.0	0.146	<0.067	1,085	12	0.581	1.4
			RG_GC_BT-M-06_2021-04-25	0.0455	0.0074	83.7	102	0.016	<0.514	3.5	0.384	<0.067	1,393	5.3	0.325	1.3
			RG_GC_BT-M-07_2021-04-26	0.0458	0.0101	77.9	1.5	<0.007	<0.514	0.073	<0.082	<0.067	354	2.5	0.055	0.623
			RG_GC_BT-M-08_2021-04-26	0.0152	0.0047	69.1	61	0.009	<0.514	1.0	<0.082	<0.067	750	11	0.664	1.4
Kokanee	April	RG_SC	RG_SC_KO-M-01_2021-04-21	0.0503	0.0166	67.0	0.616	<0.007	<0.514	0.065	<0.082	<0.067	331	1.4	0.016	0.930
			RG_SC_KO-M-02_2021-04-22	0.0690	0.0172	75.1	21	<0.007	<0.514	0.585	<0.082	<0.067	549	2.1	0.055	0.949
		RG_ER	RG_ER_KO-M-01_2021-04-21	0.0363	0.0095	73.8	112	0.008	<0.514	2.4	0.204	<0.067	2,377	13	0.677	1.7
			RG_ER_KO-M-02_2021-04-27	0.0200	0.0152	24.0	40	<0.007	<0.514	1.5	0.172	1.1	642	3.4	0.108	1.3
	June	RG_GC	RG_GC_KO-M-01_2021-06-23	0.0501	0.0137	72.7	2.8	<0.005	<0.495	0.261	1.1	<0.045	359	1.6	0.031	0.785
			RG_GC_KO-M-02_2021-06-24	0.0644	0.0132	79.5	1.1	0.012	<0.495	0.373	11	<0.045	922	1.4	0.031	0.818
			RG_GC_KO-M-03_2021-06-25	0.0450	0.0067	85.1	0.629	<0.005	<0.495	0.373	0.116	<0.045	1,287	1.4	0.031	0.953
			RG_GC_KO-M-04_2021-06-25	0.0633	0.0168	73.5	2.8	<0.005	<0.495	0.261	0.116	<0.045	1,259	2.0	0.039	0.934
			RG_GC_KO-M-05_2021-06-25	0.0642	0.0163	74.6	1.1	<0.005	<0.495	0.186	<0.108	<0.045	684	1.9	0.027	0.972
			RG_GC_KO-M-06_2021-06-25	0.0463	0.0125	73.0	2.7	<0.005	<0.495	0.373	<0.108	<0.045	1,252	4.0	0.117	1.3
			RG_GC_KO-M-07_2021-06-25	0.0414	0.0109	73.7	1.8	<0.005	<0.495	0.513	0.196	<0.045	1,310	1.7	0.057	1.1
	August	RG_SC	RG_SC_KO-M-01_2021-08-24	0.0432	0.0130	69.9	2.0	<0.008	<0.506	0.243	0.479	<0.036	438	2.2	0.058	1.4
			RG_SC_KO-M-02_2021-08-26	0.0556	0.0156	71.9	1.7	<0.008	<0.506	0.146	<0.113	<0.036	641	4.3	0.091	1.9
			RG_SC_KO-M-03_2021-08-26	0.0624	0.0177	71.6	31	0.016	<0.506	1.2	<0.113	<0.036	994	38	0.368	2.6
			RG_SC_KO-M-04_2021-08-26	0.0279	0.0077	72.4	5.2	0.132	<0.506	0.437	0.192	0.062	438	5.1	0.180	1.6
			RG_SC_KO-M-05_2021-08-26	0.0184	0.0051	72.3	7.1	<0.008	<0.506	1.6	<0.113	0.062	1,348	7.8	0.207	1.2
			RG_SC_KO-M-06_2021-08-24	0.0400	0.0118	70.5	2.6	<0.008	<0.506	0.389	0.192	0.041	1,461	4.0	0.138	1.3
		RG_ER	RG_ER_KO-M-01_2021-08-24	0.0349	0.0110	68.5	7.5	<0.008	<0.506	0.437	<0.113	0.041	1,143	9.1	0.099	1.9
			RG_ER_KO-M-02_2021-08-24	0.7175	0.1738	75.8	2.7	<0.008	<0.506	0.230	0.280	0.064	542	<1.900	0.045	1.9
			RG_ER_KO-M-03_2021-08-24	0.0636	0.0176	72.3	6.3	<0.008	<0.506	0.340	1.3	0.062	1,258	7.6	0.184	1.7
			RG_ER_KO_M-04_2021-08-27	1.0170	0.2917	71.3	1.9	<0.008	<0.506	0.164	<0.113	0.960	600	1.9	0.045	2.5
			RG_ER_KO-M-05_2021-08-27	1.3336	0.3287	75.4	5.3	<0.008	<0.506	0.377	0.151	<0.036	897	4.5	0.125	5.7
		RG_GC	RG_GC_KO-M-01_2021-08-24	0.0477	0.0140	70.6	18	0.065	<0.506	0.778	0.396	0.062	1,066	7.5	0.227	1.6
Mountain Whitefish	April	RG_SC	RG_SC_MW-M-01_2021-04-20	0.1111	0.0306	72.5	8.0	<0.007	<0.514	0.260	0.086	<0.067	737	1.5	0.059	1.1
			RG_SC_MW-M-02_2021-04-21	0.0414	0.0131	68.4	0.478	<0.007	<0.514	0.065	<0.082	<0.067	473	1.3	0.024	0.823
			RG_SC_MW-M-03_2021-04-21	0.0533	0.0147	72.4	2.0	<0.007	<0.514	0.130	<0.082	<0.067	528	2.2	0.067	1.2
			RG_SC_MW-M-04_2021-04-21	0.0413	0.0134	67.6	0.809	<0.007	<0.514	0.065	<0.082	<0.067	400	1.1	0.020	0.750
			RG_SC_MW-M-05_2021-04-21	0.0496	0.0159	67.9	15	<0.007	<0.514	0.325	0.086	<0.067	622	2.9	0.061	1.1
		RG_ER	RG_ER_MW-M-01_2021-04-19	0.0746	0.0223	70.1	2.8	0.016	0.895	0.130	0.107	0.149	685	1.7	0.032	1.1

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mountain Whitefish	April	RG_ER	RG_ER_MW-M-02_2021-04-19	0.0828	0.0241	70.9	0.365	<0.007	<0.514	0.065	<0.082	0.372	632	1.5	0.052	1.1
			RG_ER_MW-M-04_2021-04-21	0.0277	0.0090	67.5	1.6	0.009	<0.514	0.130	<0.082	0.223	510	1.8	0.056	0.853
			RG_ER_MW-M-05_2021-04-25	0.0711	0.0206	71.0	71	0.015	<0.514	1.7	0.193	<0.067	926	5.8	0.197	1.4
			RG_ER_MW-M-06_2021-04-25	0.0910	0.0237	74.0	19	<0.007	<0.514	0.736	0.110	<0.067	788	2.6	0.074	1.4
			RG_ER_MW-M-07_2021-04-25	0.0588	0.0154	73.8	27	<0.007	<0.514	1.1	0.098	<0.067	766	2.8	0.099	1.2
		RG_GC	RG_GC_MW-M-01_2021-04-20	0.1387	0.0284	79.5	0.924	<0.007	<0.514	<0.001	<0.082	<0.067	584	2.0	0.075	1.0
			RG_GC_MW-M-02_2021-04-20	0.2264	0.0483	78.7	1.6	<0.007	<0.514	0.072	<0.082	<0.067	627	1.6	0.052	1.1
			RG_GC_MW-M-03_2021-04-22	0.0448	0.0099	77.9	12	<0.007	<0.514	0.144	0.093	<0.067	630	4.5	0.145	1.2
			RG_GC_MW-M-04_2021-04-22	0.0696	0.0137	80.3	11	<0.007	<0.514	0.288	0.093	<0.067	553	2.9	0.112	0.803
			RG_GC_MW-M-05_2021-04-22	0.0503	0.0132	73.8	23	<0.007	<0.514	0.436	0.117	<0.067	765	1.8	0.040	1.0
			RG_GC_MW-M-06_2021-04-22	0.0491	0.0114	76.8	39	<0.007	<0.514	0.786	0.117	<0.067	659	5.1	0.182	1.9
			RG_GC_MW-M-07_2021-04-22	0.1012	0.0254	74.9	23	<0.007	<0.514	0.698	0.087	<0.067	640	2.7	0.103	1.5
			RG_GC_MW-M-08_2021-04-21	0.0202	0.0018	91.1	7.6	0.008	<0.514	2.4	0.117	<0.067	1,170	3.7	0.140	0.672
			RG_GC_MW-M-09_2021-04-22	0.0665	0.0062	90.7	51	<0.007	<0.514	2.1	0.117	<0.067	870	13	0.251	1.9
	June	RG_ER	RG_ER_MW-M-08_2021-06-22	0.0277	0.0061	78.0	31	0.010	<0.495	1.2	0.928	<0.045	668	4.9	0.217	3.7
Rainbow Trout	April	RG_SC	RG_SC_RB-M-01_2021-04-20	0.0906	0.0195	78.5	2.6	<0.007	<0.514	0.250	<0.082	<0.067	605	1.8	0.031	1.3
		RG_ER	RG_ER_RB-M-01_2021-04-23	0.0838	0.0208	75.2	40	<0.007	<0.514	0.793	0.163	0.526	739	2.4	0.082	1.0
	May		RG_ER_RB-M-02_2021-05-29	0.0106	0.0007	93.4	39	<0.008	<0.477	1.2	0.650	<0.063	686	3.7	0.079	2.4
	June		RG_ER_RB-M-03_2021-06-23	0.0119	0.0050	58.0	4.9	0.007	<0.495	0.898	0.483	<0.045	434	1.3	0.037	1.1
		RG_GC	RG_GC_RB-M-01_2021-06-22	0.0538	0.0145	73.0	6.6	0.033	<0.495	0.708	100	<0.045	530	1.3	0.029	1.1
			RG_GC_RB-M-02_2021-06-22	0.0574	0.0143	75.1	13	0.029	<0.495	1.8	2.0	<0.045	701	2.2	0.055	5.9
			RG_GC_RB-M-03_2021-06-23	0.0470	0.0130	72.3	0.404	<0.005	<0.495	0.037	<0.108	<0.045	592	1.3	0.027	1.2
			RG_GC_RB-M-04_2021-06-23	0.1673	0.0336	79.9	0.539	<0.005	<0.495	0.075	<0.108	<0.045	591	1.3	0.045	0.843
			RG_GC_RB-05-M_2021-06-25	0.0672	0.0138	79.5	<0.296	<0.005	<0.495	0.032	<0.108	<0.045	748	1.1	0.027	0.723
Westslope Cutthroat Trout	April	RG_SC	RG_SC_WCT-M-01_2021-04-20	0.0521	0.0152	70.8	4.0	0.008	<0.514	0.141	<0.082	<0.067	616	2.4	0.066	1.1
			RG_SC_WCT-M-02_2021-04-20	0.0338	0.0110	67.5	6.0	0.011	<0.514	0.387	<0.082	<0.067	474	3.5	0.077	0.653
			RG_SC_WCT-M-03_2021-04-24	0.0644	0.0192	70.2	90	0.011	<0.514	1.8	<0.082	<0.067	767	6.2	0.352	1.2
		RG_ER	RG_ER_WCT-M-01_2021-04-21	0.0192	0.0064	66.7	219	0.025	<0.514	5.7	0.409	<0.067	1,334	7.4	0.203	1.9
			RG_ER_WCT-M-02_2021-04-23	0.0622	0.0197	68.3	7.4	0.012	<0.514	0.263	<0.082	<0.067	326	2.7	0.081	0.982
			RG_ER_WCT-M-03_2021-04-23	0.0397	0.0133	66.5	159	0.016	<0.514	4.3	0.344	<0.067	1,165	7.4	0.293	1.5
			RG_ER_WCT-M-04_2021-04-24	0.0341	0.0125	63.3	2,956	0.071	0.776	52	2.1	<0.067	4,552	117	7.3	4.3
			RG_ER_WCT-M-05_2021-04-24	0.0298	0.0118	60.4	1,127	0.032	<0.514	23	0.581	0.650	1,735	50	2.9	2.4
			RG_ER_WCT-M-06_2021-04-25	0.0619	0.0185	70.1	2.5	0.011	<0.514	0.296	0.086	<0.067	841	2.0	0.072	1.4
			RG_ER_WCT-M-07_2021-04-27	0.0358	0.0160	55.3	30	0.009	<0.514	0.592	0.086	<0.067	663	5.1	0.104	1.6
			RG_ER_WCT-M-08_2021-04-27	0.0366	0.0139	62.0	57	<0.007	<0.514	1.0	0.086	<0.067	1,970	4.6	0.195	1.7
		RG_GC	RG_GC_WCT-M-01_2021-04-20	0.0408	0.0084	79.4	10	0.021	<0.514	0.865	0.128	<0.067	1,297	2.9	0.102	1.8
			RG_GC_WCT-M-02_2021-04-20	0.0391	0.0093	76.2	2.2	<0.007	<0.514	0.433	0.093	<0.067	1,151	1.6	0.026	1.6
			RG_GC_WCT-M-03_2021-04-22	0.0240	0.0061	74.6	50	<0.007	<0.514	0.793	0.139	<0.067	1,717	11	0.406	2.4
			RG_GC_WCT-M-04_2021-04-22	0.0324	0.0068	79.0	15	<0.007	<0.514	1.0	0.131	<0.067	1,616	6.8	0.269	1.3
			RG_GC_WCT-M-06_2021-04-22	0.0320	0.0067	79.1	9.9	<0.007	<0.514	0.521	<0.082	<0.067	1,039	2.7	0.079	1.7
			RG_GC_WCT-M-07_2021-04-22	0.0559	0.0131	76.6	3.1	<0.007	<0.514	0.261	0.087	<0.067	1,234	2.4	0.098	1.4
			RG_GC_WCT-M-08_2021-04-23	0.0146	0.0036	75.3	3.4	<0.007	<0.514	0.868	0.102	<0.067	1,386	1.8	0.055	1.3
			RG_GC_WCT-M-09_2021-04-23	0.0303	0.0039	87.1	89	0.015	<0.514	4.0	0.291	<0.067	1,459	3.7	0.177	2.0
	May	RG_SC	RG_SC_WCT-M-04_2021-05-29	0.0332	0.0063	81.0	39	<0.008	<0.477	0.551	0.295	0.972	660	7.8	0.378	0.970
Yellow Perch	April	RG_SC	RG_SC_YP-M-01_2021-04-20	0.0716	0.0145	79.7	30	<0.007	<0.514	1.6	0.256	<0.067	1,313	2.7	0.063	0.895
			RG_SC_YP-M-02_2021-04-20	0.0891	0.0247	72.3	6.6	<0.007	<0.514	0.281	<0.082	0.078	1,239	1.8	0.054	0.732
			RG_SC_YP-M-03_2021-04-20	0.1145	0.0255	77.7	3.3	<0.007	<0.514	0.141	<0.082	<0.067	807	1.9	0.045	0.732
			RG_SC_YP-M-04_2021-04-21	0.0534	0.0146	72.7	5.9	0.032	<0.514	0.141	0.093	<0.067	356	2.7	0.029	0.323
			RG_SC_YP-M-05_2021-04-21	0.0449	0.0126	71.9	4.2	<0.007	<0.514	0.211	<0.082	<0.067	653	3.1	0.086	1.1
		RG_ER	RG_ER_YP-M-01_2021-04-21	0.0594	0.0134	77.4	19	<0.007	<0.514	0.736	0.122	0.504	985	3.6	0.083	1.3
			RG_ER_YP-M-02_2021-04-21	0.0373	0.0084	77.5	19	<0.007	<0.514	0.883	0.122	<0.067	814	2.4	0.050	1.1
			RG_ER_YP-M-03_2021-04-21	0.1528	0.0350	77.1	1.0	<0.007	<0.514	0.147	<0.082	<0.067	928	1.6	0.035	0.828
			RG_ER_YP-M-04_2021-04-23	0.0761	0.0151	80.2	7.4	<0.007	<0.514	0.515	0.147	<0.067	1,112	2.2	0.079	0.920

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Wet Weight	Dry Weight	Moisture	Aluminum	Antimony	Arsenic	Barium	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper
				g	g	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Yellow Perch	April	RG_ER	RG_ER_YP-M-05_2021-04-23	0.4833	0.1083	77.6	35	<0.007	<0.514	0.736	0.122	<0.067	847	1.6	0.039	0.842
			RG_ER_YP-M-06_2021-04-23	0.0974	0.0209	78.5	5.5	<0.007	<0.514	0.589	0.098	<0.067	2,198	3.9	0.110	0.773
			RG_ER_YP-M-07_2021-04-23	0.0798	0.0170	78.7	21	<0.007	<0.514	0.515	<0.082	<0.067	1,175	3.3	0.083	0.879
			RG_ER_YP-M-08_2021-04-23	0.0613	0.0134	78.1	5.9	<0.007	<0.514	0.368	<0.082	<0.067	983	1.7	0.026	0.676
			RG_ER_YP-M-09_2021-04-23	0.4152	0.0808	80.5	6.3	<0.007	<0.514	0.505	<0.082	<0.067	954	1.4	0.035	0.851
		RG_GC	RG_GC_YP-M-01_2021-04-20	0.1020	0.0205	79.9	13	<0.007	<0.514	0.364	<0.082	<0.067	1,034	4.8	0.173	0.804
			RG_GC_YP-M-02_2021-04-20	0.1885	0.0367	80.5	73	0.021	<0.514	1.5	0.192	<0.067	1,522	4.3	0.114	1.2
			RG_GC_YP-M-03_2021-04-21	0.0591	0.0122	79.4	1.4	<0.007	<0.514	0.084	<0.082	<0.067	1,056	3.3	0.099	0.737
			RG_GC_YP-M-04_2021-04-21	0.0355	0.0063	82.3	73	0.028	<0.514	1.3	0.113	<0.067	1,538	18	0.705	1.7
			RG_GC_YP-M-05_2021-04-22	0.1302	0.0252	80.6	52	<0.007	<0.514	1.3	0.142	0.610	963	2.4	0.064	1.8
			RG_GC_YP-M-06_2021-04-22	0.0887	0.0152	82.9	31	0.007	<0.514	1.1	0.085	<0.067	934	3.2	0.113	2.1
			RG_GC_YP-M-07_2021-04-22	0.1052	0.0235	77.7	1.6	<0.007	<0.514	0.167	<0.082	<0.067	1,022	1.9	0.035	1.1
			RG_GC_YP-M-08_2021-04-22	0.1063	0.0202	81.0	2.1	<0.007	<0.514	0.167	0.085	<0.067	955	1.7	0.035	0.747
			RG_GC_YP-M-09_2021-04-23	0.3339	0.0630	81.1	4.9	<0.007	<0.514	0.335	0.085	<0.067	698	1.7	0.039	0.846

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bull Trout	April	RG_SC	RG_SC_BT-M-01_2021-04-20	99	0.221	0.041	1,318	3.3	0.629	0.038	3.6	11,807	14,987	1.6	<0.001	1,318
			RG_SC_BT-M-02_2021-04-20	55	0.040	0.011	1,076	0.832	0.483	<0.014	3.4	9,964	20,222	1.2	<0.001	1,175
			RG_SC_BT-M-03_2021-04-21	228	0.240	0.080	1,659	3.4	0.947	0.032	14	13,642	27,237	2.3	<0.001	1,067
			RG_SC_BT-M-04_2021-04-22	43	0.049	0.017	1,158	0.909	1.8	<0.014	0.975	9,451	16,506	2.4	<0.001	2,541
			RG_SC_BT-M-05_2021-04-23	307	0.200	0.115	1,382	5.2	2.8	0.064	16	11,996	25,248	2.1	<0.001	1,293
			RG_SC_BT-M-06_2021-04-23	67	0.050	0.026	1,095	1.3	0.924	<0.014	3.2	9,466	17,626	1.7	<0.001	1,453
			RG_SC_BT-M-07_2021-04-26	115	0.040	0.013	1,224	2.2	0.857	0.033	9.6	9,316	14,921	1.4	<0.001	778
			RG_SC_BT-M-08_2021-04-26	151	0.158	0.055	1,034	4.0	0.754	0.022	4.3	7,048	13,129	1.2	<0.001	364
		RG_ER	RG_ER_BT-M-01_2021-04-21	14	0.021	0.009	1,081	0.412	0.234	<0.014	0.309	10,087	19,850	3.1	<0.001	1,170
			RG_ER_BT-M-02_2021-04-23	17	0.041	0.009	845	0.616	0.341	<0.014	0.371	9,796	21,246	2.5	<0.001	698
			RG_ER_BT-M-03_2021-04-24	224	0.143	0.120	1,067	4.7	3.9	0.053	6.6	12,938	27,623	2.1	<0.001	1,145
			RG_ER_BT-M-04_2021-04-25	95	0.194	0.068	1,337	4.9	1.3	<0.014	1.4	10,333	20,696	2.2	<0.001	631
			RG_ER_BT-M-05_2021-04-25	24	0.039	0.016	1,222	1.0	0.982	<0.014	0.545	10,432	23,652	2.1	<0.001	744
			RG_ER_BT-M-06_2021-04-25	30	0.019	0.010	1,293	0.490	3.0	<0.014	0.454	11,202	22,154	2.2	<0.001	1,457
			RG_ER_BT-M-07_2021-04-26	34	0.054	0.010	1,132	0.864	0.748	<0.014	2.1	8,354	15,557	1.9	<0.001	928
			RG_ER_BT-M-08_2021-04-26	1,907	0.143	0.205	1,291	19	2.5	0.325	177	9,975	19,830	2.6	<0.001	1,008
		RG_GC	RG_GC_BT-M-01_2021-04-21	49	0.072	0.023	652	0.718	2.6	<0.014	1.8	4,888	10,595	2.2	<0.001	2,558
			RG_GC_BT-M-02_2021-04-22	104	0.264	0.023	655	1.5	1.2	0.048	2.2	5,092	6,072	2.2	0.011	770
			RG_GC_BT-M-03_2021-04-22	26	0.145	0.017	405	0.508	0.638	<0.014	0.442	4,256	12,796	1.5	<0.001	3,252
			RG_GC_BT-M-04_2021-04-23	921	0.171	0.090	796	9.7	2.2	0.161	73	7,093	9,484	2.3	<0.001	4,362
			RG_GC_BT-M-05_2021-04-25	347	0.041	0.023	872	3.9	0.316	0.032	36	7,168	12,739	3.0	<0.001	2,274
			RG_GC_BT-M-06_2021-04-25	142	0.155	0.063	1,024	3.1	0.352	0.023	11	4,664	6,423	3.4	<0.001	880
			RG_GC_BT-M-07_2021-04-26	22	0.014	<0.007	658	0.477	0.401	<0.014	1.8	6,485	13,113	1.5	<0.001	1,142
			RG_GC_BT-M-08_2021-04-26	286	0.089	0.027	808	3.5	0.947	<0.014	25	7,172	14,344	1.8	<0.001	2,842
Kokanee	April	RG_SC	RG_SC_KO-M-01_2021-04-21	11	0.007	<0.007	1,264	0.251	0.428	<0.014	0.198	10,779	21,573	1.8	<0.001	696
			RG_SC_KO-M-02_2021-04-22	38	0.034	0.009	1,152	0.775	0.489	<0.014	1.5	11,022	22,546	2.3	<0.001	578
		RG_ER	RG_ER_KO-M-01_2021-04-21	279	0.127	0.079	1,088	3.8	0.510	0.025	27	9,723	17,780	2.6	<0.001	880
			RG_ER_KO-M-02_2021-04-27	77	0.123	0.031	1,199	2.0	0.658	0.025	3.6	10,287	18,215	1.6	<0.001	760
	June	RG_GC	RG_GC_KO-M-01_2021-06-23	16	0.038	0.014	1,305	0.424	0.338	<0.001	0.548	11,733	20,617	2.0	<0.001	919
			RG_GC_KO-M-02_2021-06-24	12	0.024	0.014	1,251	0.346	0.238	<0.001	0.372	11,349	17,605	1.9	<0.001	949
			RG_GC_KO-M-03_2021-06-25	11	0.012	0.018	1,201	0.177	0.346	<0.001	0.362	11,715	18,605	2.0	<0.001	965
			RG_GC_KO-M-04_2021-06-25	52	0.006	0.014	1,266	0.466	0.418	0.025	2.5	12,138	19,257	1.8	<0.001	993
			RG_GC_KO-M-05_2021-06-25	22	0.011	0.014	1,207	0.379	0.288	0.016	0.890	12,917	22,206	2.0	<0.001	1,013
			RG_GC_KO-M-06_2021-06-25	51	0.037	0.021	1,248	0.818	0.223	0.016	4.0	11,728	20,114	2.1	<0.001	1,119
			RG_GC_KO-M-07_2021-06-25	22	0.010	0.018	1,277	0.303	0.202	0.012	0.796	12,363	21,391	1.9	<0.001	1,141
	August	RG_SC	RG_SC_KO-M-01_2021-08-24	27	0.012	0.021	1,654	0.427	0.325	0.021	0.852	14,740	31,170	2.5	<0.001	1,010
			RG_SC_KO-M-02_2021-08-26	47	0.011	0.037	1,790	0.730	0.352	0.021	2.7	13,328	24,607	2.2	<0.001	1,550
			RG_SC_KO-M-03_2021-08-26	462	0.017	0.024	1,606	5.8	0.287	0.294	45	12,953	24,347	2.2	<0.001	1,218
			RG_SC_KO-M-04_2021-08-26	97	0.110	0.048	1,247	1.8	0.242	0.063	3.9	10,188	23,305	1.7	0.005	1,650
			RG_SC_KO-M-05_2021-08-26	110	0.095	0.011	1,125	1.7	0.311	0.021	7.3	11,896	21,444	2.0	<0.001	1,225
			RG_SC_KO-M-06_2021-08-24	62	0.027	0.032	1,422	0.659	0.193	0.021	3.2	12,799	27,274	1.6	<0.001	1,610
		RG_ER	RG_ER_KO-M-01_2021-08-24	117	0.007	0.026	1,731	1.5	0.200	0.084	10	14,325	28,441	1.9	<0.001	910
			RG_ER_KO-M-02_2021-08-24	37	0.007	0.058	1,373	0.435	0.222	0.017	0.412	13,042	20,688	1.9	<0.001	2,241
			RG_ER_KO-M-03_2021-08-24	97	0.010	0.042	1,518	1.0	0.235	0.042	6.7	11,895	22,898	2.0	<0.001	1,892
			RG_ER_KO_M-04_2021-08-27	32	0.049	0.038	952	0.320	0.402	0.034	1.2	10,411	18,936	1.8	<0.001	1,681
			RG_ER_KO-M-05_2021-08-27	94	0.053	0.065	1,514	0.673	0.356	0.043	2.8	11,086	19,602	2.5	<0.001	2,296
		RG_GC	RG_GC_KO-M-01_2021-08-24	118	0.057	0.048	1,878	1.7	0.376	0.063	9.4	16,047	33,205	2.6	0.005	1,205
Mountain Whitefish	April	RG_SC	RG_SC_MW-M-01_2021-04-20	25	0.106	0.022	1,336	0.472	0.479	<0.014	0.297	11,008	24,882	2.1	<0.001	1,255
			RG_SC_MW-M-02_2021-04-21	15	<0.006	0.031	895	0.422	0.443	<0.014	0.247	9,744	21,792	3.4	<0.001	966
			RG_SC_MW-M-03_2021-04-21	35	0.017	0.039	1,022	0.619	0.255	<0.014	1.5	10,271	22,754	2.1	<0.001	1,229
			RG_SC_MW-M-04_2021-04-21	11	0.014	0.017	1,127	0.297	0.311	<0.014	0.148	9,268	19,907	1.2	<0.001	733
			RG_SC_MW-M-05_2021-04-21	40	0.024	0.035	1,510	1.1	0.326	0.022	3.3	10,879	25,385	2.6	<0.001	860
		RG_ER	RG_ER_MW-M-01_2021-04-19	15	0.015	0.053	1,074	0.653	0.380	<0.014	0.382	12,855	28,760	4.1	<0.001	1,116

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mountain Whitefish	April	RG_ER	RG_ER_MW-M-02_2021-04-19	18	<0.006	0.019	1,275	0.637	0.274	<0.014	0.254	10,611	22,428	4.7	<0.001	813
			RG_ER_MW-M-04_2021-04-21	15	0.007	0.036	1,166	0.542	0.274	<0.014	0.305	8,274	16,293	3.5	<0.001	824
			RG_ER_MW-M-05_2021-04-25	131	0.080	0.153	1,567	2.6	0.393	0.025	8.0	13,774	30,043	5.0	<0.001	778
			RG_ER_MW-M-06_2021-04-25	44	0.048	0.131	929	1.2	0.338	<0.014	2.1	10,393	25,065	3.0	<0.001	637
			RG_ER_MW-M-07_2021-04-25	54	0.065	0.088	719	1.5	0.162	<0.014	2.3	7,617	17,653	1.3	<0.001	763
		RG_GC	RG_GC_MW-M-01_2021-04-20	27	<0.006	0.033	1,231	0.777	0.283	<0.014	1.1	12,470	26,216	2.9	<0.001	637
			RG_GC_MW-M-02_2021-04-20	26	0.007	0.013	1,020	0.672	0.533	<0.014	0.655	10,538	26,360	2.5	<0.001	893
			RG_GC_MW-M-03_2021-04-22	71	0.011	0.022	1,515	1.0	0.387	0.023	6.2	10,818	21,100	5.6	<0.001	881
			RG_GC_MW-M-04_2021-04-22	40	0.037	0.022	904	0.871	0.593	<0.014	3.3	10,415	22,106	1.9	<0.001	764
			RG_GC_MW-M-05_2021-04-22	48	0.024	0.022	969	0.816	0.329	<0.014	1.0	11,467	24,398	2.4	<0.001	1,231
			RG_GC_MW-M-06_2021-04-22	91	0.027	0.033	1,500	1.6	0.533	<0.014	6.5	12,131	29,714	1.1	<0.001	1,868
			RG_GC_MW-M-07_2021-04-22	47	0.029	0.027	1,074	1.2	0.267	<0.014	2.3	13,415	30,875	4.3	<0.001	1,234
			RG_GC_MW-M-08_2021-04-21	41	0.054	0.027	709	1.2	0.408	<0.014	4.2	2,856	3,185	2.1	<0.001	295
			RG_GC_MW-M-09_2021-04-22	259	0.487	0.033	1,088	3.9	0.643	0.161	26	5,950	13,157	2.8	<0.001	801
	June	RG_ER	RG_ER_MW-M-08_2021-06-22	95	0.191	0.029	320	1.9	0.212	0.024	5.8	10,310	23,364	6.8	<0.001	1,206
Rainbow Trout	April	RG_SC	RG_SC_RB-M-01_2021-04-20	28	0.017	<0.007	1,353	0.366	0.735	<0.014	0.644	11,452	22,644	1.4	<0.001	1,132
		RG_ER	RG_ER_RB-M-01_2021-04-23	53	0.045	0.022	1,340	1.1	0.254	0.023	2.3	11,549	24,020	2.9	<0.001	977
	May		RG_ER_RB-M-02_2021-05-29	102	0.068	0.023	383	1.4	0.128	0.056	5.0	3,860	5,337	1.0	<0.001	1,423
	June		RG_ER_RB-M-03_2021-06-23	18	0.100	0.016	1,330	2.6	0.225	0.012	0.318	13,445	28,497	2.9	<0.001	890
		RG_GC	RG_GC_RB-M-01_2021-06-22	19	0.059	0.055	1,245	1.1	0.227	0.016	0.310	10,729	18,938	1.1	<0.001	1,062
			RG_GC_RB-M-02_2021-06-22	51	0.606	0.064	1,542	1.8	0.256	0.033	2.7	13,329	26,620	2.2	<0.001	2,965
			RG_GC_RB-M-03_2021-06-23	16	0.002	0.018	1,550	0.278	0.353	<0.001	0.207	13,501	25,354	2.5	<0.001	1,107
			RG_GC_RB-M-04_2021-06-23	17	0.026	0.014	1,298	0.348	0.601	<0.001	0.248	12,303	23,330	4.9	<0.001	1,156
			RG_GC_RB-05-M_2021-06-25	11	<0.001	0.009	1,081	0.260	0.430	0.012	0.174	12,342	26,592	1.2	<0.001	1,367
Westslope Cutthroat Trout	April	RG_SC	RG_SC_WCT-M-01_2021-04-20	36	0.017	<0.007	1,295	0.662	0.180	<0.014	2.0	13,241	27,503	8.5	<0.001	1,184
			RG_SC_WCT-M-02_2021-04-20	33	0.042	<0.007	461	0.701	0.135	<0.014	2.6	4,152	8,244	0.643	<0.001	840
			RG_SC_WCT-M-03_2021-04-24	182	0.071	0.041	1,178	3.3	0.333	<0.014	12	13,039	28,393	1.1	<0.001	1,082
		RG_ER	RG_ER_WCT-M-01_2021-04-21	271	0.215	0.131	1,045	4.1	0.242	0.100	13	8,230	19,277	1.3	<0.001	1,443
			RG_ER_WCT-M-02_2021-04-23	34	0.044	0.016	607	0.508	0.114	<0.014	2.2	6,453	11,161	2.0	<0.001	730
			RG_ER_WCT-M-03_2021-04-23	278	0.250	0.105	1,279	5.9	0.188	0.025	15	9,613	17,736	3.9	<0.001	1,012
			RG_ER_WCT-M-04_2021-04-24	3,158	1.3	1.7	2,127	42	0.269	0.125	208	10,638	23,169	2.9	0.008	958
			RG_ER_WCT-M-05_2021-04-24	2,085	0.390	0.649	1,211	19	0.128	0.162	153	6,656	11,317	0.964	<0.001	770
			RG_ER_WCT-M-06_2021-04-25	26	0.016	0.016	1,243	0.604	0.269	0.025	0.785	12,388	25,978	3.1	<0.001	1,226
			RG_ER_WCT-M-07_2021-04-27	95	0.034	0.026	1,152	1.5	0.242	0.050	6.6	11,650	24,257	1.7	<0.001	983
			RG_ER_WCT-M-08_2021-04-27	97	0.029	0.043	1,310	1.4	0.174	<0.014	6.5	10,773	20,464	6.3	<0.001	1,381
		RG_GC	RG_GC_WCT-M-01_2021-04-20	82	0.045	0.022	1,053	0.919	0.315	0.023	3.5	8,686	17,442	5.0	<0.001	1,751
			RG_GC_WCT-M-02_2021-04-20	29	0.019	0.009	1,285	0.362	0.678	<0.014	0.603	10,415	21,374	1.5	<0.001	800
			RG_GC_WCT-M-03_2021-04-22	254	0.019	0.027	1,084	3.6	0.133	0.136	25	10,059	19,785	2.4	<0.001	1,796
			RG_GC_WCT-M-04_2021-04-22	144	0.016	0.017	1,214	2.0	0.343	0.064	5.5	12,767	28,231	1.5	<0.001	1,193
			RG_GC_WCT-M-06_2021-04-22	48	0.026	0.012	1,356	0.933	0.370	<0.014	2.4	12,797	26,033	4.0	<0.001	1,220
			RG_GC_WCT-M-07_2021-04-22	44	<0.006	0.012	1,173	0.494	0.151	<0.014	1.7	11,628	22,991	3.6	<0.001	1,854
			RG_GC_WCT-M-08_2021-04-23	35	0.010	0.014	898	0.532	0.123	<0.014	0.773	10,208	18,208	4.9	<0.001	1,152
			RG_GC_WCT-M-09_2021-04-23	107	0.150	0.064	916	2.7	0.192	0.032	5.5	6,842	11,775	3.8	<0.001	1,467
	May	RG_SC	RG_SC_WCT-M-04_2021-05-29	186	0.026	0.029	1,224	2.3	0.410	<0.001	15	10,724	26,779	1.3	<0.001	1,567
Yellow Perch	April	RG_SC	RG_SC_YP-M-01_2021-04-20	57	0.129	0.037	1,205	2.4	0.638	0.019	3.2	11,141	22,450	4.2	<0.001	1,967
			RG_SC_YP-M-02_2021-04-20	35	0.017	0.059	1,250	0.914	0.616	<0.014	1.3	11,009	25,344	1.8	<0.001	2,661
			RG_SC_YP-M-03_2021-04-20	27	0.008	0.022	1,079	1.3	0.629	<0.014	1.2	11,381	25,738	4.0	<0.001	2,079
			RG_SC_YP-M-04_2021-04-21	13	0.017	0.007	260	0.519	0.126	0.019	0.628	2,134	4,100	<0.439	<0.001	961
			RG_SC_YP-M-05_2021-04-21	40	0.008	0.007	1,464	1.3	0.832	<0.014	3.2	12,136	26,540	0.857	<0.001	937
		RG_ER	RG_ER_YP-M-01_2021-04-21	71	0.033	0.033	1,130	1.5	0.676	0.027	4.3	11,147	27,763	3.8	<0.001	1,925
			RG_ER_YP-M-02_2021-04-21	38	0.028	0.066	801	0.955	0.541	<0.014	1.7	7,587	17,362	2.7	<0.001	1,713
			RG_ER_YP-M-03_2021-04-21	19	0.007	0.016	1,360	0.879	0.446	<0.014	0.705	8,335	18,738	3.2	<0.001	852
			RG_ER_YP-M-04_2021-04-23	57	0.014	0.049	964	1.5	0.676	0.027	2.1	10,592	23,271	4.1	<0.001	2,134

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Selenium	Silver	Sodium
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Yellow Perch	April	RG_ER	RG_ER_YP-M-05_2021-04-23	44	0.041	0.049	1,007	1.0	0.716	0.027	0.705	9,645	24,552	3.3	<0.001	1,395
			RG_ER_YP-M-06_2021-04-23	62	0.010	0.041	1,161	1.6	0.486	<0.014	4.0	11,708	27,080	3.2	<0.001	1,373
			RG_ER_YP-M-07_2021-04-23	62	0.014	0.038	1,265	1.5	0.764	<0.014	3.4	11,400	29,591	3.7	<0.001	1,747
			RG_ER_YP-M-08_2021-04-23	23	0.007	0.033	1,055	0.932	0.541	<0.014	1.0	9,183	22,754	2.9	<0.001	938
			RG_ER_YP-M-09_2021-04-23	22	0.015	0.102	1,171	0.793	0.739	<0.014	0.419	11,331	22,311	2.6	<0.001	3,379
		RG_GC	RG_GC_YP-M-01_2021-04-20	94	0.031	0.032	1,246	1.8	0.352	0.023	8.7	10,097	23,171	2.8	<0.001	1,561
			RG_GC_YP-M-02_2021-04-20	107	0.136	0.068	1,038	2.6	0.552	0.046	7.5	11,114	27,571	2.6	<0.001	2,230
			RG_GC_YP-M-03_2021-04-21	37	<0.006	0.082	897	0.862	0.645	<0.014	2.9	10,660	25,310	3.4	<0.001	2,312
			RG_GC_YP-M-04_2021-04-21	372	0.084	0.088	1,077	4.5	0.708	0.090	38	11,678	26,594	3.8	<0.001	3,421
			RG_GC_YP-M-05_2021-04-22	66	0.042	0.055	1,008	1.3	1.0	0.030	2.1	13,129	29,888	3.0	<0.001	3,717
			RG_GC_YP-M-06_2021-04-22	70	0.052	0.077	1,005	1.6	0.897	0.030	3.8	15,125	37,595	3.3	<0.001	4,769
			RG_GC_YP-M-07_2021-04-22	19	<0.006	0.025	1,445	0.469	0.913	<0.014	0.675	13,546	32,089	3.2	<0.001	1,929
			RG_GC_YP-M-08_2021-04-22	18	0.009	0.027	819	0.995	0.519	<0.014	0.877	12,416	28,680	3.5	<0.001	1,848
			RG_GC_YP-M-09_2021-04-23	21	0.019	0.027	1,129	1.1	0.995	<0.014	0.515	13,737	37,337	3.4	<0.001	2,592

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Bull Trout	April	RG_SC	RG_SC_BT-M-01_2021-04-20	1.5	0.064	0.645	4.7	0.009	0.103	43
			RG_SC_BT-M-02_2021-04-20	0.715	0.048	0.775	1.1	<0.001	<0.053	23
			RG_SC_BT-M-03_2021-04-21	1.9	0.033	0.381	7.6	0.005	0.243	29
			RG_SC_BT-M-04_2021-04-22	0.819	0.027	1.0	2.6	<0.001	<0.053	37
			RG_SC_BT-M-05_2021-04-23	2.3	0.071	0.267	14	0.005	0.262	22
			RG_SC_BT-M-06_2021-04-23	1.2	0.031	0.661	2.0	<0.001	0.094	23
			RG_SC_BT-M-07_2021-04-26	1.1	0.034	0.418	2.7	<0.001	0.133	15
			RG_SC_BT-M-08_2021-04-26	2.9	0.034	0.303	7.3	0.003	0.199	11
		RG_ER	RG_ER_BT-M-01_2021-04-21	0.262	0.036	0.128	1.4	<0.001	<0.053	19
			RG_ER_BT-M-02_2021-04-23	0.420	0.031	0.048	1.1	<0.001	<0.053	14
			RG_ER_BT-M-03_2021-04-24	1.6	0.028	0.167	21	0.007	0.270	25
			RG_ER_BT-M-04_2021-04-25	1.8	0.026	0.246	5.7	0.007	0.135	17
			RG_ER_BT-M-05_2021-04-25	0.623	0.021	0.116	1.6	0.002	<0.053	14
			RG_ER_BT-M-06_2021-04-25	0.304	0.022	0.122	0.983	<0.001	<0.053	18
			RG_ER_BT-M-07_2021-04-26	0.558	0.046	0.463	1.6	<0.001	<0.053	17
			RG_ER_BT-M-08_2021-04-26	3.8	0.082	0.353	20	0.005	2.4	21
		RG_GC	RG_GC_BT-M-01_2021-04-21	1.1	0.031	2.7	0.693	0.002	<0.053	26
			RG_GC_BT-M-02_2021-04-22	0.608	0.014	0.235	3.5	0.002	0.064	12
			RG_GC_BT-M-03_2021-04-22	0.494	0.016	1.5	2.1	0.002	<0.053	21
			RG_GC_BT-M-04_2021-04-23	1.5	0.050	1.4	11	0.004	0.877	100
			RG_GC_BT-M-05_2021-04-25	0.807	0.037	1.5	2.8	0.002	0.310	34
			RG_GC_BT-M-06_2021-04-25	2.6	0.013	0.505	7.2	0.005	0.175	25
			RG_GC_BT-M-07_2021-04-26	0.161	0.026	0.415	0.988	<0.001	<0.053	14
			RG_GC_BT-M-08_2021-04-26	0.465	0.056	0.570	4.9	<0.001	0.310	53
Kokanee	April	RG_SC	RG_SC_KO-M-01_2021-04-21	0.192	0.049	0.119	0.544	<0.001	<0.053	24
			RG_SC_KO-M-02_2021-04-22	0.661	0.048	0.095	1.4	0.001	<0.053	63
		RG_ER	RG_ER_KO-M-01_2021-04-21	2.9	0.048	0.454	5.3	0.003	0.390	53
			RG_ER_KO-M-02_2021-04-27	0.913	0.063	0.182	2.4	0.001	0.066	31
	June	RG_GC	RG_GC_KO-M-01_2021-06-23	0.237	0.099	0.086	6.6	<0.001	<0.070	20
			RG_GC_KO-M-02_2021-06-24	0.695	0.072	0.245	1.1	<0.001	<0.070	49
			RG_GC_KO-M-03_2021-06-25	1.1	0.074	0.110	2.8	<0.001	<0.070	59
			RG_GC_KO-M-04_2021-06-25	1.0	0.076	0.252	1.6	<0.001	<0.070	94
			RG_GC_KO-M-05_2021-06-25	0.464	0.092	0.282	1.3	<0.001	<0.070	85
			RG_GC_KO-M-06_2021-06-25	0.966	0.078	0.356	2.1	<0.001	<0.070	84
			RG_GC_KO-M-07_2021-06-25	1.0	0.054	0.098	1.9	<0.001	<0.070	29
	August	RG_SC	RG_SC_KO-M-01_2021-08-24	0.276	0.055	0.130	2.0	0.001	<0.077	20
			RG_SC_KO-M-02_2021-08-26	0.432	0.060	0.851	1.5	<0.001	<0.077	61
			RG_SC_KO-M-03_2021-08-26	0.787	0.050	0.388	2.0	0.003	0.305	45
			RG_SC_KO-M-04_2021-08-26	0.507	0.066	0.421	2.3	0.017	0.162	59
			RG_SC_KO-M-05_2021-08-26	1.3	0.045	0.612	1.8	0.001	0.097	96
			RG_SC_KO-M-06_2021-08-24	0.997	0.043	0.258	1.3	0.001	0.081	40
		RG_ER	RG_ER_KO-M-01_2021-08-24	0.849	0.048	0.166	1.3	0.001	<0.077	15
			RG_ER_KO-M-02_2021-08-24	0.334	0.058	0.204	0.644	<0.001	<0.077	14
			RG_ER_KO-M-03_2021-08-24	0.536	0.042	0.125	2.0	0.001	0.134	18
			RG_ER_KO_M-04_2021-08-27	0.465	0.069	0.172	0.859	<0.001	<0.077	17
			RG_ER_KO-M-05_2021-08-27	0.658	0.055	0.396	1.7	<0.001	<0.077	27
		RG_GC	RG_GC_KO-M-01_2021-08-24	0.780	0.061	0.126	2.3	0.002	0.148	18
Mountain Whitefish	April	RG_SC	RG_SC_MW-M-01_2021-04-20	0.524	0.009	0.548	1.4	0.001	<0.053	33
			RG_SC_MW-M-02_2021-04-21	0.114	0.009	<0.037	0.816	<0.001	<0.053	16
			RG_SC_MW-M-03_2021-04-21	0.228	0.022	0.068	1.1	<0.001	<0.053	25
			RG_SC_MW-M-04_2021-04-21	0.133	0.013	0.244	0.816	<0.001	<0.053	16
			RG_SC_MW-M-05_2021-04-21	0.433	0.012	0.045	1.4	<0.001	<0.053	17
		RG_ER	RG_ER_MW-M-01_2021-04-19	0.127	0.052	0.131	1.5	0.001	0.064	21

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Mountain Whitefish	April	RG_ER	RG_ER_MW-M-02_2021-04-19	0.101	0.029	0.107	0.929	<0.001	<0.053	20
			RG_ER_MW-M-04_2021-04-21	0.135	0.029	0.118	0.929	<0.001	<0.053	17
			RG_ER_MW-M-05_2021-04-25	0.976	0.032	0.136	4.6	0.003	0.260	21
			RG_ER_MW-M-06_2021-04-25	0.580	0.014	0.171	1.2	<0.001	0.057	20
			RG_ER_MW-M-07_2021-04-25	0.644	0.011	0.356	2.0	0.002	0.102	26
		RG_GC	RG_GC_MW-M-01_2021-04-20	0.071	0.048	0.099	1.1	<0.001	<0.053	38
			RG_GC_MW-M-02_2021-04-20	0.114	0.026	0.092	1.2	<0.001	<0.053	22
			RG_GC_MW-M-03_2021-04-22	0.191	0.056	0.234	1.2	<0.001	0.085	21
			RG_GC_MW-M-04_2021-04-22	0.170	0.024	0.059	1.2	<0.001	0.056	17
			RG_GC_MW-M-05_2021-04-22	0.428	0.008	0.268	1.5	<0.001	<0.053	20
			RG_GC_MW-M-06_2021-04-22	0.199	0.016	0.128	2.6	<0.001	0.106	16
			RG_GC_MW-M-07_2021-04-22	0.197	0.042	0.051	1.9	<0.001	<0.053	16
			RG_GC_MW-M-08_2021-04-21	2.8	0.009	0.399	1.1	0.006	0.071	20
			RG_GC_MW-M-09_2021-04-22	0.886	0.014	0.944	1.9	0.004	0.161	38
	June	RG_ER	RG_ER_MW-M-08_2021-06-22	0.419	0.050	0.305	3.5	<0.001	0.087	43
Rainbow Trout	April	RG_SC	RG_SC_RB-M-01_2021-04-20	0.361	0.021	0.926	1.1	<0.001	<0.053	53
		RG_ER	RG_ER_RB-M-01_2021-04-23	0.558	0.023	0.225	2.7	0.002	0.089	28
	May		RG_ER_RB-M-02_2021-05-29	0.773	0.012	0.903	2.5	0.002	0.084	56
	June		RG_ER_RB-M-03_2021-06-23	0.228	0.026	<0.043	1.7	<0.001	<0.070	11
		RG_GC	RG_GC_RB-M-01_2021-06-22	0.484	0.020	0.463	1.1	0.003	<0.070	12
			RG_GC_RB-M-02_2021-06-22	0.769	0.023	0.098	2.7	0.003	<0.070	32
			RG_GC_RB-M-03_2021-06-23	0.218	0.025	0.083	1.3	<0.001	<0.070	25
			RG_GC_RB-M-04_2021-06-23	0.177	0.035	0.160	2.1	<0.001	<0.070	19
			RG_GC_RB-05-M_2021-06-25	0.248	0.022	0.064	1.2	<0.001	<0.070	12
Westslope Cutthroat Trout	April	RG_SC	RG_SC_WCT-M-01_2021-04-20	0.331	0.017	0.589	1.5	<0.001	<0.053	45
			RG_SC_WCT-M-02_2021-04-20	0.363	0.007	0.349	1.2	0.002	<0.053	20
			RG_SC_WCT-M-03_2021-04-24	0.717	0.019	0.112	3.9	0.002	0.203	20
		RG_ER	RG_ER_WCT-M-01_2021-04-21	1.9	0.009	0.834	12	0.006	0.356	23
			RG_ER_WCT-M-02_2021-04-23	0.237	0.008	0.080	0.526	<0.001	<0.053	14
			RG_ER_WCT-M-03_2021-04-23	2.0	0.016	0.516	8.7	0.006	0.465	33
			RG_ER_WCT-M-04_2021-04-24	12	0.037	0.803	184	0.061	5.0	30
			RG_ER_WCT-M-05_2021-04-24	3.6	0.011	0.104	55	0.014	1.8	19
			RG_ER_WCT-M-06_2021-04-25	0.555	0.015	0.145	1.1	<0.001	<0.053	21
			RG_ER_WCT-M-07_2021-04-27	0.483	0.013	0.286	1.6	0.001	0.085	45
			RG_ER_WCT-M-08_2021-04-27	1.7	0.014	0.427	3.4	0.001	0.204	22
		RG_GC	RG_GC_WCT-M-01_2021-04-20	0.920	0.013	0.629	1.8	<0.001	<0.053	82
			RG_GC_WCT-M-02_2021-04-20	0.550	0.010	0.155	0.907	<0.001	<0.053	22
			RG_GC_WCT-M-03_2021-04-22	1.0	0.007	0.245	2.1	<0.001	0.189	42
			RG_GC_WCT-M-04_2021-04-22	1.1	0.009	0.097	1.0	<0.001	0.114	32
			RG_GC_WCT-M-06_2021-04-22	0.562	0.014	0.367	1.0	<0.001	<0.053	18
			RG_GC_WCT-M-07_2021-04-22	0.672	0.018	0.146	1.0	<0.001	<0.053	26
			RG_GC_WCT-M-08_2021-04-23	0.987	0.011	0.113	1.4	<0.001	<0.053	22
			RG_GC_WCT-M-09_2021-04-23	1.3	0.017	1.1	5.0	0.004	0.137	54
	May	RG_SC	RG_SC_WCT-M-04_2021-05-29	0.358	0.028	0.861	2.3	<0.001	0.269	23
Yellow Perch	April	RG_SC	RG_SC_YP-M-01_2021-04-20	1.1	0.020	0.150	2.7	0.002	0.055	56
			RG_SC_YP-M-02_2021-04-20	0.480	0.028	0.113	1.5	<0.001	<0.053	30
			RG_SC_YP-M-03_2021-04-20	0.203	0.023	0.114	1.5	<0.001	<0.053	31
			RG_SC_YP-M-04_2021-04-21	0.258	0.013	0.110	1.5	0.003	0.062	19
			RG_SC_YP-M-05_2021-04-21	0.176	0.028	0.103	1.5	<0.001	<0.053	36
		RG_ER	RG_ER_YP-M-01_2021-04-21	0.290	0.013	0.174	1.7	<0.001	0.059	47
			RG_ER_YP-M-02_2021-04-21	0.342	0.007	0.066	1.5	<0.001	<0.053	29
			RG_ER_YP-M-03_2021-04-21	0.175	0.017	<0.037	0.874	<0.001	<0.053	26
			RG_ER_YP-M-04_2021-04-23	0.426	0.017	0.107	1.5	0.002	0.055	36

Table G.5: Total Metal Analysis for Non-Lethal Sport Fish MuscleTissue Samples, Koocanusa Reservoir Monitoring Program, 2021

Species	Month	Area	Sample ID	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc
				mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Yellow Perch	April	RG_ER	RG_ER_YP-M-05_2021-04-23	0.381	0.024	0.105	1.9	<0.001	<0.053	26
			RG_ER_YP-M-06_2021-04-23	1.0	0.014	0.250	1.5	<0.001	0.072	30
			RG_ER_YP-M-07_2021-04-23	0.331	0.014	0.166	1.5	<0.001	0.066	29
			RG_ER_YP-M-08_2021-04-23	0.279	0.009	0.060	1.2	<0.001	<0.053	19
			RG_ER_YP-M-09_2021-04-23	0.408	0.039	0.088	1.5	<0.001	<0.053	26
		RG_GC	RG_GC_YP-M-01_2021-04-20	0.393	0.021	0.065	2.0	<0.001	0.122	25
			RG_GC_YP-M-02_2021-04-20	0.941	0.021	0.098	4.9	0.002	0.137	49
			RG_GC_YP-M-03_2021-04-21	0.274	0.015	0.069	1.5	<0.001	<0.053	22
			RG_GC_YP-M-04_2021-04-21	0.933	0.019	0.868	4.0	0.002	0.607	58
			RG_GC_YP-M-05_2021-04-22	0.363	0.029	0.158	2.6	0.002	0.066	29
			RG_GC_YP-M-06_2021-04-22	0.423	0.031	0.423	2.6	0.002	0.097	31
			RG_GC_YP-M-07_2021-04-22	0.322	0.041	0.134	1.1	<0.001	<0.053	47
			RG_GC_YP-M-08_2021-04-22	0.278	0.016	0.342	1.5	<0.001	<0.053	26
			RG_GC_YP-M-09_2021-04-23	0.210	0.042	0.201	1.5	<0.001	<0.053	23