

Site C Clean Energy Project

Methylmercury Monitoring Plan (MMP) Implementation: 2022 Report

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Site C Clean Energy Project
Methylmercury Monitoring Plan
(MMP) Implementation:
2022 Report



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EXECUTIVE SUMMARY

Azimuth Consulting Group Inc. (Azimuth) has prepared this report on behalf of BC Hydro to document the 2022 implementation of Site C's Methylmercury Monitoring Plan (MMP). While baseline monitoring started more than a decade ago, 2022 was the first event expressly following the development of the MMP and the first event conducted in a single year.

Reservoir creation is known to temporarily increase fish mercury concentrations due to increased production of methylmercury caused by the inundation of terrestrial soils. The MMP¹ was developed to address methylmercury-related conditions in the provincial Environmental Assessment Certificate (EAC) and Federal Decision Statement (FDS) issued for the Site C Clean Energy Project (the Project). MMP development was a collaborative effort involving Indigenous Nations, Health Authorities, BC Hydro, and Azimuth through the Site C Methylmercury Subcommittee.

The objectives of the MMP are to:

- Monitor changes in methylmercury concentrations in fish prior to Project effects (baseline conditions) and after reservoir formation during Project operations;
- Work with Indigenous Nations to plan and implement the MMP; and
- Work with Health Authorities to effectively communicate fish consumption guidance for people eating fish caught in the Site C reservoir and downstream of the Project in the Peace River.

The MMP has three main components:

- 1. Core program;
- 2. Indigenous Community Sampling Program (ICSP); and
- 3. Fish Consumption program.

Ultimately, these three components are combined to help manage mercury-related health risks from eating fish affected by the Project. Key results for the 2022 MMP program are provided below.

¹ The MMP can be downloaded here: https://www.sitecproject.com/sites/default/files/site-c-methylmercury-monitoring-plan.pdf



Core Program

The foundation of the MMP. This component has the mandate of characterizing mercury in fish and supporting media and tracking changes over time and space in relation to Site C. The Core program focuses on six target fish species: Bull Trout, Walleye, Rainbow Trout, Mountain Whitefish, Longnose Sucker, and Redside Shiner. Sampling is conducted in the mainstem of the Peace River, extending from Peace Canyon Dam past the Project and down through Many Islands, Alberta. In addition to fish, the Core program includes mercury-focused sampling of supporting media including surface water, porewater, sediments, benthic invertebrates, and zooplankton to help understand how changes in the food web might be affecting fish mercury concentrations.

The 2022 event provided an opportunity to test MMP methods and to collect additional data prior to reservoir creation. Current plans are to fill the Site C reservoir in the late summer of 2024 becoming operational in December 2024. Once Site C is operational, the MMP will be conducted annually through 2034, then every five years thereafter until fish mercury concentrations stabilize.

Mercury in Supporting Media

The full complement of supporting media (surface water, porewater, sediments, benthic invertebrates, and zooplankton)² was sampled in 2022 to characterize mercury-related conditions prior to filling the reservoir. These 2022 results were compared to historical data and will be important in characterizing future changes related to reservoir formation.

Mercury in Fish

In 2022, tissue mercury samples were collected from 622 fish, the vast majority from the six targeted species. Combined with other fish mercury data collected since 2008 to characterize conditions prior to reservoir creation, 1,973 fish mercury samples were included in the analysis

² Supporting media sampling involved chemical analysis of mercury and parameters influencing mercury cycling and uptake into the food chain. Five components were investigated: surface water which is typically very low in mercury, but is expected to increase with reservoir formation; sediment and porewater representing the matrix where mercury methylating bacteria reside; and, benthic invertebrates and zooplankton which are a key link in the food chain between bacteria and fish.



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representing three time periods: 2008–2010, 2017–2021, and 2022³. Overall, fish mercury concentrations in 2022 were similar to the 2017–2021 period. The 2022 data were used to develop updated fish consumption guidance for the Peace River between Peace Canyon Dam and Many Islands, Alberta (**Table ES-1**).

Indigenous Community Sampling Program

This Indigenous-implemented component is complementary to the Core program with inclusion of fish species and/or locations of particular interest to Indigenous Communities but that are not included in the Core MMP. The ICSP is coordinated by Azimuth, but all sampling is conducted by trained Indigenous Community Champions. There are three main objectives of the ICSP:

- Test the levels of mercury in fish species/locations that people eat, but that are not monitored in the Core MMP;
- Provide opportunities for Indigenous Nations to participate in monitoring changes to the environment from the Project; and
- Improve food security and food sovereignty for Indigenous Nations by building skills and knowledge related to methylmercury in fish.

Training

Three sessions were conducted in 2022 at the Northern Lights College in Fort St. John to train Community Champions. These sessions included a presentation to help participants better understand methylmercury in aquatic environments and what changes occur when reservoirs are created. It also provided an overview of the MMP. Following the presentation, hands-on training sessions were provided that demonstrated how to collect a fish tissue sample. Trained participants were provided with a 'fish kit' containing all the tools needed to collect fish tissue for mercury samples. A total of 31 participants from the 13 Indigenous communities potentially affected by the Project took part in the 2022 training sessions.

³ The 2022 data are the first fish mercury data collected following the MMP; while we do not expect to see meaningful changes relative to the 2017-2021 time period, 2022 was treated as a stand-alone event to match the year-specific approach that will be used once Site C is in the operations phase (i.e., after reservoir filling). Given that we have observed temporal changes in fish mercury concentrations since the baseline period (Azimuth 2021), treating 2022 as a discrete year provides an up-to-date characterization of conditions prior to reservoir filling. That said, there were no meaningful differences between the two time periods, so the 2022 data could be amalgamated with the 2017-2021 data if needed in the future.



Sampling

In 2022, Community Champions from Dene Tha', Doig River, and Saulteau First Nation collected 33 fish samples. Samples came from Moberly Lake (26), the Peace-Smoky River confluence (4), and Williston reservoir (3). Eight species of fish were collected, including three MMP target species (Walleye, Mountain Whitefish, and Longnose Sucker) and five non-target species (Northern Pike, Burbot, Lake Whitefish, Lake Trout, and White Sucker).

Mercury concentrations in the 2022 ICSP fish broadly followed size related trends observed in the broader MMP with larger older fish tissue containing high concentrations. Insectivorous species such as Rainbow Trout and Mountain Whitefish had lower mercury levels, while piscivorous species higher in the food web, such as Walleye, Burbot, and Northern Pike, had higher mercury concentrations.

Fish Consumption Program

This component of the MMP focuses on understanding how much fish Indigenous and non-Indigenous people in the Peace Region eat. Two strategies are being used to collect this information: (1) analyzing information from existing sources, and (2) collecting new data.

Existing Data on Baseline Consumption

This task started in 2022 and focused on extracting information from two main sources:

First Nations, Food, Nutrition, and Environment Study (FNFNES). This study looked at the traditional diet of adult Indigenous people living on reserves south of 60° latitude in Canada. Six of the 13 Indigenous Nations potentially affected by the Project participated in the study.

Country Foods Harvest Questionnaires. As part of the Site C environmental assessment process, data on harvest and consumption of traditional foods, including fish, was collected in 2010 and 2011 for the Duncans First Nation and Horse Lake First Nation.

These two studies provide useful data to characterize baseline fish consumption for the Project. However, three key limitations were identified: the data are now over a decade old, targeted adults only, and only included wild-caught fish. Consequently, efforts were also made to collect new data on baseline consumption that also included information on how much fish are eaten by children and how much fish from stores or restaurants people eat.

New Data on Baseline Consumption

This task started in 2022 and involved two activities:

Designing and implementing a creel survey fish consumption questionnaire; and

 Having discussions with Indigenous Nations to determine interest in participating in a baseline fish consumption survey.

Creel Survey Fish Consumption Questionnaire. This Azimuth-designed survey was conducted on the Peace River.

A questionnaire on how much fish people eat was administered by Aski Reclamation Inc. and LGL Ltd. from July 2022 through June 2023 as part of a broader survey on fish under the Peace River Creel Survey (Mon-2, Task 2c of the FAHMFP). The interviews occurred from Peace Canyon Dam to Many Islands, Alberta. Nearly a hundred fish consumption questionnaires were completed.

Discussions with Indigenous Nations. Indigenous Nations were provided information on MMP baseline fish consumption at a variety of occasions, including meetings of the Site C Environmental Forum, the Site C Methylmercury Subcommittee, and at Quarterly Project Update meetings with individual Nations. Four Nations expressed interest in participating in a process to provide new data on baseline fish consumption: Blueberry River First Nation, Halfway River First Nation, McLeod Lake Indian Band, and Saulteau First Nations. Follow-up discussions regarding the timing and format of data collection continued into 2023.

Baseline Fish Consumption Data Analyses and Reporting

It is anticipated that collecting and analyzing the baseline fish consumption data will be completed in 2024, and a stand-alone report on fish consumption during the baseline period will subsequently be issued.



Site C MMP – 2022 Report

Figure ES1-1. 2022 MMP fish consumption guidance

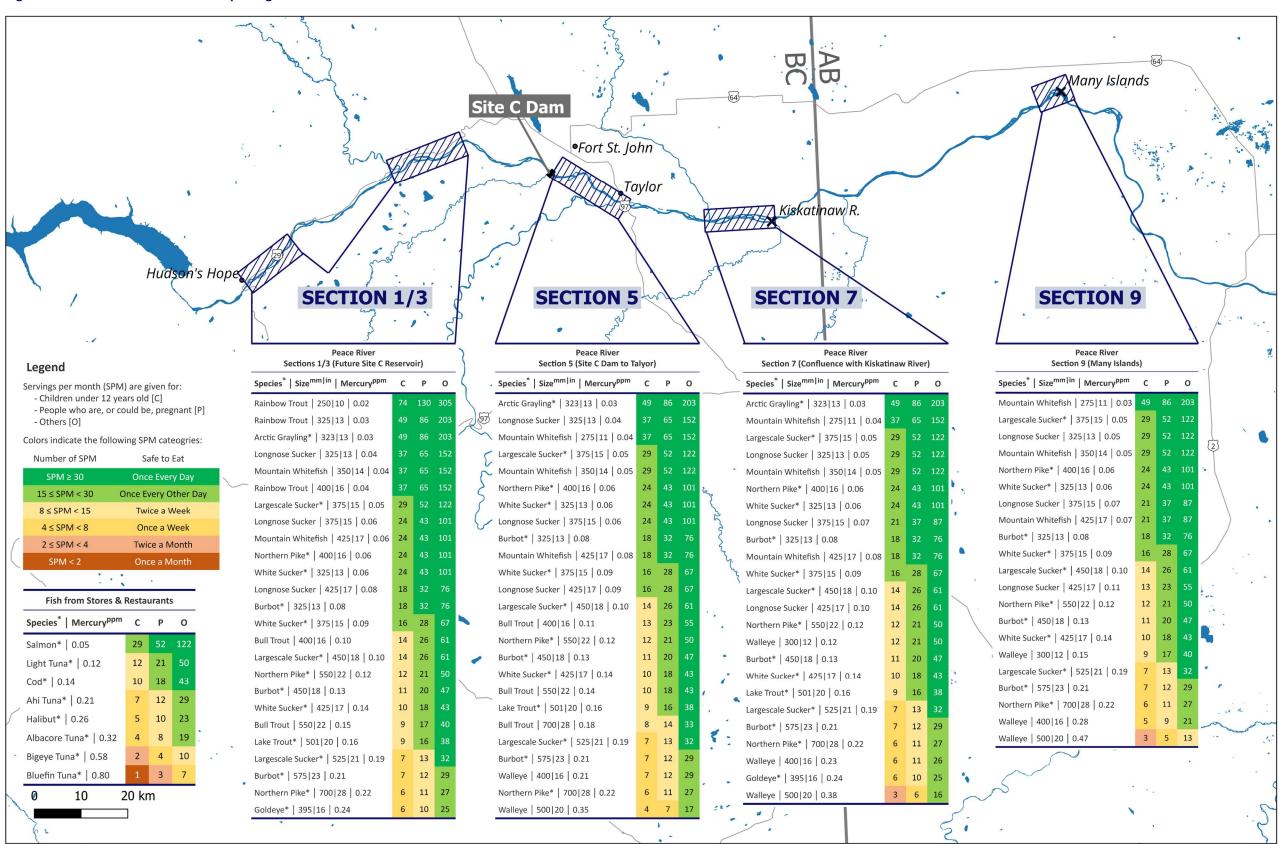


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We acknowledge this research was conducted on the traditional territory of Treaty 8 First Nations of Dunne Zaa, Cree, and Tse'khene cultural descent.

The report was written by Gary Mann, Norm Healey, Mehdi Aqdam, Ian McIvor, Clare Kilgour, and Thomas Smith from Azimuth Consulting Group Inc. Supporting statistical analyses were conducted by Mehdi Aqdam with input from Gary Mann and Brian Pyper. Development of fish consumption guidance was led by Norm Healey with support from Mehdi Aqdam and input from Gary Mann. Ian McIvor coordinated the Indigenous Community Sampling Program (ICSP) and led the 2022 reporting effort. Lynne Graham edited the report.

We gratefully acknowledge the following support:

- Dave Hunter, Nich Burnett and Brent Mossop (BC Hydro) commissioned this work, provided input into the statistical analyses and reviewed and provided helpful comments on the draft report.
- Site C's Methylmercury Subcommittee provided input on the development of the Methylmercury Monitoring Plan (MMP) and on the 2022 implementation of the plan through discussions on results.
- Dustin Ford, Demitria Burgoon, and the rest of the team at WSP Canada Inc. that
 conducted the Peace River Large Fish Indexing Survey (Mon-2, Task 2a) under the Site C
 Fisheries and Aquatic Habitat Monitoring and Follow-up Program (FAHMFP), which has
 provided the bulk of the fish samples analyzed for mercury since 2017. Dustin also built
 the database used to house the MMP fish and invertebrate dataset.
- Kevin Ganshorn (Ecofish Research Ltd) and Patrick Beaupre (Aski Reclamation) led the team responsible for sampling surface water, porewater, sediment, benthic invertebrates, and zooplankton in 2022 for the MMP; this sampling was conducted in conjunction with FAHMFP Mon-8/9 surface water and sediment monitoring. Ecofish is housing the MMP chemistry data for surface water, porewater, and sediment.



ACRONYMS

BB Burbot
BT Bull Trout
C Carbon

CSU Largescale Sucker

DOC Dissolved Organic Carbon
DQOs Data Quality Objectives

EAC Environmental Assessment Certificate
EIS Environmental Impact Statement

FAHMFP Fisheries and Aquatic Habitat Monitoring Follow-up Program

FDS Federal Decision Statement

GE Goldeye
GR Arctic Grayling

Hg Mercury

ICSP Indigenous Community Sampling Program

LOI Loss on Ignition
LSU Longnose Sucker
LT Lake Trout

MDL Method Detection Limit

MeHg Methylmercury

MMP Methylmercury Monitoring Program

MW Mountain Whitefish

N Nitrogen NP Northern Pike

pTDI Provisional Tolerable Daily Intake

QC Quality control RB Rainbow Trout

RPD Relative Percent Difference

RSC Redside Shiner

SIA Stable Isotope Analysis

THg Total Mercury

TIC Total Inorganic Carbon
TOC Total Organic Carbon
TSS Total Suspended Solids

WP Walleye WSU White Sucker

 $\delta^{13}C$ Carbon Stable Isotope Ratios $\delta^{15}N$ Nitrogen Stable Isotope Ratios

%MeHg Percent methylmercury



1 INTRODUCTION

Azimuth Consulting Group Inc. (Azimuth) prepared this report on behalf of BC Hydro to document the results of the 2022 implementation of the Methylmercury Monitoring Plan (MMP; see **Section 1.2** below for more information).

1.1 Background

Azimuth has been working with BC Hydro since 2009 to help address concerns regarding potential changes in mercury concentrations in fish from the the Site C Clean Energy Project ("the Project"). Reservoir creation is known to temporarily increase fish methylmercury concentrations (Schetagne and Therien 2013; Bodaly et al. 2007) which is why it was identified as a technical focus area in the environmental impact statement (EIS) for the Project (BC Hydro 2013).

To support the EIS, Azimuth:

- Characterized mercury in the aquatic environment⁴;
- Developed predictions of the magnitude, timing, and extent of future changes in fish mercury levels expected with reservoir creation; and
- Estimated health risks from eating fish.

1.2 Methylmercury Monitoring Plan (MMP)

Azimuth worked with BC Hydro in collaboration with the Site C Methylmercury Subcommittee to develop the MMP for Site C (BC Hydro 2022; see text box). The Methylmercury Subcommittee, established in March 2020, supports the Site C Environmental Forum and includes:

- Representatives from five of the Indigenous Nationsaffected by the Project;
- Representatives from First Nations Health Authority and Northern Health;
- Representatives from BC Hydro; and
- Technical specialists from Azimuth.

In addition, the Subcommittee includes guest members from Health Canada, BC Ministry of Health, and Alberta Health.

⁴ Sampling targeted total mercury and methylmercury in surface water, sediment, porewater, zooplankton, benthic invertebrates, and fish.



1

The purpose of the Methylmercury Subcommittee is to:

- Address questions regarding methylmercury and human health asked by Indigenous Nations and Health Authorities;
- Collaboratively develop the MMP for the Project, incorporating local knowledge, Traditional Knowledge, and cultural values important to Indigenous Nations;
- Support information sharing about methylmercury;
- Support the development of approaches/tools to effectively communicate information about methylmercury and health risks associated with consuming fish to Indigenous Nations and Health Authorities;
- Support the communication of this information to the broader Environmental Forum and community members; and
- Support implementation of the MMP.

Methylmercury Monitoring Plan (MMP)

The MMP addresses methylmercury-related conditions in the Environmental Assessment Certificate (EAC) and Federal Decision Statement (FDS) issued to the Project.

The MMP was a collaborative effort involving Indigenous Nations, Health Authorities, BC Hydro, and Azimuth through the Site C Methylmercury Subcommittee.

The objectives of the MMP are to:

- Monitor methylmercury concentrations in fish prior to Project effects (baseline conditions) and changes after reservoir formation, during Project operations;
- Work with Indigenous Nations to plan and implement the MMP; and
- Work with Health Authorities to effectively communicate fish consumption guidance for people who eat fish caught in the Site C reservoir and downstream of the Project in the Peace River.

The complete MMP is available here: https://www.sitecproject.com/sites/default/files/site-c-methylmercury-monitoring-plan.pdf

The MMP includes background information on mercury (Hg) in aquatic ecosystems, including reservoirs, and a summary of the Site C EIS predictions for methylmercury in fish (BC Hydro 2022; link in text box).

The MMP has three main components:

- Core program. The Core program is the foundation of the MMP. Its mandate is to characterize
 mercury present in fish and supporting media and to track changes over time and space.
 Sampling is conducted in conjunction with sampling under the Site C Fisheries and Aquatic
 Habitat Monitoring and Follow-up Program (FAHMFP, BC Hydro 2015).
- 2. **Indigenous Community Sampling Program (ISCP).** This Indigenous-implemented component is complementary to the Core program in that fish species and/or locations of particular interest

- to Indigenous Communities are sampled. The ICSP is coordinated by Azimuth, but all sampling is conducted by trained Community Champions.
- 3. **Fish Consumption Program.** This component focuses on understanding fish consumption behaviour, i.e., how much fish is consumed, what species are consumed, and where were they caught. Consumption behaviour is recorded by age and gender for Indigenous and non-Indigenous consumers.

These three components are later combined to help manage mercury-related health risks related to eating fish affected by the Project.

1.3 Objectives

The objectives of this 2022 MMP Annual Report are to:

- Summarize available data for mercury in supporting media (surface water, porewater, sediment, zooplankton, and benthic invertebrates) and highlight the Core MMP results for 2022 (Section 3);
- Summarize available fish data for tissue mercury and stable isotope, with an emphasis on characterizing length-mercury relationships and highlighting the Core MMP results for 2022 (Section 4);
- Provide an overview of the 2022 ICSP (Section 5);
- Provide updated fish consumption guidance based on the 2022 MMP results (Section 6); and
- Report 2022 MMP activities related to characterizing baseline fish consumption (Section 7).

2 SITE C PHASING AND MMP SAMPLING LOCATIONS

2.1 Site C Development Phasing

Project construction started in summer 2015 and is expected to be completed in 2024. The MMP describes the expected changes in methylmercury concentrations in the environment that are associated with key stages of Project development. These predicted changes for a given phase are based on the degree of flooding of terrestrial habitat. When soils are flooded and bacteria decompose the organic matter, methylmercury production increases as a by-product of the bacterial decomposition. The expected changes for key development phases/sub-phases are as follows:

- Construction: Pre-Diversion (fall 2015 to fall 2020). Peace River water level changes will be natural, so no changes would be expected.
- Construction: River Diversion (fall 2020 to late summer 2024 [planned]). Diversion of the Peace River around the dam site started in fall 2020. Water level rises created a headpond upstream of the dam construction site, with the potential to extend up to 18 km upstream during high-water events. However, the overall potential for meaningful increases in methylmercury production during this period is low, because (1) most of the land inundated by the diversion headpond was routinely under water during high flow events that occurred prior to river diversion, and (2) the duration for which these areas are inundated during river diversion has been limited.
- Construction: Reservoir Filling (summer 2024 to winter 2025). Reservoir filling is expected to take about four months to complete; it is currently scheduled for late summer 2024. During this time, water levels will rise between 0.3 m and 3 m a day until the reservoir is 52 m deep close to the dam, 36 m deep at the Halfway River, and 18 m deep near Hudson's Hope. At this stage, as terrestrial habitat within the reservoir footprint becomes inundated, we expect methylmercury production to start ramping up, leading to initial increases in methylmercury concentrations, particularly in flood-zone sediments (including porewater) and surface water.
- Operations (starting winter 2025). When filled, the average width of the reservoir will be two to three times that of the current Peace River. The 83 km long reservoir will have a total surface area of 9,330 ha, of which 5,550 ha will be newly inundated terrestrial habitat. Increased methylmercury production will lead to the onset of higher bioaccumulation into the food web.
 One factor that could moderate methylmercury production in newly flooded areas is high rates of sediment deposition related to bank erosion occurring during and post reservoir filling as described in the EIS (BC Hydro 2013, Vol. 2: App. I). Because information regarding this phenomenon in existing reservoirs is lacking (BC Hydro 2013, Vol. 2: App. J3), sediment

deposition due to bank erosion was not explicitly considered in the mercury modelling; however, model test runs showed that high sedimentation of largely inorganic material had the potential to considerably reduce methylmercury production and diminish predicted increases in fish mercury concentrations. Ongoing monitoring should help to gain insights into how this plays out. Either way, we expect to see increases in methylmercury throughout the ecosystem; it is only the magnitude of change that could be reduced.

As described in the MMP (BC Hydro 2022), fish mercury concentrations are expected to increase by an average of three to four times current levels (characterized in **Section 4**) within five to eight years after filling the reservoir. After that, they are expected to gradually return to levels similar to natural lakes and rivers in the region by 20 to 30 years after reservoir creation (BC Hydro 2013, Vol. 2: Sec. 11.9). Downstream in the Peace River, possibly as far as Many Islands, Alberta, fish mercury concentrations were predicted to double, on average, before returning to a new baseline level (BC Hydro 2013, Vol. 2: Sec. 11.9).

In summary, while Project construction began in fall 2015, none of the activities conducted to date resulted in flooding significant amounts of the terrestrial habitat planned to be eventually covered by the reservoir footprint. Consequently, we do not anticipate seeing meaningful Project-related changes to methylmercury concentrations in water, sediment (including porewater), zooplankton, benthic invertebrates, or fish through 2022.

2.2 Sampling Locations

The geographic area of the Core MMP extends for more than 200 river km from the Peace Canyon Dam to the Many Islands area of Alberta (**Figure 2-1**). Core MMP sampling locations for fish and supporting media (surface water, porewater, sediment, zooplankton, and benthic invertebrates) are described in **Table 2-1**. Most of these stations have a monitoring history extending to the early baseline period. When presenting the baseline data in **Sections 3** and **4**, notable deviations in station names or locations will be documented.



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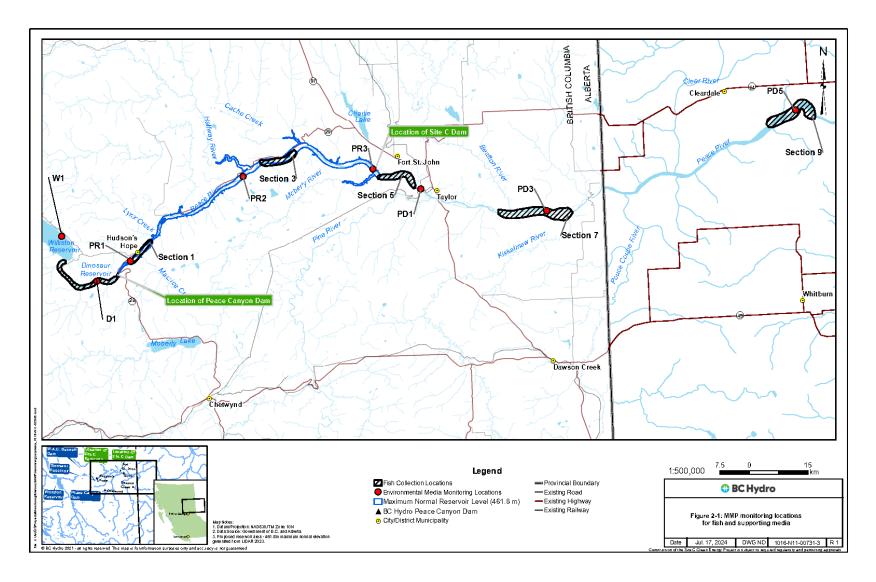
Table 2-1. Core MMP sampling locations on the Peace River for fish and supporting media

		Fish Sampling Areas			Supporting Media Sampling Areas		
Study Area	General Location	Name (Section #)	Description	River Km Extent (kms from WAC Bennet Dam)	Name (ID)	Description	
	Peace-Canyon dam at upstream terminus and Site C dam at downstream terminus.	Upper Site C* (Section 1)	Downstream end of Peace River Canyon to Lynx Creek confluence	25.0 to 34.0	Upper Site C (PR1)	Near the community of Hudson's Hope	
Site C Reservoir		Mid - Lower Site C* (Section 3)	Halfway River confluence to Cache Creek confluence	65.8 to 82.1	Mid Site C (PR2)	Immediately upstream of Halfway River conflence	
		(Section 3)	Cache Creek confidence		Lower Site C (PR3)	Immediately upstream of Moberly River confluence	
Site C Dam	-	-	-		-	-	
Peace River Downstream	Immediately downstream of Site C dam.	Site C Tailrace (Section 5)	Moberly River confluence to CN Railway bridge	105.0 to 117.7	Site C Tailrace (PD1)	Downstream of Site C dam, immediately upstream of Pine River confluence	
	Approximately 45 km downstream of Site C dam.	Beatton-Kiskatinaw (Section 7)	Beatton River confluence to Kiskatinaw River confluence	140.0 to 158.0	Beatton- Kiskatinaw (PD3)	Downstream of confluence with Beatton River but upstream of the Kiskatinaw River confluence	
	Approximately 120 km downstream of Site C dam.	Many Islands (Section 9)	Many Islands Park area	217.0 to 231.0	Many Islands (PD5)	In the vicinity of Many Islands, AB. Expected downstream terminus of Project-related mercury impacts.	

Notes: * After the Site C reservoir is created, Sections 1 and 3 will be combined.

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Figure 2-1. Baseline monitoring locations for fish and supporting media



3 SUPPORTING MEDIA

This section summarizes the 2022 Core MMP supporting media results and puts them into context with available historical data. Supporting media consist of surface water, porewater, sediments, benthic invertebrates, and zooplankton. A data quality assessment for 2022 is included in **Appendix A**.

3.1 Overview of Available Data

The first mercury-focused investigation of surface water, porewater, sediments, zooplankton, and benthic invertebrates conducted in the region was done in 2000 and 2001 in the Williston reservoir (Baker et al. 2002). While the study is not directly applicable to the Peace River, it provides some useful historical context for the total mercury and methylmercury amounts in these supporting media.

Similar to fish, baseline sampling related to mercury for the Project was started in 2010/2011 to support the EIS. These efforts were holistic (i.e., included all supporting media types mentioned above), and they focused on the Peace River. When baseline monitoring resumed under the FAHMFP in 2016 (BC Hydro 2015), water and sediment were sampled for mercury. In 2022, the first full MMP event was conducted; it included surface water, sediment, porewater, zooplankton, and benthic invertebrates.

Details of data collected under the MMP and other historical data are provided in the following sections.

3.1.1 MMP Supporting Media Data

The 2022 event was the first monitoring cycle conducted under the MMP (BC Hydro 2022). An overview of the 2022 program is presented in **Table 3-1** (locations shown in **Figure 2-1**). The Core MMP program focuses primarily on total mercury and methylmercury, as well as other analytes known to influence methylation or bioaccumulation. Media-specific ancillary analytes that are potentially important in understanding mercury patterns in the ecosystem are tracked as supplemental information. In addition to the MMP-specific events, we were able to expand the supplemental dataset by including data from the Site C reservoir and Peace River Water and Sediment Quality Monitoring Program (Mon-8/9 of the FAHMFP). More details regarding the program and supplemental data are provided in **Appendix B**.

The supporting media sampling in 2022 was conducted by Ecofish Research Ltd. (Ecofish) and Aski Reclamation LP (Aski) in conjunction with Mon-8/9. Note that two other sampling locations were included in 2022 for surface water and zooplankton, to obtain additional baseline information on background watershed mercury dynamics:



- Williston reservoir (W1) upstream of the WAC Bennett Dam. Surface water samples were collected at both shallow (S; 0.2 m) and deep (D; 5 m) depths; and
- **Dinosaur reservoir (D1)** upstream of Peace Canyon Dam. Surface water samples were collected at both shallow (S; 0.2 m) and deep (D; 5 m) depths.

To make certain results easier to present, the MMP and non-MMP sampling stations were grouped based on their locations:

- Reservoirs. The Williston and Dinosaur locations;
- Peace River Upstream. Locations between Peace Canyon Dam and Site C;
- Peace River Downstream. Locations downstream of Site C to Many Islands, Alberta.



Table 3-1. Overview of 2022 sampling of Core MMP supporting media

Media Type	Locations	Timing
Surface Water	W1*, D1*, PR1, PR2, PR3, PD1, PD3, and PD5	Two events: Aug 20-23 Oct 16-24
Porewater	PR1, PR2, PR3, PD1, PD3, and PD5	One event: Aug 20-23
Sediment	PR1, PR2, PR3, PD1, PD3, and PD5	One event: Aug 17-26
Benthic Invertebrates	PR1, PR2, PR3, PD1, PD3, and PD5	One event: Deploy Aug 3-5 Retrieve Sep 26 - Oct 1
Zooplankton	W1*, D1*, PR1	Two events: Aug 20-23 Oct 16-24 ²

Notes: * = non-MMP locations; 2 = no PR1 sample

3.1.2 Historical Supporting Media Data

Several efforts to sample environmental media were conducted as part of Site C-related monitoring programs over the baseline period (from 2010 to 2022). For this analysis, data from these programs that relates to surface water, porewater, sediment, benthic invertebrates, and zooplankton have been compiled to provide a holistic view of baseline conditions in the Peace River.

The specific years of data included in the analysis for each medium are listed below in **Table 3-2**.

Table 3-2. Historical supporting media data relevant to the MMP.

Year	Media Sampled	Data Source
2019	Surface water, sediment	Saulteau EBA 2020
2018	Surface water, sediment	Saulteau EBA 2019
2017	Surface water, sediment	Saulteau EBA 2018
2016	Surface water, sediment	Saulteau EBA 2017
2011	Benthic Invertebrates	Azimuth 2012
2010	Surface water, sediment, benthic invertebrates, zooplankton	Azimuth 2011
2001	Surface water, porewater, sediment, benthic invertebrates, zooplankton	Baker et al. 2002
2000	Surface water, porewater, sediment, benthic invertebrates, zooplankton	Baker et al. 2002



3.2 Surface Water

3.2.1 Overview

The MMP tracks changes in total mercury and methylmercury (filtered and unfiltered) in water to better understand how creating the reservoir will change the processes that contribute to the concentrations of mercury seen in fish. Most water quality studies refer to concentrations in unfiltered samples as "total" (e.g., total iron concentrations) and in filtered samples as "dissolved" (e.g., dissolved zinc concentrations). However, because we already use "total" to refer to the sum of all forms of mercury in a sample (i.e., total mercury), we will explicitly use the terminology "unfiltered" to refer to

Why Sample Surface Water?

Surface water typically has very low concentrations of total mercury and methylmercury. But following reservoir filling, concentrations are expected to rise, temporarily.

Increases in mercury and methylmercury concentrations in the water can be important for their uptake into the food chain in the Site C reservoir and downstream in the Peace River.

In addition to total mercury and methylmercury concentrations in water, other water quality analytes such as pH, sulphate, total and dissolved organic carbon, and total suspended solids (TSS) can impact concentrations of methylmercury in biota.

refer to the *sum* of the dissolved and particulate-bound mercury and "filtered" to refer to dissolved mercury (i.e., for either total mercury or total methylmercury). All total mercury and methylmercury concentrations for surface water in this MMP report are presented in ng/L (parts per trillion).

Collectively, surface water quality analyses provide insights into the forms of mercury present in water and whether the total mercury and methylmercury are predominantly bound to particulates (particulate-bound phase) or dissolved in the water (dissolved phase). In addition to their absolute concentrations, the relative amount of methylmercury to total mercury is a useful way to track mercury changes over time. It is calculated as follows: percent methylmercury = 100 * [MeHg]/[THg], where [] denotes filtered concentration, MeHg = methylmercury and THg = total mercury. Filtered samples directly provide results for the dissolved phase, while subtracting filtered concentrations from unfiltered concentrations provides results for particulate-bound mercury. Dissolved-phase methylmercury is considered the most available for bioaccumulation into the food web.

In addition to total mercury and methylmercury, the MMP targets a number of other water quality analytes known to influence mercury methylation or bioaccumulation (primary analytes; **Table 3-3**). In the interest of keeping this report readable, we focus on pH (In Situ), dissolved organic carbon (DOC),

and total suspended solids (TSS) in this section; the results of the other mercury-related secondary analytes are presented in **Appendix B**.

In 2022, surface water sampling for the MMP was conducted in August and October (**Table 3-1**; locations shown in **Figure 2-1**). Methods for surface water sampling and analysis for the Core MMP are described in **Appendix B**.

As noted in **Section 3.1.1**, Mon-8/9 results from the following non-MMP sampling stations and events in the mainstem of the Peace River were included when relevant (see Table 1 in Ganshorn et al. 2023 for full details):

- Peace Canyon (PC1). Mainstem of the Peace River downstream of Peace Canyon Dam;
- Peace Downstream (PD2). Downstream of the Pine River and upstream of the Beatton River;
 and
- **Peace Downstream (PD4).** Downstream of the Alces River and upstream of the Pouce Coupe River.

We also plotted key water quality data for tributaries monitored under Mon-8/9, although it was not part of the MMP. The purpose was to document current and past data for tributary inputs of total mercury and methylmercury to the Peace River, both upstream and downstream of the Project. Similar to the other ancillary analytes in **Table 3-3**, this supplemental data is provided in **Appendix B.** Data were available for the following tributaries:

- Halfway River (HD) and Moberly River (MD). Downstream sites on two tributaries discharging in the Peace River upstream of the Project; and
- Pine River (PINE), Beatton River (BEA), Kiskatinaw River (KR), and Pouce Coupe River (POUCE).
 Sites on tributaries discharging into the Peace River downstream of the Project.

3.2.2 2022 Data Quality Assessment

Data quality for the 2022 surface water program was assessed as described in **Appendix A**. Overall, data met the data quality objectives of the MMP.

3.2.3 2022 Results for Surface Water

The 2022 results for the primary mercury-related surface water quality analytes are described in the paragraphs below and presented in **Figure 3-1**. The points in this plot are coloured by project phase: green (indicating Baseline | Reference) for the reservoirs group, and purple (indicating Construction

phase) for both the upstream and downstream Peace River groups. Note that "x" represents samples with concentrations below laboratory reporting limits (MDL), the lowest concentration measurable by the laboratory.

Total mercury concentrations (filtered and unfiltered). Total mercury concentrations showed a strong seasonal pattern, with the highest concentrations occurring in the June event and tracking TSS. Unfiltered total mercury concentrations reached approximately 30 ng/L in that event but were generally less than 1 ng/L. Filtered total mercury concentrations were less than 2 ng/L in the June event and < 0.5 ng/L for the August and October events. Concentrations of both unfiltered and filtered total mercury progressively increased from Williston and Dinosaur, through the Peace River Upstream and the Peace River Downstream locations.

Methylmercury concentrations (both filtered and unfiltered). Methylmercury concentrations were generally less than 0.05 ng/L, but were higher at the three most downstream stations (PD3, PD4, and PD5) where they peaked around 0.25 ng/L in unfiltered samples and just above 0.05 ng/L in filtered samples.

Percent methylmercury. The percent mercury ranged from 1 to 4 %.

TSS, DOC, pH (In Situ). The data for ancillary analytes also show some seasonality, with TSS and DOC showing similar patterns of peaks in the first event followed by much lower concentrations later in the summer. pH (In Situ) generally ranged from 7.7 to 8.2 and appeared slightly higher at the Peace River Downstream stations. Like total mercury, above, TSS concentrations progressively increased downstream, and concentrations peaked over 300 mg/L. Results for DOC were generally between 2 and 5 mg/L, but peaked over 10 mg/L at the most downstream stations (PD4 and PD5) in the June event.

3.2.4 Temporal Trends for Surface Water

Temporal trends for the primary mercury-related surface water quality analytes are presented in **Figure** 3-2. Amalgamating data into spatial groups makes it easier to visualize general spatial-temporal patterns in the data. This will become even more helpful once water quality related to mercury changes after reservoir filling starts later in 2024. There do not appear to be substantial changes in total mercury or methylmercury in the Peace River Upstream group between the Baseline phase (2010 to 2012) and Construction phase (2016 to 2022 and ongoing).

These results are consistent with the low potential for meaningful changes in methylmercury concentrations in surface water associated with river diversion and dam construction described in **Section 2.1**.



3.2.5 Tables and Figures

Table 3-3. Overview of MMP surface water quality analytes

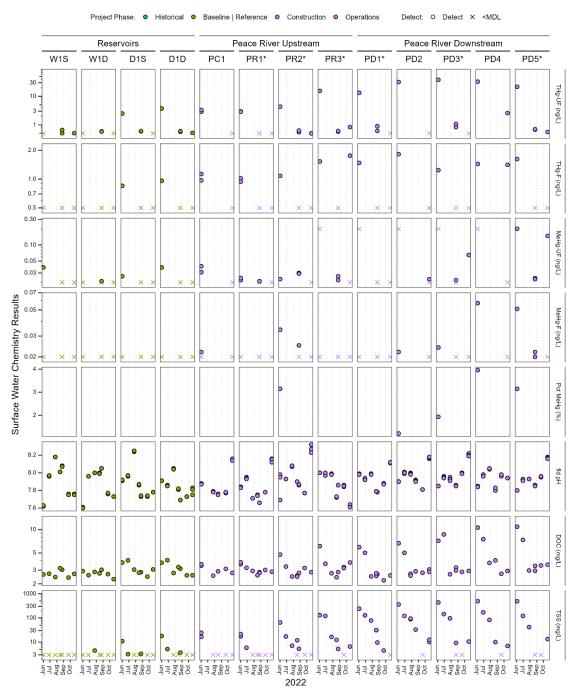
	Abbreviated			Data
Analyte	Name	Units	MDL	Type ¹
Metals				
Total Mercury - Filtered	THg-F	ng/L	0.5	1°
Total Mercury - Unfiltered	THg-UF	ng/L	0.5	1°
Calcium (Ca) - Dissolved	Ca	mg/L	0.05	2°
Magnesium (Mg) - Dissolved	Mg	mg/L	0.005	2°
Speciated Metals				
Methylmercury - Filtered	MeHg-F	ng/L	0.02	1°
Methylmercury - Unfiltered	MeHg-UF	ng/L	0.02	1°
Physical Tests				
Total Suspended Solids	TSS	mg/L	3	1°
pH (In Situ)	fld pH	-	0.1	1°
pH (lab)	lab pH	-	0.1	2°
Specific Conductivity (In Situ)	Cond	μS/cm	2	2°
Alkalinity, Total (as CaCO3)	Alk-Tot	mg/L	1	2°
Anions and Nutrients				
Chloride (CI)	Cl	mg/L	0.5	2°
Sulfate (SO4)	SO4	mg/L	0.3	2°
Fluoride (F)	F	mg/L	0.02	2°
Nitrate (as N)	NO3-N	mg/L	0.005	2°
Nitrite (as N)	NO2-N	mg/L	0.001	2°
Organic / Inorganic Carbon				
Dissolved Organic Carbon	DOC	mg/L	0.5	1°

Notes: 1° = primary analyte; 2° = secondary analyte.



Figure 3-1. Results for key mercury-related surface water quality analytes, by station and station group in 2022, for reservoir and Peace River locations

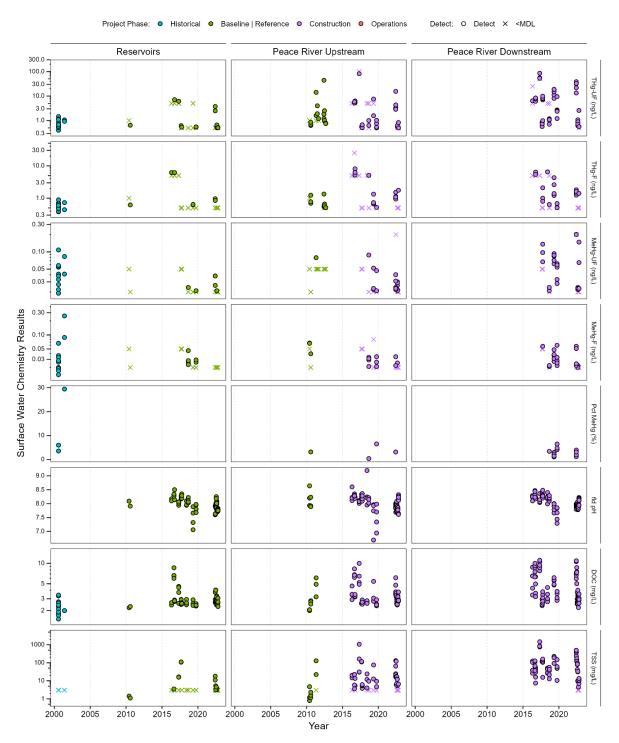
Site C MMP stations noted with asterisk (*); log scale for all analytes except Pct MeHg and fld pH



Note: For reservoir samples, station names ending in "S" were collected at the surface, while station names ending in "D" were collected at depth. MDL = Method Detection Limit

Figure 3-2. Temporal trends for key mercury-related surface water quality analytes, by station group, for reservoir and Peace River locations

Log scale for all analytes except Pct MeHg and fld pH





3.3 Porewater

3.3.1 Overview

The MMP targets total mercury and methylmercury in porewater. The purpose is to track changes related to developing the Site C reservoir to better understand the underlying processes that ultimately affect fish mercury concentrations. As the reservoir has not yet been filled, sampling conducted to date (Section 3.1) provides some indication of spatial and temporal patterns in porewater mercury concentrations prior to Site C.

Similar to surface water, we are also tracking other analytes in porewater that can affect the production or bioavailability of methylmercury. A full list of MMP analytes for porewater is provided in **Table 3-4**, including their shortened

Why Sample Porewater?

Porewater is the water that fills the spaces between particles of sediment at the bottom of lakes, reservoirs, rivers, and oceans. As water levels rise during reservoir filling, terrestrial soils rich in organic matter will be submerged, leading to higher production of methylmercury, created as a by-product of bacterial decomposition of the organic matter. While this may occur after filling the reservoir, there is also the possibility that erosion of the river banks during and after filling could bury the low-lying agricultural and forest soils, which have high mercury methylation potential, under sloughed bank material that is low in organic matter. Burying the terrestrial soils could substantially lower mercury methylation rates, which could lead to lower magnitude changes in methylmercury concentrations in porewater and throughout the food web.

names for plotting. In addition to including total mercury, methylmercury and percent methylmercury (see **Section 3.2**) in this section, pH (lab), chloride, sulphate, DOC, and TSS are also discussed (primary analytes). Tables and plots for the other MMP secondary analytes in are provided in **Appendix B**.

In 2022, sediment porewater samples were collected from each of the six Core MMP sampling stations (see **Section 2.2**) between August 19 and 26. Methods for sampling and analysis are described in **Appendix B,** and an overview of the process is shown in **Figure 3-3**. Because sediment was filtered to extract the porewater, there are no results for unfiltered samples.

3.3.2 2022 Data Quality Assessment

Data quality for the 2022 porewater sampling was assessed as described in **Appendix A**. All analyte/QC sample types were considered to have met their respective data quality objectives (DQOs), except for methylmercury in the field duplicate. The methylmercury field duplicate showed higher variability than specified in the DQO (RPD \leq 45 %). While this result could be due to small-scale differences in conditions

in the sediments at a particular location, the porewater analyses confirmed the presence of suspended solids (TSS) in about half the samples. As discussed for surface water, the presence of TSS can influence concentrations of both total mercury and methylmercury. We are working with the sampling team (Ecofish/Aski) to better understand this issue, with the aim of improving methods for the next event. As discussed in **Section A.3.3.2 of Appendix A**, the 2022 porewater methylmercury data received a "cautionary" flag that will follow these data from now on (e.g., the flag will allow future analyses relying on these data to identify that there was an issue that warranted cautious interpretation of results). This contrasts with an "unreliable" flag, which is given to data that are clearly wrong.

3.3.3 2022 Results for Porewater

The 2022 results for the primary mercury-related porewater quality analytes are presented in **Figure** 3-4. Total mercury concentrations (filtered) ranged from < 5 ng/L to 11.3 ng/L, generally declining from upstream to downstream. Methylmercury concentrations (filtered) ranged from 0.17 to 0.93 ng/L, with no apparent spatial patterns (note that the 2022 methylmercury data were flagged as cautionary). Percent methylmercury ranged between 2 and 10 %. Results for the ancillary analytes showed no clear spatial trends. Observed values were as follows:

- pH (lab) was slightly basic, ranging from 8.2 to 8.4;
- Chloride ranged from 0.78 to 10.8 mg/L;
- Sulphate ranged from 6.5 to 74 mg/L;
- DOC ranged from 11.1 to 23.8 mg/L; and
- TSS ranged from < 3 to 10.1 mg/L.

3.3.4 Temporal Trends for Porewater

Temporal trends for the primary mercury-related surface water quality analytes are presented **Figure** 3-5. Porewater data for the Peace River are only available for 2022, thereby precluding an assessment of temporal patterns. To put the 2022 results into perspective, some historical data for Williston reservoir from 2000/2001 (Baker et al. 2002) are provided for context. For total mercury, methylmercury, and percent methylmercury, the 2022 MMP results were generally consistent with the historical results for Williston reservoir.



3.3.5 Tables and Figures

Table 3-4. Overview of MMP porewater quality analytes

Analyte	Abbreviated Name	Units	MDL	Data Type ¹
Metals				
Total Mercury - Filtered	THg-F	ng/L	0.5	1°
Calcium (Ca) - Dissolved	Ca	mg/L	0.05	2°
Magnesium (Mg) - Dissolved	Mg	mg/L	0.005	2°
Speciated Metals				
Methylmercury - Filtered	MeHg-F	ng/L	0.02	1°
Physical Tests				
Total Suspended Solids	TSS	mg/L	3	1°
pH (lab)	lab pH	-	0.1	1°
Conductivity (lab)	Cond	μS/cm	2	2°
Alkalinity, Total (as CaCO3)	Alk-Tot	mg/L	1	2°
Anions and Nutrients				
Chloride (CI)	Cl	mg/L	0.5	1°
Sulfate (SO4)	SO4	mg/L	0.3	1°
Fluoride (F)	F	mg/L	0.02	2°
Nitrate (as N)	NO3-N	mg/L	0.005	2°
Nitrite (as N)	NO2-N	mg/L	0.001	2°
Organic / Inorganic Carbon				
Dissolved Organic Carbon	DOC	mg/L	0.5	1°

Notes: 1° = primary analyte; 2° = secondary analyte.

Figure 3-3. Porewater sampling overview

(A) take grab sample, (B) homogenize, (C) transfer to filtration unit and filter, and (D) extracted porewater

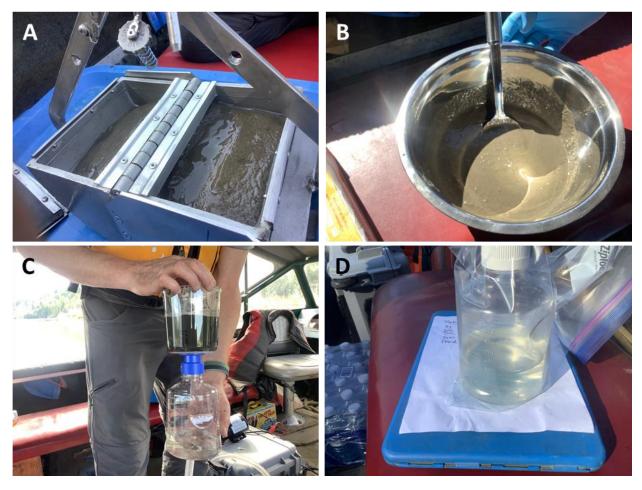
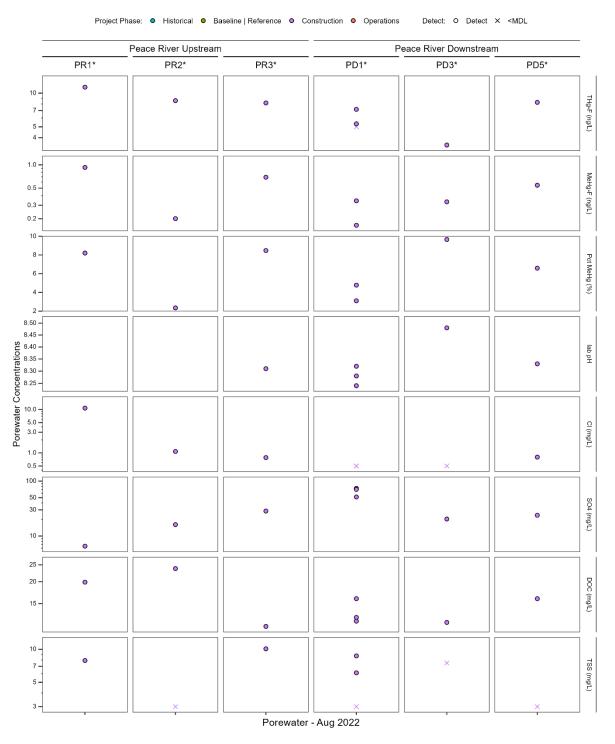
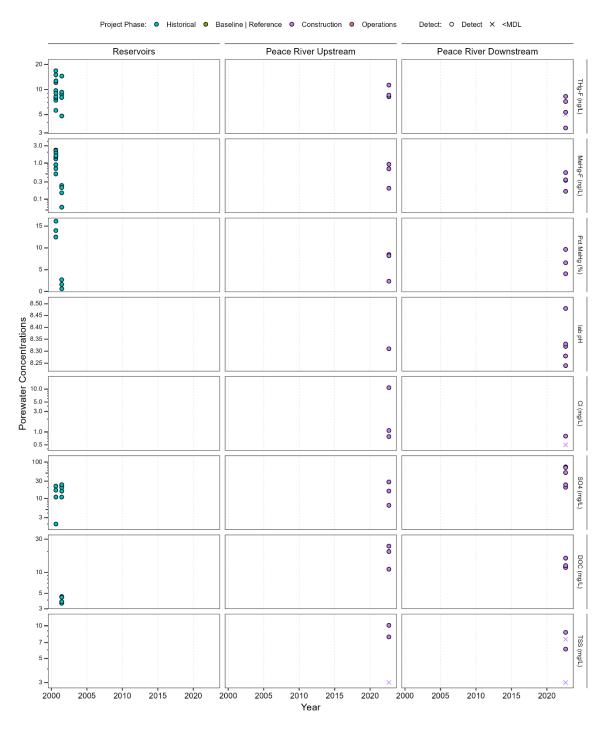


Figure 3-4. Results for key mercury-related porewater quality analytes, by station and station group, in 2022, for Peace River locations



Note: Log scale used for all analytes except Pct MeHg and lab pH.

Figure 3-5. Temporal trends for key mercury-related porewater quality analytes, by station group, for reservoir and Peace River locations



Note: Log scale used for all analytes except Pct MeHg and lab pH.

3.4 Sediment

3.4.1 Overview

The Peace River is predominantly an erosional environment where strong currents prevent finer sediments from depositing on the river bottom. Some areas are protected from faster flowing water and finer sediments deposit there, but most of the river bottom consists of coarser material like gravels and cobbles. Locations where deposition occurs have been targeted to characterize total mercury and methylmercury concentrations in sediments prior to reservoir filling. Future sampling will also

Why Sample Sediment?

Freshly inundated terrestrial soils can be a major source of methylmercury in new reservoirs. In Site C, there is also the potential for significant bank erosion to occur both during and after reservoir filling. If this occurs, low-lying agricultural and forest soils (i.e., habitats with high mercury methylation potential) could be buried under sloughed bank material, which could limit methylmercury production in these areas. Tracking total mercury and methylmercury concentrations in sediment will help better understand how these areas are influencing fish mercury concentrations in the Peace River.

focus on newly flooded reservoir areas with high mercury methylation potential.

In addition to total mercury, methylmercury, and percent methylmercury (see Section 3.2), pH (lab), loss on ignition (LOI), total organic carbon (TOC), total inorganic carbon (TIC), and particle size were included because they may influence mercury bioavailability (see Table 3-5 for more information, including their shortened names for plotting). Note that total mercury and methylmercury concentrations in sediments in this MMP report are presented as $\mu g/kg$ (parts per billion) on a dry weight basis (dw). Sediment particle size results are reported as clay, silt, sand, and gravel in units of percent (%) according to the Wentworth scale (Wentworth 1922). To simplify interpretation, the clay and silt fractions may be collectively referred to as "fines."

In 2022, sediment chemistry samples were collected between August 19 and 26 from each of the six Core MMP sampling stations (see **Section 2.2**). In addition, data from non-MMP stations and events (October 2022) targeted by Mon-8/9 were included for context. Note that the detection limit for total mercury was higher, and methylmercury was not included in the non-MMP event. Sediment sampling and analysis methods for the Core MMP are described in **Appendix B**.

Similar to surface water quality, we also plotted key sediment quality results for tributaries monitored as part of Mon-8/9. The purpose was to document current and past data for tributary inputs of total

mercury and methylmercury to the Peace River, both upstream and downstream of the Project. These results are provided in **Appendix B**.

3.4.2 2022 Data Quality Assessment

Data quality for the 2022 sediment sampling was assessed as described in **Appendix A**. Overall, data met the data quality objectives of the MMP.

3.4.3 2022 Results for Sediments

The 2022 results for sediment quality are presented in **Figure 3-6**. Total mercury concentrations ranged between 40 and 65 μ g/kg and did not show any obvious spatial patterns. Methylmercury concentrations were generally < 1 μ g/kg and percent methylmercury (only calculated when both total mercury and methylmercury were detected in a sample) was < 1.3 %. Organic carbon content, as indicated by both LOI and TOC, was generally low (< 2.5 %).

Sediment particle size was finer (i.e., more clay and silt) at the two upstream reservoir stations (**Figure 3-7**). In the Peace River, sediments were fairly fine (40 to 60 % fines), except for PC1 (< 20 % fines) and PD2 (< 35 % fines), which both consisted of coarser sediment.

3.4.4 Temporal Trends for Sediments

Temporal trends for sediment quality are presented in **Figure 3-8**. Total mercury concentrations were generally between 20 and 100 μ g/kg and show no obvious temporal or spatial patterns. Methylmercury measurements were more limited but, where available, concentrations were typically < 1 μ g/kg. The 2022 results for the ancillary analytes were fairly consistent with historical data, where those were available.

Temporal trends for sediment particle size are shown in **Figure 3-9**. The results show some variability with station groups over time (e.g., coarser sediments in 2019 for both the reservoirs and Peace River Upstream groups). This likely reflects the challenge of finding consistent material for sampling over time and space. For the most part, sediment particle sizes were fairly similar for the Peace River groups (40 to 60 % fines).



3.4.5 Tables and Figures

Table 3-5. Overview of MMP sediment quality analytes

Abbreviated										
Analyte	Name	Units	MDL							
Metals										
Total Mercury	THg	μg/kg	5							
Speciated Metals										
Methylmercury	MeHg	μg/kg	0.05							
Physical Tests										
pH (lab)	lab pH	-	0.1							
Loss on Ignition	LOC	%	1							
Organic / Inorganic Carbon										
Total Inorganic Carbon	TIC	%	0.05							
Total Organic Carbon	TOC	%	0.05							
Particle Size										
% Gravel (>2 mm)	% Gravel (>2 mm)	%	1							
% Sand (0.063 mm - 2.0 mm)	% Sand (0.063 mm - 2.0 mm)	%	1							
% Silt (0.004 mm - 0.063 mm)	% Silt (0.004 mm - 0.063 mm)	%	1							
% Clay (<4 μm)	% Clay (<4 μm)	%	1							



Figure 3-6. Results for key mercury-related sediment quality analytes, by station and station groups, for reservoir and Peace River locations in 2022

Site C MMP stations noted with an asterisk (*); log scale used for total mercury and methylmercury

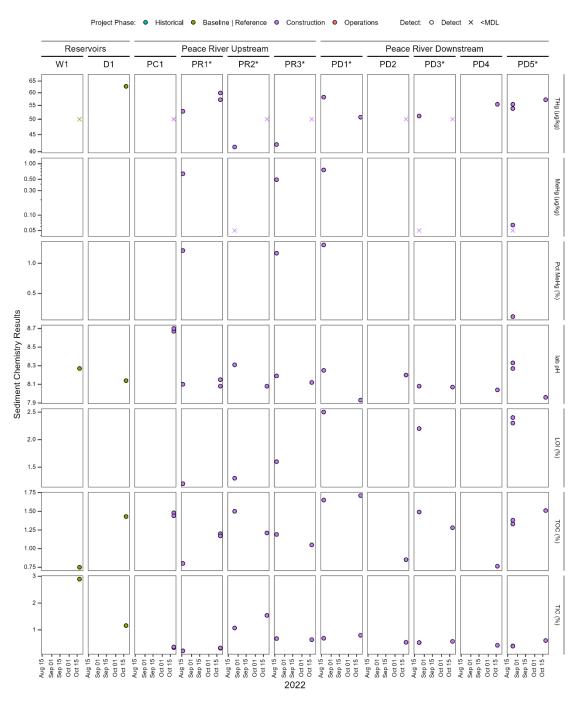




Figure 3-7. Sediment particle size fractions by station and station groups in 2022, for reservoir and mainstem Peace River locations

Site C MMP stations noted with an asterisk (*)

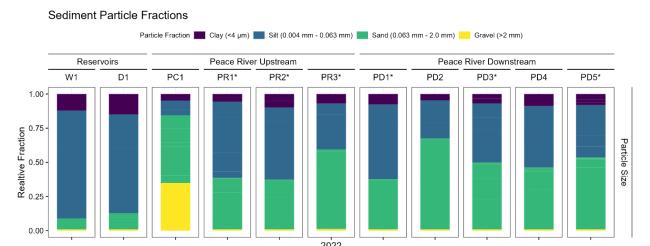




Figure 3-8. Temporal trends in key mercury-related sediment quality analytes, by station group, for reservoir and mainstem Peace River locations

Log scale used for total mercury and methylmercury

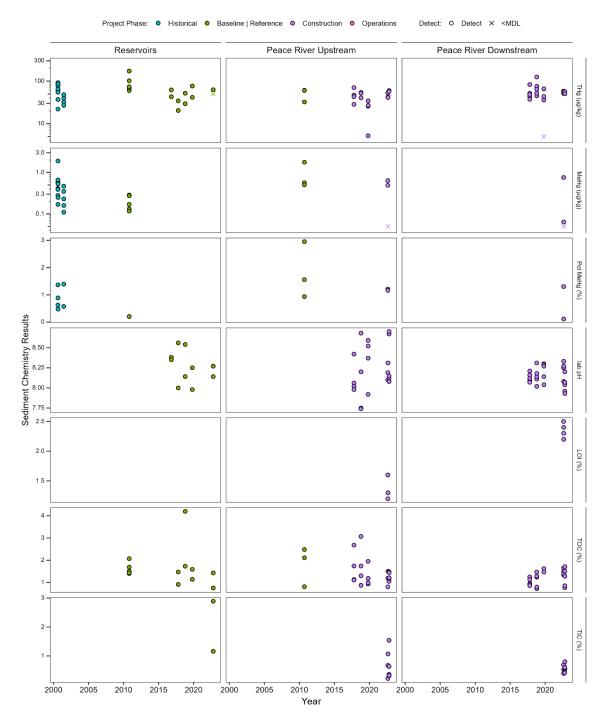
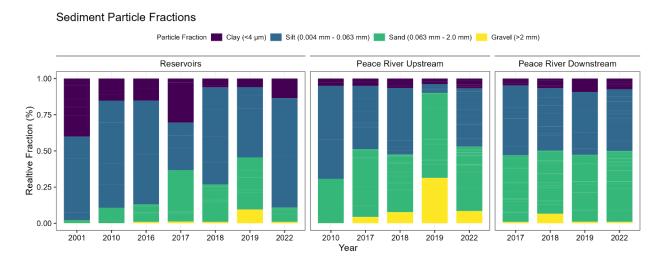




Figure 3-9. Temporal trends in sediment particle size fractions, by station group for reservoir and mainstem Peace River locations





3.5 Benthic Invertebrates

3.5.1 Overview

Benthic (bottom-dwelling) organisms live primarily in or on the bottom substrate. Many are the larvae of flying insects such as caddisflies, mayflies, midges, and dragonflies. Monitoring methylmercury concentrations in different groups of benthic invertebrates and at different locations over time will help us to better understand how changes at the base of the benthic food web might be contributing to fish mercury concentrations.

Analytes for benthic invertebrate tissue samples are listed in **Table 3-6**. In addition to total mercury, methylmercury, and moisture content, the MMP also targets stable isotopes of nitrogen (N) and carbon (C) to provide complementary information on feeding ecology. Differences in stable N

Why Sample Benthic Invertebrates?

Benthic invertebrates are aquatic organisms residing in the bottom substrate of a water body (infauna) or on it (epifauna). They are a key food chain component of the aquatic food web and are an important food group for many fish species, including juveniles of piscivorous (fish-eating) fish species.

As benthic invertebrates colonize freshly inundated terrestrial soils, they may be exposed to higher methylmercury levels in their food (e.g., bacteria, algae, or other invertebrates), leading to increases in their tissue methylmercury concentrations. In turn, tissue methylmercury concentrations of the fish feeding on these invertebrates would also start to increase, but more slowly due to their much larger size. Therefore, benthic invertebrates will likely be an important pathway from higher methylmercury production in the newly flooded habitat through the food chain to predatory fish.

isotopes provide insights into where an organism is feeding in the food web (e.g., if it is an algae-eating bug or something bigger that eats algae-eating bugs). Differences in stable C isotopes help to identify where the food energy is coming from (e.g., originating from benthic bottom dwelling algae, pelagic [water column] phytoplankton, or terrestrial inputs). These measurements are also collected for fish (see **Section 4**) to help build an understanding of the food web and its influence on tissue mercury concentrations. Results of the stable isotopes analysis are provided in **Appendix B**.

In 2022, benthic invertebrate samples were collected from each of the six Core MMP sampling stations (see **Section 2.2**), using rock baskets. An overview of the process is shown in **Figure 3-10**. The baskets were filled with cobbles sized 5 to 10 cm (length of longest axis) and placed in early August. The baskets were retrieved in late September/early October after nearly two months in the river. They were then opened in a water-filled bucket, and the basket and cobbles were scrubbed to remove any attached algae and invertebrates. After removing the cleaned basket and rocks, the water mixture was sieved to

make picking out the invertebrates easier. The invertebrates were then sorted into groups based on taxonomy and/or size (e.g., big caddisflies, little caddisflies, mayflies) and placed in a sample vial. More details on methods of sampling and analysis are provided in **Appendix B**.

3.5.2 2022 Data Quality Assessment

Data quality for the 2022 benthic invertebrate tissue sampling was assessed as described in **Appendix A**. Data met the data quality objectives of the MMP for all analytes except for the nitrogen stable isotope analysis. For nitrogen (δ^{15} N), field duplicate quality control (QC) results showed high variability for similar organisms collected from the same location. As δ^{15} N values provide insights into how high in a food web an organism is feeding (its trophic level), the high variability reduces our ability to make strong conclusions about potential changes in the trophic level of benthic invertebrates that may occur after the reservoir is created. Consequently, the 2022 δ^{15} N results for benthic invertebrates will be assigned a cautionary flag in the Site C MMP Database, so that any future analyses will be able to take their status into account. More details are provided in **Section A.3.3.4 in Appendix A**.

3.5.3 2022 Results for Benthic Invertebrates

The 2022 results for benthic invertebrate tissue chemistry are presented in **Figure 3-11**. Point colours highlight the different taxonomic groups making up the samples in **Figure 3-12**. A summary of taxonomic groups sampled at each station, including a key to the invertebrate class codes, is provided in **Table 3-7**.

Total mercury concentrations were highest (75 ng/g dw) in caddisfly larvae (*Trichoptera*) at the upstream-most station, PR1. Most other taxa-station combinations were fairly similar, ranging between 15 and 40 ng/g dw across the other stations. Methylmercury concentrations were also highest (12.7 ng/g dw) in bigger caddisfly larvae from PR1, and concentrations show a general decreasing trend moving downstream. Percent methylmercury was highest at PR2 (20.7% in bigger caddisfly larvae) and lowest (4% in smaller caddisfly larvae) at PR1; PD5 had the lowest percent methylmercury overall.



3.5.4 Temporal Trends for Benthic Invertebrates

Amalgamating data into spatial groups makes it easier to visualize general spatial-temporal patterns in the data, and this will become even more helpful once mercury concentrations begin to increase after filling the reservoir in fall 2024. Mercury concentrations in benthic invertebrates in 2022 were generally lower than observed in previous years. While the data are still somewhat limited, these results are consistent with the low potential for meaningful changes in methylmercury concentrations in the Peace River associated with river diversion and dam construction (Section 2.1).

Temporal trends for the primary mercury-related benthic invertebrate tissue chemistry analytes are presented **Figure 3-13**.



3.5.5 Tables and Figures

Table 3-6. Overview of MMP tissue quality analytes for benthic invertebrates

	Abbreviated	ł							
Analyte	Name	Units	MDL						
Metals									
Total Mercury	THg	ng/g dw	5						
Speciated Metals									
Methylmercury	MeHg	ng/g dw	5						
Physical Tests									
Moisture	%Moist	%	2						
Stable Isotope Analysis									
Nitrogen	$\delta^{15} N$	‰	-						
Carbon	$\delta^{13} C$	‰	-						

Notes: Units and MDL converted to ng/g (ppb). MDLs shown are targets; actual MDLs may vary. No MDLs for SIA.

Table 3-7. Benthic invertebrate tissue sample numbers by type and station for 2022

Code	Туре	PR1*	PR2*	PR3*	PD1*	PD3*	PD5*
M	Miscellaneous	1	-	1	-	-	-
ТВ	Trichoptera Big	1	1	1	3	1	1
TS	Trichoptera Small	1	2	1	3	1	2
Р	Plecoptera	-	1	-	-	-	-
TT	Trichoptera Tiny	-	2	-	-	-	-
TC	Trichoptera from Casings	-	-	1	1	2	1
Е	Ephemeroptera	-	-	-	1	1	1
РВ	Plecoptera Big	-	-	-	3	1	-
PS	Plecoptera Small	-	-	-	1	-	-

Note: MMP stations shown with an asterisk (*)

Figure 3-10. Benthic invertebrate sampling overview

(A) rock baskets ready for deployment, (B) retrieved rock basket, (C) collecting all debris off rocks, (D) sorting debris to find invertebrates, (E) sorting invertebrates, and (F) sample vials ready for the cooler



Figure 3-11. Results for key mercury-related benthic invertebrate tissue quality analytes, by station and station group, for reservoir and Peace River locations in 2022

Site C MMP stations noted with an asterisk (*); Log scale used for total mercury and methylmercury

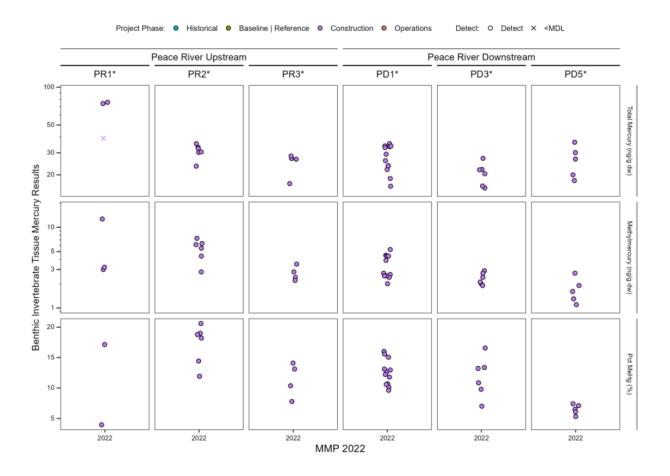
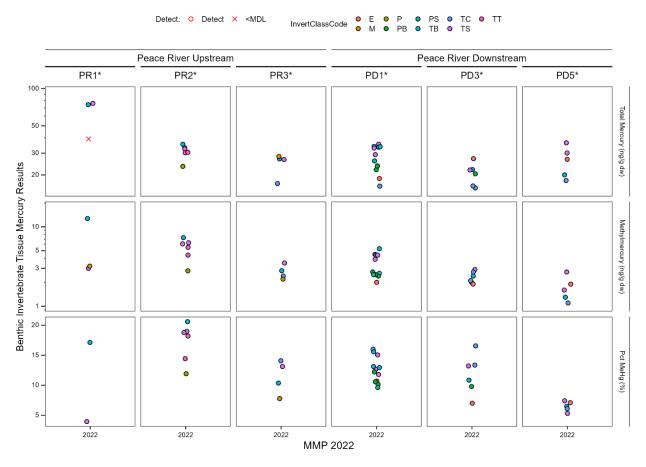




Figure 3-12. Results for key mercury-related benthic invertebrate tissue quality analytes, by station and station group, for reservoir and Peace River locations in 2022, highlighting taxonomic groups

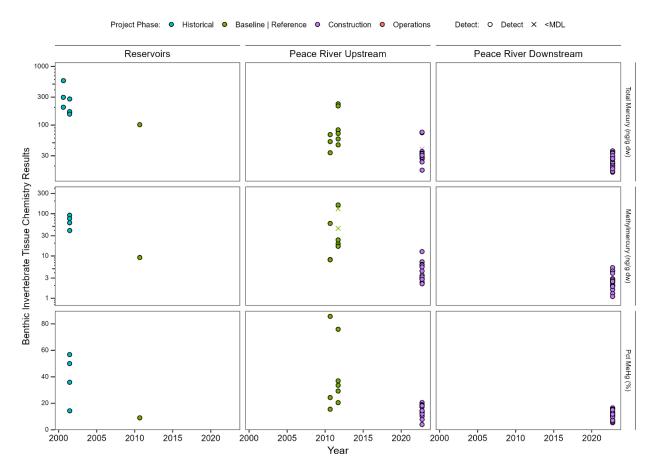
Site C MMP stations noted with an asterisk (*); log scale used for total mercury and methylmercury



Invertebrate class codes listed in Table 3-7.

Figure 3-13. Temporal trends in key mercury-related benthic invertebrate tissue quality analytes, by station group, for reservoir and mainstem Peace River locations

Log scale used for total mercury and methylmercury





3.6 Zooplankton

3.6.1 Overview

Zooplankton densities in the Peace River are currently low and contribute little to fish diets (BC Hydro 2013, Vol. 2: App. P [Part 1]). However, after the reservoir is created, they are expected to be substantially more abundant and will be the cornerstone of the pelagic (watercolumn based) food chain. Changes in methylmercury concentrations in surface water will drive increases in methylmercury concentrations in zooplankton. Consequently, they are included in the MMP to help us to better understand the processes responsible for changes in fish mercury concentrations after the reservoir is filled.

Analytes for zooplankton tissue samples are the same as for benthic invertebrates (see **Table 3-8**). While the MMP targets

Why Sample Zooplankton?

Zooplankton are aquatic invertebrates that live in the water column. In freshwater, they are mainly found in lakes and ponds. They can be found in rivers and streams, particularly downstream of lakes, but, generally, they do not survive well in faster flowing environments.

The water residency time in the Site C reservoir is expected to be 23 days, which is potentially sufficient time to support a zooplankton community within the reservoir. While sampling will also be conducted in the tailrace area (immediately below the dam), zooplankton density is expected to decrease rapidly downstream of the dam, so sampling will not be conducted at locations further downstream.

Zooplankton are an important component of the pelagic (water-column based) food chain. Tracking changes in their tissue mercury concentrations will help to better understand the evolution of fish mercury concentrations after the reservoir is created.

total mercury, methylmercury, and moisture content, it also targets stable isotopes of nitrogen (N) and carbon (C) to provide complementary information on feeding ecology (see **Section 3.5** for more information). These measurements are also collected in fish (**Section 4**) to help build an understanding of the food web and its influence on tissue mercury concentrations.

In 2022, zooplankton samples were collected from the Upper Site C (PR1) Core MMP station and two non-MMP stations (Williston reservoir [W1] and Dinosaur reservoir [D1]). The reservoir stations were added to better characterize baseline conditions. Samples were collected in August and October at the same times/locations as surface water sampling. They were collected by towing a zooplankton net through the water. Details on methods used for sampling and analysis are provided in **Appendix B**.

3.6.2 2022 Data Quality Assessment

Data quality for the 2022 zooplankton tissue sampling was assessed as described in **Appendix A**. Overall, data met the data quality objectives of the MMP.

3.6.3 2022 Results for Zooplankton

The 2022 results for zooplankton tissue chemistry are presented in **Figure 3-14**. Total mercury concentrations were slightly higher (120 ng/g dw) at PR1 in August. Concentrations generally ranged between 50 and 100 ng/g dw in zooplankton samples from Williston reservoir (W1) and Dinosaur reservoir (D1). One sample from October had the lowest (22.1 ng/g dw) concentrations of total mercury. Methylmercury was only detected in two of eight samples. Concentrations were highest (25.4 ng/g dw) in Dinosaur reservoir (D1) in one of the August event samples; the other sample in that event was not detected (MDL 1 ng/g dw). Percent methylmercury (only calculated when both total mercury and methylmercury were detected in a sample) ranged from 1.6 to 25.7 %.

3.6.1 Temporal Trends for Zooplankton

Temporal trends for the primary mercury-related zooplankton tissue chemistry analytes are presented in **Figure 3-15**. Mercury concentrations in benthic invertebrates in 2022 were generally consistent with previous years. While the data are still somewhat limited, these results are consistent with the low potential for meaningful changes in methylmercury concentrations in the Peace River associated with river diversion and dam construction (**Section 2.1**).



3.6.2 Tables and Figures

Table 3-8. Overview of MMP tissue quality analytes for zooplankton

	Abbreviated	d						
Analyte	Name	Units	MDL					
Metals								
Total Mercury	THg	ng/g dw	5					
Speciated Metals								
Methylmercury	MeHg	ng/g dw	5					
Physical Tests								
Moisture	%Moist	%	2					
Stable Isotope Analysis								
Nitrogen	$\delta^{15} N$	‰	-					
Carbon	$\delta^{13}C$	‰	-					

Notes: Units and MDL converted to ng/g (ppb). MDLs shown are targets; actual MDLs may vary. No MDLs for SIA.



Figure 3-14. Results for key mercury-related zooplankton tissue quality analytes, by station and station group, for reservoir and Peace River locations, in 2022

Site C MMP stations noted with an asterisk (*); log scale used for total mercury and methylmercury

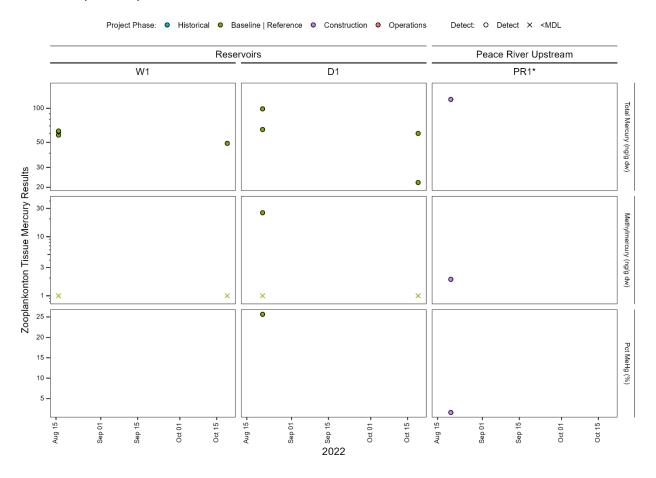
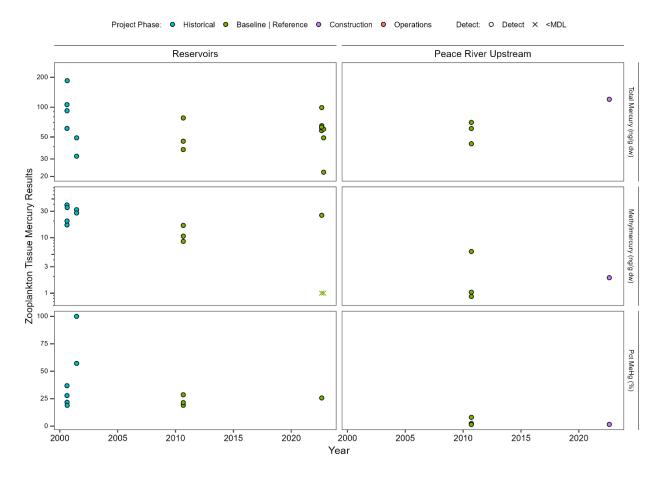




Figure 3-15. Temporal trends in key mercury-related zooplankton tissue quality analytes, by station group, for reservoir and mainstem Peace River locations

Log scale used for total mercury and methylmercury





4 FISH

The MMP is designed to characterize fish mercury concentrations in the mainstem of the Peace River as they evolve over time in relation to the construction and operation of the Project. The inundation of terrestrial habitat is expected to increase mercury methylation rates for a decade or so, leading to temporary increases in methylmercury concentrations throughout the aquatic food chain after the reservoir is created.

Mercury is found in all fish, but concentrations can vary substantially both among and within species.

Why Sample Fish?

Fish are the primary focus of the MMP. As noted in **Section 1.1** (and described further in the MMP [BC Hydro 2022]), reservoir creation is known to temporarily increase fish mercury concentrations. Actively monitoring fish mercury concentrations as they evolve at Site C, both within and downstream of the reservoir in the Peace River, will enable us to provide information on how much fish is safe for people to eat.

Species typically feeding lower in the food web, like Rainbow Trout or Mountain Whitefish, generally have lower tissue mercury concentrations than long-lived predatory species that feed predominantly on other fish, such as Bull Trout and Walleye. Further, within many species, tissue mercury concentrations typically increase as fish get older/bigger. Consequently, it is important to take size into consideration when tracking changes in tissue mercury concentrations over space and time to avoid bias due to discrepancies in the sizes of fish caught. The MMP handles this by trying to sample a range of fish sizes during each event and at each location and by reporting tissue mercury concentration estimates for one or more specific sizes for each species/event/location. These specific sizes are often called "standardized" sizes, and they were selected to be consistent with fish mercury studies in the region (e.g., Williston-Dinosaur study; Azimuth 2019) and be informative for the Project.

The Core MMP tracks total mercury in six targeted fish species at a series of locations extending from Peace Canyon Dam to Many Islands, Alberta (Section 2.2). The six species targeted in the MMP (see text box) were selected based on their falling into at least one of the following categories:

- Top predators selected because they are expected to have the highest mercury concentrations;
- Key prey species selected because, while they are expected to have lower mercury concentrations, targeting them will assist with tracking the progression of mercury changes through the food web;
- Species is present in sufficient
 numbers, based on its current and
 potential future distribution selected because sufficient numbers of a species need to be
 present to efficiently catch enough fish to characterize tissue mercury concentrations; and
- Species is important to Indigenous harvesters and/or recreational fishers.

More information on the six target fish species is provided in the MMP (BC Hydro 2022).

Analytes for fish tissue samples are listed in **Table 4-1**. In addition to total mercury, methylmercury, and moisture content, the MMP also targets stable isotopes of nitrogen (N) and carbon (C) to provide complementary information on feeding ecology. Differences in stable N isotopes provide insights into where an organism is feeding in the food web (e.g., if it is an algae-eating bug or something bigger that eats algae-eating bugs). Differences in stable C isotopes help to identify where the food energy is coming from (e.g., originating from benthic [bottom dwelling] algae, pelagic [water column] phytoplankton, or terrestrial inputs).

What Species Does the MMP Target?

Bull Trout (Salvelinus confluentus) – top predator; abundant above and below Site C Dam; consumed by people

Walleye (Sander vitreus) – top predator; abundant below Site C Dam; consumed by people

Rainbow Trout (Oncorhynchus mykiss) – invertebrateeating; abundant upstream of Site C Dam; consumed by people

Mountain Whitefish (Prosopium williamsoni) – invertebrate-eating; abundant; important prey species; infrequently consumed by people

Longnose Sucker (Catostomus Catostomus) – invertebrate-eating; abundant; important prey species; infrequently consumed by people

Redside Shiner (Richardsonius balteatus) – invertebrateeating; abundant; small-bodied fish; important prey species; not consumed by people

Table 4-1. Overview of MMP fish tissue quality analytes and other key metrics

	Abbreviated		
Analyte	Name	Units	MDL
Metals			
Total Mercury	THg	ng/g dw	5
Speciated Metals			
Methylmercury	MeHg	ng/g dw	5
Physical Tests			
Moisture	%Moist	%	2
Stable Isotope Ana	lysis		
Nitrogen	$\delta^{15} N$	‰	-
Carbon	$\delta^{13} \text{C}$	‰	-
Morphometrics			
Fork Length	FL	mm	-
Weight	Wt	g	-
Aging			
Age	Age	yr	-

Notes: Units and MDL converted to ng/g (ppb). MDLs shown are targets; actual MDLs may vary. No MDLs for SIA.

4.1 Data Overview

Baseline fish mercury sampling for Site C initially started in 2010/2011 to support the EIS. Subsequently, monitoring was continued from 2017 to 2020, with samples being collected by the team conducting the Peace River Large Fish Indexing Survey (Mon-2, Task 2a of the FAHMFP; BC Hydro 2015). Fish mercury data through 2020 were then analyzed to update our understanding of baseline conditions (Azimuth 2021). A key finding was that tissue mercury concentrations for most species had approximately doubled between the early period (2010-2011) and the more recent period (2017–2020). Reservoir filling had not yet occurred, so the change is not related to the development of Site C. Three possible

Mercury Measurements in Fish

Mercury can exist in several forms in the environment. These include elemental mercury (metallic; liquid "quicksilver" at 20 °C), inorganic mercury compounds such as cinnabar (HgS), and organic mercury compounds such as methylmercury (CH₃Hg).

In fish tissue, most mercury is present as methylmercury (Bloom 1992). Measuring methylmercury directly is considerably more expensive than measuring total mercury, which includes methylmercury. Consequently, most fish mercury studies rely on total mercury measurements and assume that it is all present as methylmercury.

In this document, unless specified otherwise, both "total mercury" and "mercury" are assumed to refer to methylmercury in the context of fish tissue.

factors were identified as potential causes of the observed increase in fish tissue mercury concentrations: climate change, forest fires, and/or logging activity.

Additional limited sampling was conducted in 2021, primarily to improve the baseline data set for Bull Trout. Samples were collected under the Site C Contingent Boat Electrofishing Program conducted immediately downstream of the Project to support the Project's Upstream Fish Passage Program.

One of the outcomes of the analysis of the 2010–2020 baseline fish mercury data was a recommendation to undertake a full MMP sampling event in a single year before the reservoir is created. The main rationale was two-fold: (1) to provide an opportunity to implement a full, single-year sampling event using the MMP methodology (i.e., to make sure that there are no unforeseen issues) and (2) to improve the baseline fish mercury dataset.

4.1.1 MMP Fish Data

The 2022 event was the first monitoring cycle conducted under the MMP (BC Hydro 2022). An overview of the 2022 program is presented in **Table 4-2** (locations shown in **Figure 2-1**). The Core MMP program focuses primarily on total mercury, but it also includes stable isotope analysis (SIA) to provide supporting information on feeding preferences. In addition, methylmercury analyses were conducted on a subset of the 2022 Core MMP tissue chemistry samples to obtain baseline information on how much of the total mercury measured in fish is in the form of methylmercury. A data quality assessment of the 2022 MMP data is provided in **Appendix A**.

MMP fish tissue sampling in 2022 was conducted by WSP Canada Inc. in conjunction with Mon-2, Task 2a of the FAHMFP.

Table 4-2. Species/location combinations for fish sampling in the 2022 MMP

		Site C Reservoir	Peace River Downstream						
			Beatton-						
		Site C Reservoir	Site C Tailrace	Kiskatinaw	Many Islands				
Target Species	Sampling Details	(Section 1 and 3)	(Section 5)	(Section 7)	(Section 9)				
	sampling year								
Bull trout	target 35 samples/event	./	х	x	х				
buil trout	target fish length:	•	^	^	^				
	250 - 600+ mm								
	sampling year								
Rainbow Trout	target 35 samples/event	./	х	x	x				
Nambow Hout	target fish length:	•	^	^	^				
	250 - 500 mm								
	sampling year								
Mountain whitefish	target 35 samples/event	./	./	1	1				
Widulitaili Wilitelisii	target fish length:	▼	•	•	•				
	250 - 500 mm								
	sampling year								
Longnose sucker	target 35 samples/event	1	1	1	./				
Longhose sucker	target fish length:	V	▼	•	V				
	250 - 500 mm								
	sampling year								
Redside shiner	target 35 samples/event	1	1	1	✓				
neusiae siinei	target fish length:	•	•	•	•				
	60 - 120 mm								
	sampling year								
Walleye	target 35 samples/event	X	х	✓	1				
vvancyc	target fish length:	^	^	•	•				
	250 - 600+ mm								



4.1.2 Historical Fish Data

Fish mercury data collected since 2008 have been integrated into the Site C MMP fish mercury database to provide temporal context (**Table 4-3**). Sampling locations (**Figure 2-1**) have remained constant across the entire period.

A data quality assessment of the 2010 through 2020 was conducted by Azimuth (2021); the assessment of data quality for 2021 and 2022 in **Appendix A**.

Table 4-3. Historical fish mercury data relevant to the MMP

Year	Report	Citation
2021	This report	This report
2017 to 2020	Site C Clean Energy Project. Baseline Peace River (2010 – 2020)	Azimuth 2021
2010 to 2011	Site C Clean Energy Project. 2010 & 2011 Status of Mercury in Benthic Invertebrates and Fish – Peace River and Dinosaur Reservoir	Azimuth 2012
2008	Site C Fisheries Studies – Mercury Levels in Peace River Fish Tissue – Data Report 2008	Mainstream 2009

4.1.3 Summary of the Integrated Fish Dataset

Collectively, the 2022 MMP and historical data are referred to as the Core MMP dataset or, simply, as the dataset.

Time Periods

Azimuth's initial statistical analysis of the 2010 to 2020 data supported grouping data into two time periods: 2010–2011 and 2017–2020 (Azimuth 2021). Since that analysis, slightly earlier data (from 2008) were identified, which helped to improve characterizing length-mercury relationships for Bull Trout and Mountain Whitefish for that period; these 2008 data were grouped with the 2010–2011 data. The 2021 data were collected to help fill some data gaps in the 2017–2020 dataset, so these datasets were grouped together (i.e., 2017–2021).



The 2022 data are the first fish mercury data collected following the MMP; while we do not expect to see meaningful changes relative to the 2017-2021 time period, 2022 was treated as a stand-alone event to match the year-specific approach that will be used once Site C is in the operations phase (i.e., after reservoir filling). Given that we have observed temporal changes in fish mercury concentrations since the baseline period (Azimuth 2021), treating 2022 as a discrete year provides an up-to-date characterization of conditions prior to reservoir filling. That said, both the 2017-2021 and 2022 data represent conditions prior to reservoir filling, so if these analyses presented herein show no meaningful difference between the data, then the 2022 data could be amalgamated with the 2017-2021 data if needed in the future. In summary, the analyses presented herein refer to three time periods: 2008–2011, 2017–2021, and 2022.

Locations

The MMP (BC Hydro 2022) provides details on fish sampling locations both before and after reservoir inundation. The locations include Sections 1, 3, 5, 7, and 9⁵ of the Peace River. The main difference is that after the Site C reservoir has been created Sections 1 and 3 will be amalgamated. Even though reservoir filling has not yet occurred, we grouped Sections 1 and 3 in our analyses to match how the data will be analyzed during operation of the Project.

Coarse Outlier Screening

This initial screening was conducted to identify gross outliers in the Core MMP dataset. The process focused on three key relationships: length vs weight, nitrogen stable isotope ratios vs mercury concentrations, and length vs mercury concentrations. Note that these relationships were examined for each target species without considering time period or sampling location. Two types of outliers were identified: High Residual points (studentized residuals \geq 4) and High Leverage points (Cook's distance \geq 0.5). Based on this, 20 fish were excluded from further analysis (see **Section 1.1** in **Appendix C** for details).

Summary of Core MMP Samples, Fish Mercury, and Feeding Relationships

The Core MMP dataset has data for 1,973 fish mercury samples across 13 species. Total mercury sample numbers for the Core MMP dataset are provided for each species by time period (**Table 4-4**) and location (**Table 4-5**). In addition to the six target MMP species, there are tissue mercury data for Burbot



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⁵ Historical data are also available for Sections 6 and 8, but these sampling areas were not included in the MMP due to limited data.

(BB), Largescale Sucker (CSU), Goldeye (GE), Arctic Grayling (GR), Lake Trout (LT), Northern Pike (NP), and White Sucker (WSU)⁶. Note that a single Kokanee data point (captured in Section 1 in 2021) was excluded from the analysis.

Total mercury concentrations ranged from 0.009 to 0.99 mg/kg ww across the dataset. Results for each species are presented in **Figure 4-1**. This plot does not take fish size into consideration, but does show relative differences in tissue mercury concentrations among species. Walleye generally have the highest mercury concentrations, but Bull Trout, Burbot, Goldeye, and Northern Pike are also relatively high compared to species such as Rainbow Trout, Redside Shiner, and Arctic Grayling. These latter species feed lower in the food chain and have the lowest tissue mercury concentrations among the sampled species.

Stable isotope results provide insights into general feeding relationships across species. Results from the MMP target species by time period and location are provided in **Figure 4-2**. Higher δ^{15} N values mean that a species is feeding higher in the food chain. Consequently, it is not surprising that species with higher δ^{15} N values also, generally, had higher total mercury concentrations (see plots showing key mercury-related data for target species in **Appendix C**). Stable isotope results for these species and other species not targeted by the MMP in the Peace River are reported elsewhere (Golder 2021).

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⁶ Non-MMP species were retained in the Core MMP dataset if they had five or more tissue mercury data points across all years/locations. The -- only species excluded on this basis was Kokanee, which had a single data point (from Section 1 in 2021).

Table 4-4. Core MMP sample numbers by species and time period

	Target Species [*]						Non-target Species [†]							
Year	ВТ	LSU	MW	RB	RSC	WP	ВВ	CSU	GE	GR	LT	NP	WSU	Total
Period: 200	8-2011													
2008	28	-	67	-	-	-	-	-	-	-	-	-	-	95
2010	15	10	17	-	11	-	-	-	-	-	-	-	-	53
2011	6	31	32	10		6	-	-	3	-	-	-	-	88
Sub-total	49	41	116	10	11	6	-	-	3	-	-	-	-	236
Period: 201	7-2021													
2017	53	91	74	25	1	51	2	-	3	1	-	7	-	308
2018	57	93	87	22	-	42	5	-	-	-	1	18	-	325
2019	13	16	54	-	-	9	12	-	14	3	2	9	-	132
2020	4	25	41	12	-	21	2	-	4	-	1	10	-	120
2021	73	25	31	9	-	15	1	25	5	-	2	18	26	230
Sub-total	200	250	287	68	1	138	22	25	26	4	6	62	26	1115
Period: 202	2													
2022	70	164	129	23	144	88	-	-	1	3	-	-	-	622
Total	319	455	532	101	156	232	22	25	30	7	6	62	26	1973

^{*} MMP Target Species include: BT (Bull Trout), LSU (Longnose Sucker), MW (Mountain Whitefish), RB (Rainbow Trout), RSC (Redside Shiner), and WP (Walleye).

Table 4-5. Core MMP sample numbers by species and location

	Target Species*					Non-target Species [†]								
Section	ВТ	LSU	MW	RB	RSC	WP	ВВ	CSU	GE	GR	LT	NP	wsu	Total
Zone: Site C														
Sections 1/3	149	139	219	95	36	-	1	11	-	4	4	6	7	671
Zone: Downstr	eam													
Section 5	149	100	120	5	50	65	4	5	-	2	1	33	5	539
Section 7	21	96	87	1	34	86	5	5	4	1	1	17	7	365
Section 9	-	120	106	-	36	81	12	4	26	-	-	6	7	398
Total	319	455	532	101	156	232	22	25	30	7	6	62	26	1973

^{*} MMP Target Species include: BT (Bull Trout), LSU (Longnose Sucker), MW (Mountain Whitefish), RB (Rainbow Trout), RSC (Redside Shiner), and WP (Walleye).



[†] MMP Non-arget Species include: BB (Burbot), CSU (Largescale Sucker), GE (Goldeye), GR (Arctic Grayling), LT (Lake Trout), NP (Northern Pike), and WSU (White Sucker).

[†] MMP Non-arget Species include: BB (Burbot), CSU (Largescale Sucker), GE (Goldeye), GR (Arctic Grayling), LT (Lake Trout), NP (Northern Pike), and WSU (White Sucker).

Target Species

Non-target Species

Non-target Species

Non-target Species

Non-target Species

Figure 4-1. Total mercury concentrations in MMP fish tissue samples by species

See notes from **Table 4-4** for fish species abbreviation key.



Site C Downstream 12 WP 10 2008-2011 RB RSC MWLSU 8 . MW LSU 6 12 · вт 10-2017-2021 δ¹⁵N (‰) MW MW RB RB LSU LSU 6 12 ВТ 10 -MW MW2022 RB 8 RSC LS LSU 6 -30 -28 -26 -30 -28 -24 -32 -24 -32 -26 δ¹³C (‰)

Figure 4-2. Stable isotope results for MMP target species, by time period and location

See notes from **Table 4-4** for fish species abbreviation key.

4.2 Analysis Overview

Detailed analysis of the Core MMP dataset through 2022 is provided in **Appendix C**. Key elements of that process were as follows:

Data Overview. Catch refers to the fish that were caught, sampled for mercury analysis, and which passed the coarse outlier screen. The catch and data summary presents the sample size, mean and range for length, weight, condition⁷, age, mercury concentration and the stable isotopes δ^{13} C and δ^{15} N (see **Appendix C**).

General Mercury Relationships. Length, weight, age and feeding preferences can all influence fish mercury concentrations. Plots are used to explore the following key relationships:

- Length-Weight. The length-weight relationship shows how weight increases as fish get longer. This relationship is usually "strong" in that the range of observed weights for a given fish length is narrow relative to the other relationships. Consequently, this plot is useful for identifying outliers such as incorrectly entered data or unhealthy fish (see Appendix C).
- Age-Length. Age-length relationships show how fish length increases as fish get older. These
 relationships are typically variable and show a wide range of length values for each age. This
 variability makes it harder to identify outliers, but the plots can still provide useful insights into
 growth patterns and how they influence mercury concentrations (see Appendix C).
- Length-Mercury. Length-mercury is the typical mercury relationship because concentrations increase as fish length increases. Length is simple to measure and highly repeatable, so measurement error tends to be low. Mercury concentrations are also positively correlated to weight and age, but measurement error for both those variables relative to length is higher (e.g., being off by a year for age would be a 100% error for a one-year-old fish, and the time since a fish's last meal can influence weight). This makes weight and age correlations less useful than length, particularly for comparing patterns over time or space (presented in following sections and in Appendix C).
- Length- $\delta^{15}N$. Fish are known to change their diet as they get bigger, because their larger size enables them to feed at higher trophic positions (see **Appendix C**).



55

⁷ Condition is a measure of the weight of a fish relative to its length. It is calculated as (weight/length³ x 100) and is represented by the letter K. Fis-h with higher condition weigh more for their size than fish with lower condition.

• δ^{15} N-Mercury. δ^{15} N values increase as the position of a fish in the food chain (trophic position) increases. This relationship essentially shows how feeding preferences affect mercury concentrations in fish tissue. The expectation is for higher tissue mercury concentrations in fish that feed higher in the food chain (see **Appendix C**).

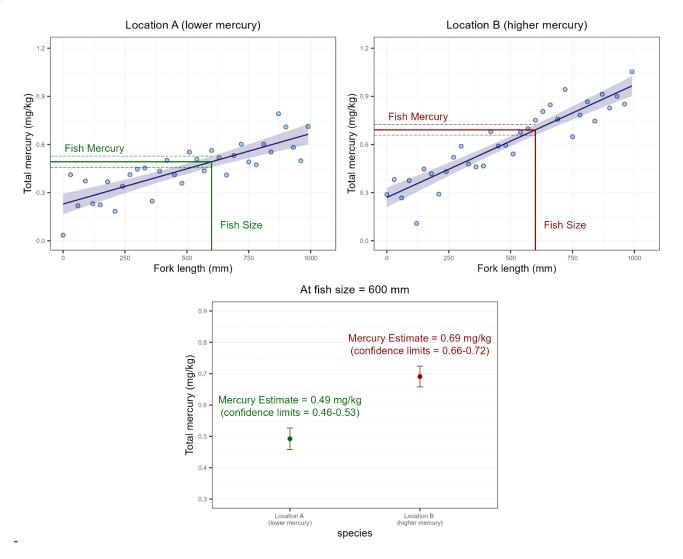
Length-Mercury Relationships (for target species only). As discussed previously, when looking at patterns in fish mercury concentrations over time or space it is important to consider fish size (length); failing to do so can lead to biased results. The approach we used to characterize (or "model") the length-mercury relationships is presented in detail in **Appendix C**. An example of the process using hypothetical data to compare fish mercury concentrations in one species between two locations, one with lower tissue mercury concentrations and the other higher, is shown in **Figure 4-3**. The process is as follows:

- The *upper panels* show the length-mercury relationship for a single species at two locations for a single time period. The points are the raw data (i.e., total mercury concentration and fork length for each fish). The solid blue line is the best estimate of the relationship, and the lighter blue shaded areas are the 95% confidence limits of that estimate. The more closely that the best estimate fits the data, the closer the confidence limits will be to the best estimate.
- The *upper panels* also show how the length-mercury relationship relates to the estimate of mercury concentration for a 600 mm fish for each location. Start at 600 mm on the x axis and move up (shown with a vertical green line for Location A and a red line for Location B) until you intersect the best fit (solid) line, then move horizontally (green horizontal line for Location A and a red line for Location B) to the y axis to find the corresponding best estimate mercury concentration for that fish size. The same process applies to the lower and upper confidence limits (shown as dashed green or red lines for Locations A or B, respectively).
- The *lower panel* compares the tissue mercury concentration estimates (square box) and 95% confidence limits (vertical lines) for a 600-mm fish for Location A (green) and Location B (red).

H-ighlights of the analyses for target species are presented in the following sections.

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Figure 4-3. Example of length-mercury relationship characterization and deriving mercury concentration estimates for a 600 mm fish using a hypothetical dataset



4.3 Mercury in Target Fish Species

4.3.1 Bull Trout

Total mercury sample numbers for Bull Trout by fish size class, location, and time period are summarized in **T-able 4-6**. Only 4 fish were collected in 2008–2011 from Section 5 of the Peace River. For the 2017–2021 and 2022 time periods, the fish sampled in Sections 1 to 3 were generally smaller than those sampled in Section 5. Given that Bull Trout caught in the Peace River are considered to primarily come from the Halfway River population, this is most likely due to the timing of sampling (late summer/fall) relative to the timing of fish movements in the river (e.g., returning to the Halfway River to spawn in the fall).

Raw data and fitted length-mercury relationships for Bull Trout by location and time period are shown in **Figure 4-4**. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location/time period combination, for up to three sizes of Bull Trout (400 mm, 550 mm, and 700 mm; **Figure 4-5**). Location/time period/size combinations were not provided if there were no underlying data to support them (e.g., all sizes from Section 5 in 2010–2011).

The results show a clear increase between the 2008–2011 and 2017–2021 time periods for all three sizes. Tissue mercury concentrations were marginally higher in 2022 than in 2017–2021.

Updated fish consumption guidance based on the 2022 results for Bull Trout is provided in **Section 6.2**.

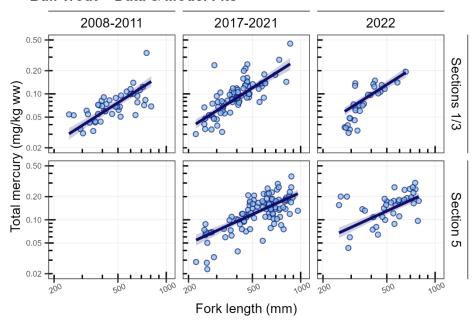
T-able 4-6. Bull Trout total mercury sample numbers by size class, location, and time period

Bull Trout – Size Classes (fork length in mm)									
Location/Period	200-300	300-400	400-500	500-600	600-700	700-800	800-900	900-1000	Total
Sections 1/3									
2008-2011	3	13	9	7	6	4	1	-	43
2017-2021	14	25	25	8	2	1	2	-	77
2022	7	13	7	1	1	-	-	-	29
Section 5									
2008-2011	2	1	-	1	-	-	-	-	4
2017-2021	11	7	19	14	29	13	11	1	105
2022	5	3	10	9	5	8	-	-	40



Figure 4-4. Length-mercury plots showing final model fits (and $\pm 95\%$ confidence intervals) for Bull Trout

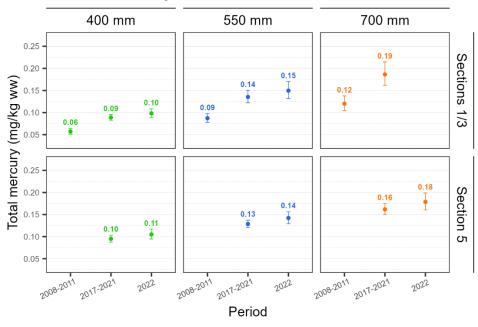
Bull Trout - Data & Model Fits



Axis scaling: x-axis = log10; y-axis = log10.

Figure 4-5. Estimates of mercury concentrations (±95% confidence intervals) in select sizes of Bull Trout using the best model

Bull Trout – Mercury Estimates



4.3.2 Walleye

Total mercury sample numbers for Walleye by fish size class, location and time period are summarized in **Table 4-7**. The only samples collected in 2008–2011 were from Section 7 (six fish only) of the Peace River. The remaining location/time period combinations generally had 21 or more mercury samples. The 300 to 400 mm and 400 to 500 mm size classes were the most represented in the dataset, followed by the 200 to 300 mm size class.

Raw data and fitted length-mercury relationships for Walleye by location and time period are shown in **Figure 4-6**. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location/time period combination, for up to three sizes of Walleye (300 mm, 400 mm, and 500 mm; **Figure 4-7**); location/time period/size combinations were not provided if there were no underlying data to support them (e.g., all sizes from Sections 5 and 9 in 2008–2011).

The results for 400 mm Walleye from Section 7 show a clear increase between the 2008–2011 and 2017–2021 time periods. There was no change observed in tissue mercury concentrations between 2017–2021 and 2022.

Updated fish consumption guidance based on the 2022 results for Walleye is provided in Section 6.2.

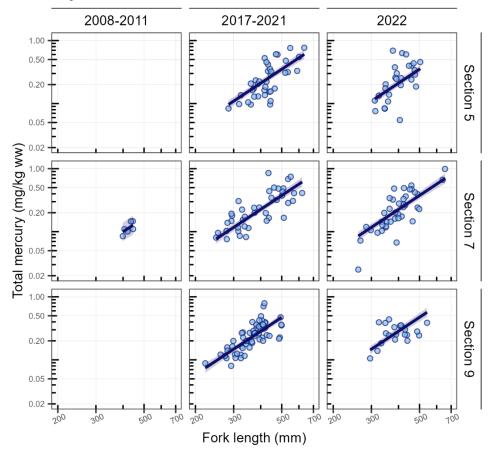
Table 4-7. Walleye total mercury sample numbers by size class, location, and time period

W	Walleye – Size Classes (fork length in mm)								
Location/Period	200-300	300-400	400-500	500-600	600-700	Total			
Section 5									
2017-2021	1	12	18	5	2	38			
2022	-	14	12	1	-	27			
Section 7									
2008-2011	-	1	5	-	-	6			
2017-2021	8	13	9	9	1	40			
2022	4	18	16	-	2	40			
Section 9									
2017-2021	9	31	20	-	-	60			
2022	1	10	9	1	-	21			



Figure 4-6. Length-mercury plots showing final model fits (and ±95% confidence intervals) for Walleye

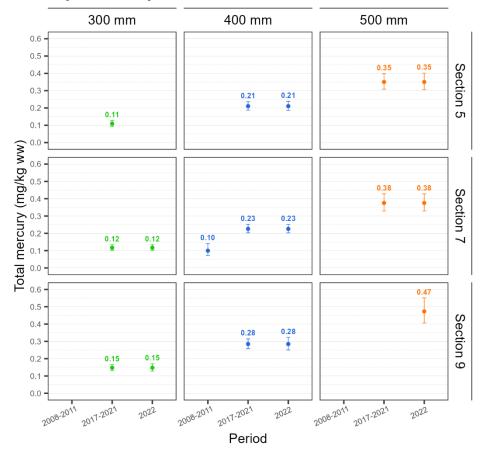




Axis scaling: x-axis = log10; y-axis = log10.

Figure 4-7. Estimates of mercury concentrations (±95% confidence intervals) in select sizes of Walleye using the best model

Walleye - Mercury Estimates



4.3.3 Rainbow Trout

Total mercury sample numbers for Rainbow Trout by fish size class, location, and time period are summarized in **Table 4-8**. All samples were from Sections 1 and 3 of the Peace River. The 200 to 300 mm and 300 to 400 mm size classes were the most represented in the dataset, followed by the 400 to 500 mm size class.

Raw data and fitted length-mercury relationships for Rainbow Trout by location and time period are shown in **Figure 4-8**. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location/time period combination for up to three sizes of Rainbow Trout (250 mm, 325 mm, and 400 mm; **Figure 4-9**).

The results for Rainbow Trout show a decrease in tissue mercury concentrations in 2017–2021 and 2022 relative to 2010–2011; this result may be due to the relatively low sample size in 2008–2011. There was essentially no change in Rainbow Trout tissue mercury concentrations observed between the 2008–2011, 2017–2021, and 2022 time periods.

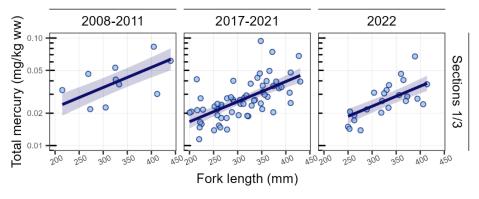
Updated fish consumption guidance based on the 2022 results for Rainbow Trout is provided in **Section 6.2**.

Table 4-8. Rainbow Trout total mercury sample numbers by size class, location, and time period

Rainbow Trout – Size Classes (fork length in mm)									
Location/Period	100-200	200-300	300-400	400-500	Total				
Sections 1/3									
2008-2011	-	3	4	3	10				
2017-2021	1	27	29	5	62				
2022	-	7	14	2	23				

Figure 4-8. Length-mercury plots showing final model fits (and ±95% confidence intervals) for Rainbow Trout

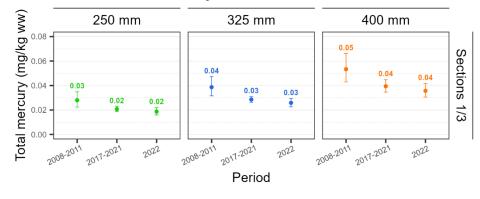




Axis scaling: x-axis = none; y-axis = log10.

Figure 4-9. Estimates of mercury concentrations (±95% confidence intervals) in select sizes of Rainbow Trout using the best model

Rainbow Trout - Mercury Estimates



4.3.4 Mountain Whitefish

Total mercury sample numbers for Mountain Whitefish by fish size class, location, and time period are summarized in **Table 4-9**. Overall, Mountain Whitefish are fairly well distributed across all sections. There were no samples collected in 2010–2011 from Sections 5 and 9 of the Peace River. Most Mountain Whitefish sampled were in the 200 to 300 mm and 300 to 400 mm size classes, with the 400 to 500 mm size class being the next most represented.

Raw data and fitted length-mercury relationships for Mountain Whitefish by location and time period are shown in **Figure 4-10**. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location/time period combination for up to three sizes of Mountain Whitefish (275 mm, 350 mm and 425 mm; **Figure 4-11**); location/time period/size combinations were not provided if there were no underlying data to support them (e.g., all sizes at Sections 5 and 9 in 2008–2011).

The results show a clear increase between the 2008–2011 and 2017–2021 time periods for all three sizes. Tissue mercury concentrations were marginally lower in 2022 than in 2017–2021.

Updated fish consumption guidance based on the 2022 results for Mountain Whitefish is provided in **Section 6.2**.

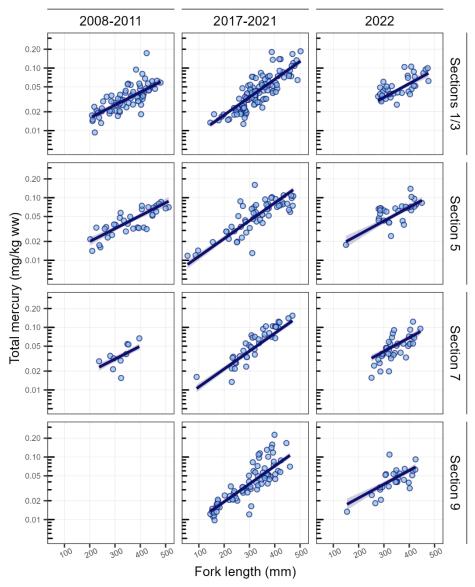
Table 4-9. Mountain Whitefish total mercury sample numbers by size class, location, and time period

Mou	Mountain Whitefish – Size Classes (fork length in mm)								
Location/Period	0-100	100-200	200-300	300-400	400-500	500-600	Total		
Sections 1/3									
2008-2011	-	-	19	33	20	-	72		
2017-2021	-	5	36	48	21	1	111		
2022	-	-	9	16	11	-	36		
Section 5									
2008-2011	-	-	10	10	13	1	34		
2017-2021	3	1	15	24	14	-	57		
2022	-	1	9	11	8	-	29		
Section 7									
2008-2011	-	-	4	6	-	-	10		
2017-2021	1	-	14	16	9	-	40		
2022	-	-	8	21	8	-	37		
Section 9									
2017-2021	-	15	22	35	7	-	79		
2022	-	1	6	15	5	-	27		



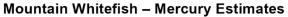
Figure 4-10. Length-mercury plots showing final model fits (and ±95% confidence intervals) for Mountain Whitefish

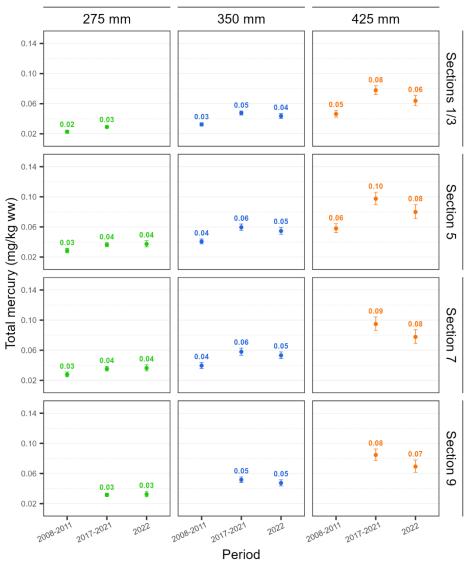




Axis scaling: x-axis = none; y-axis = log10.

Figure 4-11. Estimates of mercury concentrations (±95% confidence intervals) in select sizes of Mountain Whitefish using the best model







4.3.5 Longnose Sucker

Total mercury sample numbers for Longnose Sucker by fish size class, location, and time period are summarized in **Table 4-10**. Overall, Longnose Sucker are fairly well distributed across all sections. There were no samples collected in 2008–2011 from Sections 5 and 9 of the Peace River. Most Longnose Sucker sampled were in the 200 to 300 mm, 300 to 400 mm, and 400 to 500 mm size classes.

R-aw data and fitted length-mercury relationships for Longnose Sucker by location and time period are shown in **Figure 4-12**. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location/time period combination for up to three sizes of Longnose Sucker (325 mm, 375 mm and 425 mm; **Figure 4-13**); location/time period/size combinations were not provided if there were no underlying data to support them (e.g., all sizes at Sections 5 and 9 in 2008-2011).

The results show an increase between the 2008–2011 and 2017–2021 time periods for all three sizes. Tissue mercury concentrations were marginally lower in 2022 than in 2017–2021.

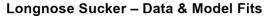
Updated fish consumption guidance based on the 2022 results is provided in Section 6.2.

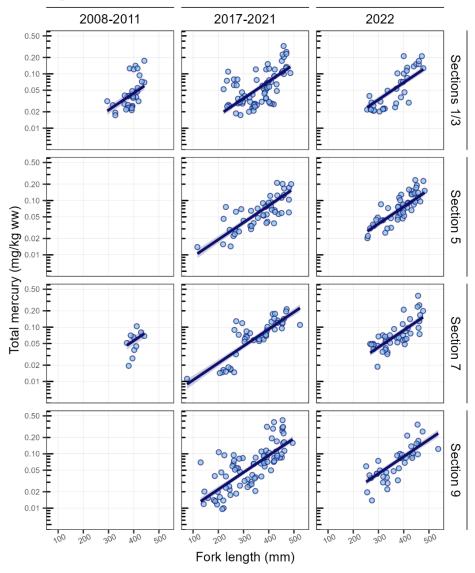
Table 4-10. Longnose Sucker total mercury sample numbers by size class, location, and time period

Loi	Longnose Sucker – Size Classes (fork length in mm)								
Location/Period	0-100	100-200	200-300	300-400	400-500	500-600	Total		
Sections 1/3									
2008-2011	-	-	1	20	10	-	31		
2017-2021	-	-	20	29	25	-	74		
2022	-	-	8	15	11	-	34		
Section 5									
2017-2021	-	1	12	16	19	-	48		
2022	-	-	7	23	22	-	52		
Section 7									
2008-2011	-	-	-	5	5	-	10		
2017-2021	1	-	13	16	13	1	44		
2022	-	-	8	19	15	-	42		
Section 9									
2017-2021	-	10	24	26	24	-	84		
2022	-	-	8	14	13	1	36		



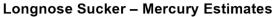
Figure 4-12. Length-mercury plots showing final model fits (and ±95% confidence intervals) for Longnose Sucker

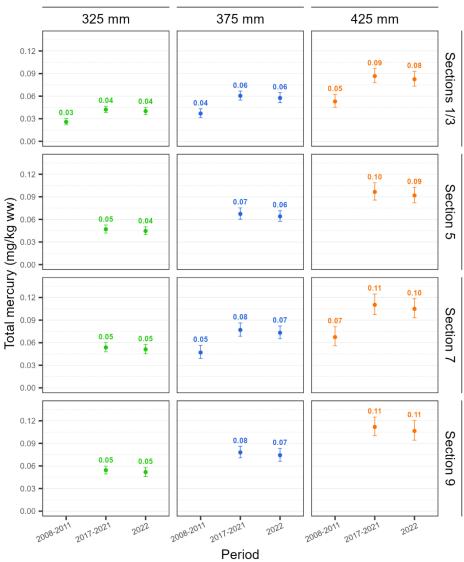




Axis scaling: x-axis = none; y-axis = log10.

Figure 4-13. Estimates of mercury concentrations (±95% confidence intervals) in select sizes of Longnose Sucker using the best model







4.3.6 Redside Shiner

Total mercury sample numbers for Redside Shiner by fish size class, location, and time period are summarized in **Table 4-11**. In addition, there were some methylmercury samples from Section 5 (six fish) and Section 7 (four fish) in the 2017–2021 time period. Sampling prior to 2022 was fairly limited. Consequently, for 2022 the results were initially looked at only for spatial patterns across the sections.

Raw data and fitted length-mercury relationships for Redside Shiner by location are shown in **Figure** 4-14. These relationships were used to estimate tissue mercury concentrations and their associated 95% confidence limits for each location for three sizes of Redside Shiner (75 mm, 85 mm, and 95 mm; **Figure** 4-15). Overall, total mercury concentrations were low and fairly similar across sizes and locations. Total mercury concentrations increased slightly across the three sizes but, generally, they decreased slightly from Sections 1 and 3 through Section 9.

Raw data for total mercury and methylmercury (where total mercury not available) by location and time period for Redside Shiner are shown in **Figure 4-16**. Only Section 5 had data for each time period. Given the limited data, mean mercury concentrations (and associated 95% confidence intervals) were calculated for each time period rather than trying to fit a length-mercury relationship (**Figure 4-17**). The results are variable and do not show any clear temporal trends.

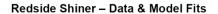
This species was included in the MMP to monitor mercury concentrations in key forage fish. As there is no information to suggest they are harvested for consumption, no fish consumption guidance is provided in **Section 6.2**.

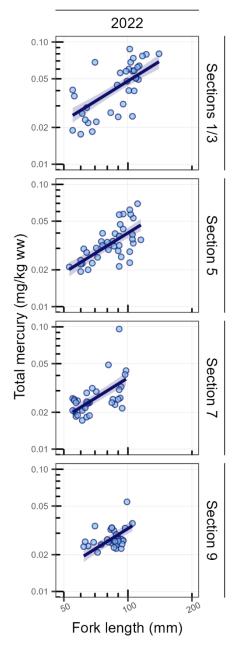
Table 4-11. Redside Shiner total mercury sample numbers by size class, location, and time period

Redside Shiner – Size Classes (fork length in mm)								
Location/Period	50-100	100-150	Total					
Sections 1/3								
2022	18	18	36					
Section 5								
2008-2011	7	4	11					
2017-2021	1	-	1					
2022	28	10	38					
Section 7								
2017-2021	-	-	-					
2022	34	-	34					
Section 9								
2022	35	1	36					



Figure 4-14. Length-mercury plots showing final model fits (and $\pm 95\%$ confidence intervals) for Redside Shiner, for 2022 only





Axis scaling: x-axis = log10; y-axis = log10.

Figure 4-15. Estimates of mercury concentrations (±95% confidence intervals) for select sizes of Redside Shiner using the best model



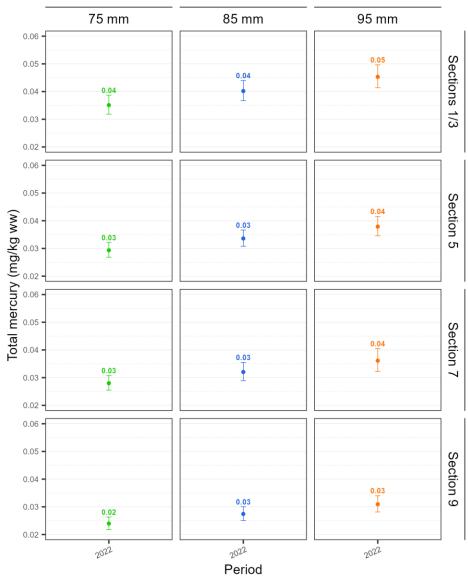




Figure 4-16. Length-mercury plots of raw data for Redside Shiner across location and time period

Blue circles represent total mercury concentrations and red circles represent methylmercury concentrations.

Redside Shiner - Data

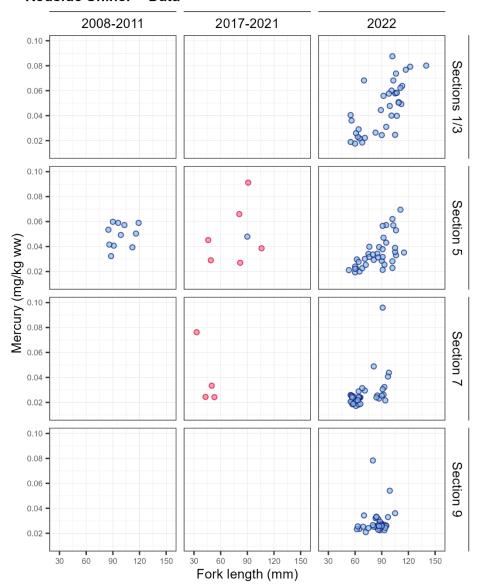
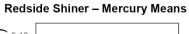
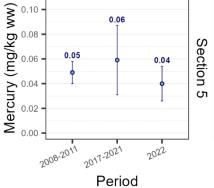




Figure 4-17. Averages (± standard deviations) of combined total mercury and methylmercury concentrations in Redside Shiner across time





4.4 Methylmercury vs Total Mercury in Fish

4.4.1 Overview

As described in **Section 4.1**, mercury (Hg) is typically measured in fish as concentrations of total mercury (THg), an analytical reporting convention for the sum of all readily digested and oxidized mercury forms. This convention is often used in fish mercury studies because: (1) direct analysis of methylmercury is more challenging and expensive, and (2) the vast majority (~95%) of mercury in fish is assumed to be methylmercury (Bloom 1992).

More recent evidence suggests that percent methylmercury (%MeHg; the ratio of methylmercury to total mercury concentrations) can vary in fish muscle tissues (Lescord et al. 2018; Aqdam et al. 2023). Although percent methylmercury in fish can be influenced by a variety of factors (e.g., fish size, trophic ecology, tissue proximate composition [i.e., lipid to protein content], and assimilation efficiency of mercury forms), they tend to be higher in larger and older individuals of piscivorous species (i.e., fisheating fish). Consequently, relying on total mercury measurements as a proxy for methylmercury is likely to be accurate for species with the highest methylmercury concentrations (i.e., those posing the greatest health risks) and potentially overestimated for individuals or species with lower total mercury concentrations (i.e., which pose low health risks).

Similar to other fish mercury studies, the Site C MMP measures total mercury concentrations in fish, assuming that they represent methylmercury concentrations in fish. As part of our efforts to characterize baseline conditions prior to filling the Site C reservoir, we wanted to document the accuracy of the assumption. To that end, we analyzed both total mercury and methylmercury on a subset of fish collected in the 2022 Core MMP and ICSP events. While this study was not intended to fully explain variability in percent methylmercury among fish species or individuals, we also did look at a number of factors including species, fish size, trophic level (indicated by nitrogen stable isotope ratios; δ^{15} N), and carbon source (indicated by carbon stable isotope ratios; δ^{13} C) to reflect potential cause-effect relationships between variability of percent methylmercury and the ecological characteristics of fish.

Data quality is assessed as described in **Appendix A**. Detailed methods and analyses for this study are reported in **Appendix D**.

4.4.2 Results

Total Mercury versus Methylmercury

The relationships between total mercury and methylmercury concentrations in target species are depicted in **Figure 4-18**. There were positive, and statistically significant, relationships between concentrations of total mercury and methylmercury in fish muscle tissues both within each and among



all target species. These results indicate that concentrations of methylmercury indeed increase with increasing concentrations of total mercury in fish muscle tissues.

Descriptive statistics of percent methylmercury are summarized in **Table 4-12**. Among the six MMP target species, percent methylmercury ranged from 77% (Arctic Grayling and Rainbow Trout) to over 100% (Lake Trout, Redside Shiner, and White Sucker). While percent methylmercury should not exceed 100% in theory, values greater than 100% may reflect the realities of the underlying laboratory analyses. As a parameter that is harder to measure, methylmercury has relatively higher laboratory variability compared to total mercury, which can lead to percent methylmercury values greater than 100% as observed elsewhere (Lescord et al. 2018; Agdam et al. 2023).

In order to better understand results of percent methylmercury, we leveraged the results of the data quality assessment (Appendix A) to compare variability between total mercury measurements and methylmercury measurements. The results support the contention that methylmercury analyses are inherently more variable than total mercury analyses. Relative percent differences between sample and duplicates were two to three times higher for methylmercury than total mercury (Figure 4-18). Particularly when drawing insights from individual sample results, high variability in laboratory results of methylmercury could thus potentially lead to spurious inferences. Based on the overall relationship shown in Figure 4-18, 82% of total mercury concentrations in muscle tissues across all target species is in the form of methylmercury.

Variability in Percent Methylmercury

We found no significant relationships between percent methylmercury and fish size, nitrogen isotopic ratios, or carbon isotopic ratios in the analyzed samples (see **Appendix D**). Concentrations of total mercury, and by proxy methylmercury, generally increase with increasing fish size, nitrogen isotopic ratios representing trophic ecology, and carbon isotopic ratios representing energy pathways (see "Key mercury-related data" plots for target species in **Appendix C** and Lescord et al., 2018). These increases in total mercury, or methylmercury, concentrations are often associated with accumulation of mercury over time in fish tissues and magnification of mercury with successive trophic transfer through aquatic food webs. As discussed in detail in **Appendix D**, it is possible that any relationship between %MeHg and these fish ecological factors could have been obscured due to the higher variability observed in methylmercury measurements relative total mercury measurements (i.e., low signal relative to noise).

4.4.3 Conclusions

Key conclusions were:

 There is a strong, positive relationship between paired total mercury and methylmercury concentrations, indicating that concentrations of methylmercury increased as concentrations of total mercury increased.



• Percent methylmercury varies substantially both within and among species, but there were no clear relationships between percent methylmercury and fish size, δ^{15} N, or δ^{13} C. It is possible that differences observed are due to the differential variability in the analyses, as laboratory and field duplicates indicated variability of methylmercury measures is 2 to 3 times higher than total mercury measures.

4.4.4 Tables and Figures

Table 4-12. Species-specific descriptive statistics of percent MeHg in fish muscle tissue samples

-	Descriptive Statistics of %MeHg								
Name	count	minimum	maximum	median	mean	std.dev.			
Arctic Grayling	9	61.18	102.16	68.99	76.73	16.96			
Bull Trout	14	31.60	112.47	82.72	78.61	19.45			
Burbot	6	67.74	119.41	74.80	87.32	25.04			
Lake Trout	6	113.86	128.97	121.46	121.39	6.60			
Lake Whitefish	4	93.47	97.31	95.29	95.34	2.08			
Longnose Sucker	16	56.75	133.09	80.48	82.92	21.34			
Mountain Whitefish	48	40.53	112.36	77.65	79.01	17.54			
Northern Pike	12	81.72	106.34	92.62	93.86	7.90			
Rainbow Trout	6	52.56	118.46	63.84	76.87	27.11			
Redside Shiner	22	47.84	130.66	90.92	85.59	25.48			
Walleye	11	37.14	119.26	81.09	81.30	25.01			
White Sucker	2	101.92	102.14	102.03	102.03	0.16			



Figure 4-18. Total mercury – methylmercury relationships within (top plots) and across (bottom plot) target species

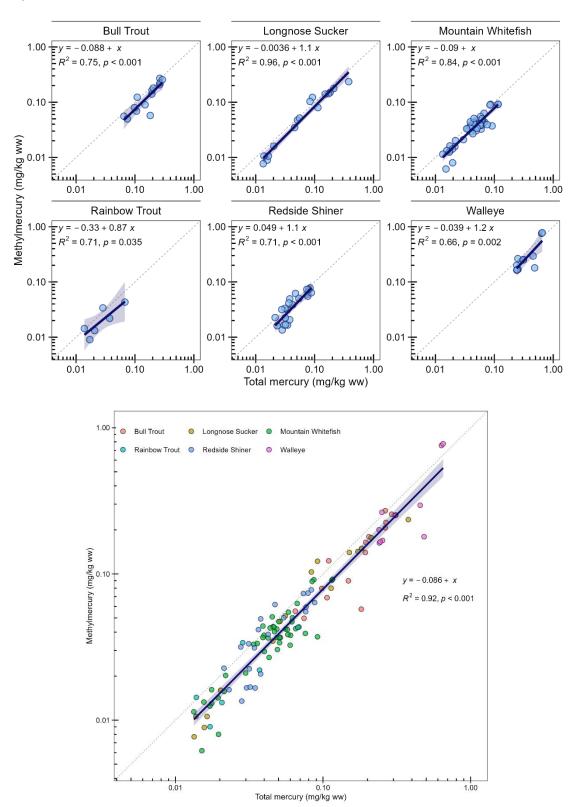
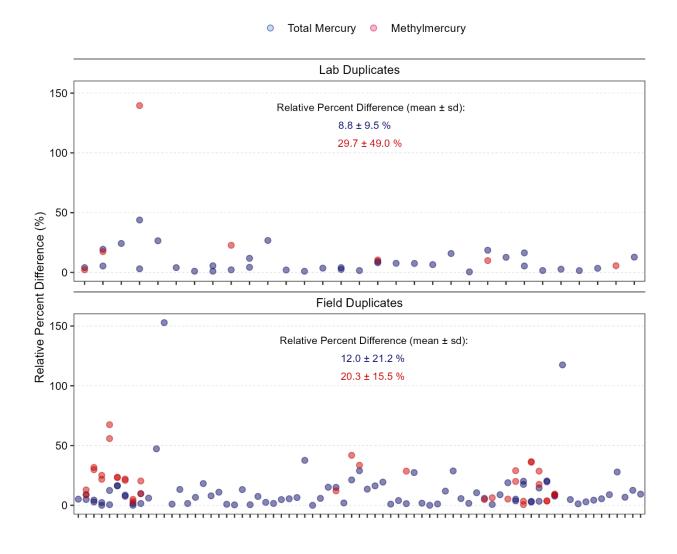




Figure 4-19. Comparison of variability of total mercury and methylmercury concentrations in laboratory and field duplicate samples.





5 INDIGENOUS COMMUNITY SAMPLING PROGRAM

5.1 Overview

The Indigenous Community Sampling Program (ICSP) is a methylmercury monitoring program implemented by Indigenous community members who collect tissue samples from fish caught for consumption.

The ICSP has three main objectives. They are to:

- Test the levels of methylmercury in fish that people eat, but which are not monitored in the Core MMP;
- Provide opportunities for Indigenous Peoples to participate in monitoring changes to the environment arising from the Project; and
- Improve food security and food sovereignty for Indigenous Peoples by building skills and knowledge related to methylmercury in fish.

To implement these objectives, training was provided within communities or at the Northern Lights College in Fort St. John. Training sessions provided a presentation that introduces methylmercury, described the effect of reservoirs on methylmercury production, and outlined the MMP. Following the presentation, a hands-on training session was provided to demonstrate how to collect a fish tissue sample. Trained community members, known as Community Champions, were provided with "Fish Kits" containing all the tools needed to collect tissue samples from fish caught in their communities.

Community Champions were compensated per sample. They were responsible for recording data (species, fork length, catch location, etc.) on standardized datasheets, collecting photographs of the fish associated with each sample, collecting the tissue sample, storing samples in a freezer, transporting samples to ALS Canada Ltd (ALS) at the end of the season, and communicating with Azimuth staff.

A brochure outlining the ICSP, its role, and how it fits into the broader MMP is provided in **Appendix E**. This publication is produced annually to communicate the findings of the program from the previous season.

5.2 2022 ICSP Results

In 2022, Community Champions from Doig River, Dene Tha', and Saulteau First Nations collected 33 fish samples from three primary locations:

- Williston reservoir (3 fish);
- Peace River near the Smoky River confluence (4 fish); and



Moberly Lake (26 fish).

The samples collected included fish from eight species, including three MMP target species (WP, MW, LSU) and five non-target species (NP, BB, LW, LT, WSU).

The concentrations of mercury in the 2022 ICSP fish broadly followed the size-related trends observed in Core MMP, with larger older fish tissue containing high concentrations. Insectivorous species such as Rainbow Trout and Mountain Whitefish had lower mercury levels, while piscivorous species higher in the food web, such as Walleye, Burbot, and Northern Pike, had higher mercury concentrations.

More detailed species-specific length-mercury results, along with consumption guidance, are provided in the 2022 ICSP Brochure (**Appendix E**).



6 FISH CONSUMPTION GUIDANCE

This section of the MMP report provides information on how frequently people can eat fish sampled under the MMP without exceeding Health Canada's guidance on safe levels of exposure to methylmercury. To help put the consumption guidance for fish from the Peace River into context, fish consumption guidance for some types of fish sold in stores and restaurants in Canada is also provided.

6.1 Methods

The methods used to calculate the fish consumption guidance were based on the approach presented in Appendix B of the MMP (BC Hydro 2022) and are described in detail in **Appendix F** of this report. The approach is summarized below.

Health Canada sets the amount of methylmercury that a person can be orally exposed to on a daily basis for their lifetime without unacceptable risk of harm. These values are known as provisional tolerable daily intakes⁸.

The maximum number of servings of a particular type of fish (i.e., species, size, location) that can be eaten in a month without exceeding Health Canada's provisional tolerable daily intakes (pTDI) for methylmercury were calculated for three groups: (1) children younger than 12 years old; (2) people who are, or could be pregnant; and (3) others. The calculations were made using the following input variables:

- The body weight of the person eating the fish. These input values were based on default average body weights for Canadians, recommended by Health Canada;
- The average serving size of fish. These input values were based on either
 - Default average serving sizes of fish that Health Canada recommends for Canadians, or
 - The average serving size of fish eaten by adult Indigenous people living on reserve in British
 Columbia, as reported by the First Nations Food, Nutrition, and Environment Study;

 $^{^8}$ The provisional tolerable daily intake (pTDI) of methylmercury for the general population recommended by Health Canada is 0.47 micrograms of methylmercury per kilogram body weight per day ($\mu g/kg/d$). The provisional tolerable daily intake of methylmercury for people who are, or could be, pregnant and for children less than 12 years of age recommended by Health Canada is 0.2 $\mu g/kg/d$. A microgram is a millionth of a gram.



• The average concentration of methylmercury in fish. The source of these input values varied depending on the type of fish. Estimates of the average concentrations of methylmercury in Core MMP target fish species were based on detailed modelling of location and species-specific length-mercury relationships from the 2022 MMP sample data. Estimates of the average concentrations of methylmercury in MMP non-target fish were derived either from "generic" models of length-mercury relationships based on pooled Peace River sample data (i.e., all locations and years) or arithmetic means of the concentration of mercury in all samples for a species (i.e., all locations, years, and lengths). Arithmetic means were used in cases where a model of a relationship between length and mercury could not be fit to the data.

Fish consumption guidance was not calculated for Redside Shiner because it was assumed people do not regularly eat this species.

6.2 Results

The maximum number of servings of a particular type of fish (i.e., species, size, location) that can be eaten in a month without exceeding Health Canada's provisional tolerable daily intakes for methylmercury are presented in **Figure 6-1**.

In the guidance tables, fish are listed in increasing order of the concentration of methylmercury they contain. People can eat a particular fish, *or any fish listed above it in the guidance table*, at the indicated frequency (servings per month).

6.3 Discussion and Future Direction of MMP Fish Consumption Guidance

The fish consumption guidance presented in this 2022 MMP report is consistent with the methods for communicating fish consumption guidance described in the MMP (BC Hydro 2022). However, there are some limitations to this approach.

Ideally, the MMP fish consumption guidance should be:

- Accurate;
- Easy for the public to access and understand; and
- Allow people to eat as much fish as possible, without exceeding their pTDI.

However, the current approach to MMP fish consumption guidance is not optimized to meet these objectives. This is discussed below.

6.3.1 Limitations to the Current Approach to MMP Fish Consumption Guidance

As concentrations of methylmercury in fish start to change once the Site C reservoir is created, it will be important to ensure that people base their fish consumption decisions on the most current estimates of

mercury concentrations in fish and the associated consumption guidance. Using hard-copy consumption guidance tables not only creates challenges with version control but also creates a risk that inaccurate, out-of-date guidance could be circulating in the public domain.

Research on baseline fish consumption indicates that most people who regularly eat fish tend to eat more than one type of fish (MMP baseline fish consumption report, in preparation). And for people who eat more than one type of fish, the current guidance format is not optimal. If they eat more than one type of fish, their maximum recommended rate of fish consumption according to the current guidance approach is based on the fish they eat that has the highest mercury concentration. Consequently, if a person eats a mix of low mercury fish and high mercury fish, their consumption of the lower mercury fish is unnecessarily restricted.

Another issue is that there is a risk people could misinterpret the consumption guidance tables and think that they can safely eat the indicated servings per month for *each* type of fish. This could result in their being exposed to doses of methylmercury greater than their provisional tolerable daily intake.

6.3.2 Option to Improve MMP Fish Consumption Guidance

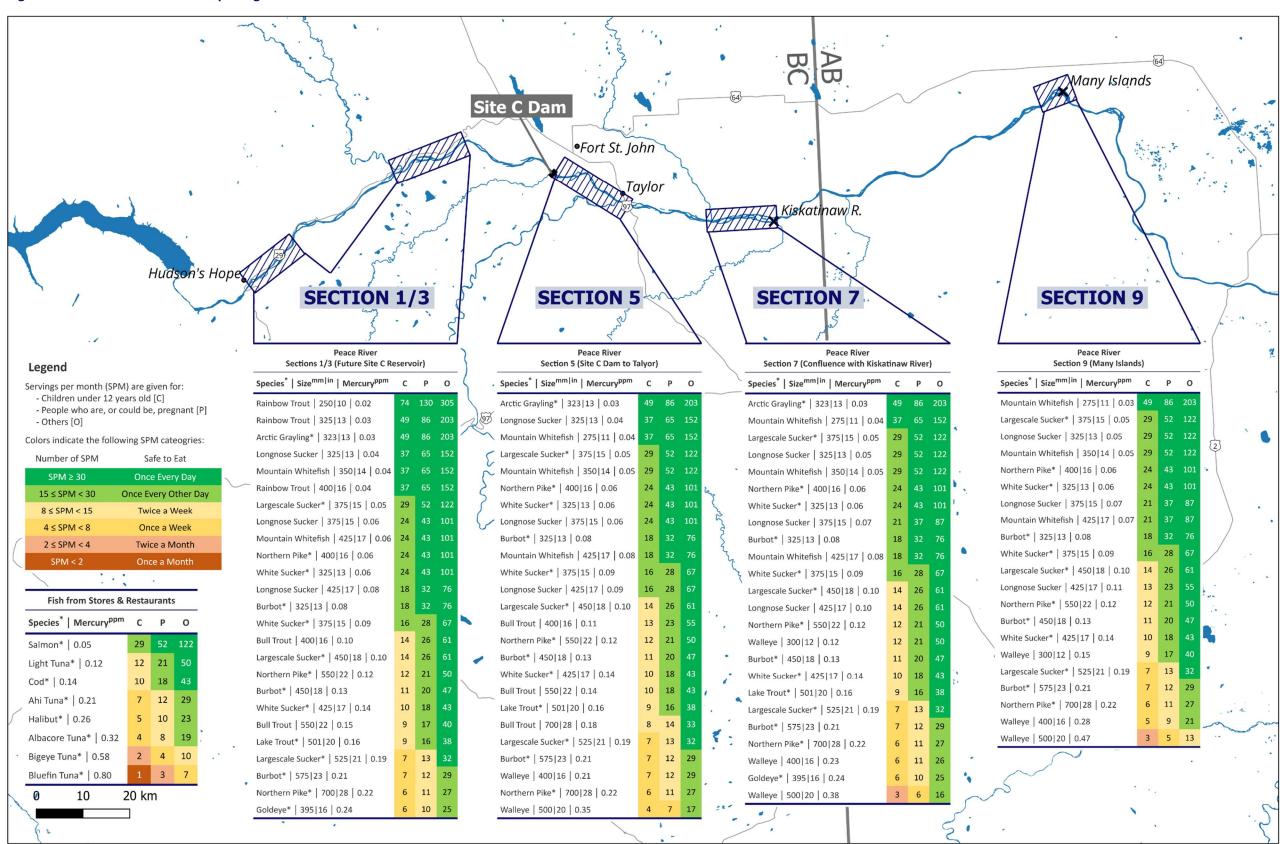
Providing the MMP fish consumption guidance in an on-line format would address some of the limitations with the current approach. For example, the guidance could be provided through an app (e.g., Shinny app) that could be accessed by any internet-enabled device (e.g., computer, tablet, or smart phone). Providing the MMP fish consumption guidance in an on-line digital format such as this:

- Could provide real-time, customized fish consumption guidance that is accurate to the user's
 own serving size, age, and gender, and it would optimize the fish consumption guidance for
 people that eat more than one type of fish (i.e., does not unnecessarily limit rates of fish
 consumption);
- Could be updated with current estimates of concentrations of methylmercury in fish as soon as new data are available (i.e., it would mitigate the risk of out-of-date, inaccurate guidance in public circulation); and
- Removes the need for the public to remember the guidance, because they can refer to the app whenever they need to.

Developement of an MMP fish consumption guidance app as an alternative or complimentary approach to the MMP fish consumption guidance tables will be discussed as an option with Indigenous Nations and Health Authorities at a future Site C Methylmercury Subcommittee meeting.

Site C MMP – 2022 Report

Figure 6-1. 2022 MMP fish consumption guidance



7 BASELINE FISH CONSUMPTION

The B.C. Environmental Assessment Certificate and the Federal Decision Statement require BC Hydro to collect information on how much fish Indigenous and non-Indigenous people in the Project area eat. These requirements are addressed by the plans described in Section 7.0 Fish Consumption Program of the MMP (BC Hydro 2022), which include collecting data on how much fish people eat during baseline and operational periods. The activities undertaken in 2022 to collect information on baseline fish consumption are described below.

The approach to collect information on baseline fish consumption is described in detail in Section 7.0 of the MMP. The approach included two strategies:

- Estimating how much fish people eat using existing sources of data on fish consumption; and
- Collecting new data on fish consumption.

Activities under both strategies were undertaken in 2022.

7.1 Existing Data on Baseline Fish Consumption

Analysis of existing data sources on fish consumption began in 2022. Data on how much fish people eat were extracted from the First Nations, Food, Nutrition, and Environment Study and from Country Foods Harvest Questionnaires.

First Nations, Food, Nutrition, and Environment Study. The First Nations, Food, Nutrition, and Environment Study (FNFNES) was a study of the traditional diet of adult Indigenous people living on reserves south of 60 degrees latitude in Canada. Of the 13 Indigenous Nations potentially affected by the Project, the following six Indigenous Nations participated in either the Alberta (Chan et al. 2016) or British Columbia (Chan et al. 2011) FNFNES regional studies (**Figure 7-1**):

- 1. Dene Tha' First Nation participated in the Alberta regional study in 2013;
- 2. Fort Nelson First Nation participated in the British Columbia regional study in 2008–2009;
- 3. Prophet River First Nation participated in the British Columbia regional study in 2008–2009;
- 4. Horse Lake First Nation participated in the Alberta regional study in 2013;
- 5. Doig River First Nation participated in the British Columbia regional study in 2008–2009; and
- 6. Saulteau First Nations participated in the British Columbia regional study in 2008–2009.



Figure 7-1. Indigenous Nations in British Columbia and Alberta that participated in the First Nations Food, Nutrition, and Environment Study





The FNFNES collected data on the traditional diets of Indigenous adults living on reserve. The FNFNES used two methods, a food frequency questionnaire and a 24-hour dietary recall. Both are established, validated methods used in nutrition research. Dietary data were collected through household interviews conducted in the fall. To calculate fish intake rates, data from the food frequency questionnaire on the frequency of fish consumption were integrated with serving size information from the 24-hour dietary recall.

Two of the research scientists from the FNFNES, dietician Karen Fediuk and statistician Peter Berti, work for Reciprocity Research Inc. Azimuth subcontracted analyses of the FNFNES data to Reciprocity Research Inc. Analyses of the FNFNES data started in 2022 and extended into 2023.

Country Foods Harvest Questionnaires. Data on harvest and consumption of traditional foods, including fish, were available for adults of the Duncans First Nation and Horse Lake First Nation. These data were collected in 2010 and 2011 as an adjunct to Traditional Land Use Surveys that were conducted as part of the Environmental Impact Statement for the Project. BC Hydro provided Azimuth with the raw data from the Horse Lake First Nation and Duncans First Nation Country Foods Harvest Questionnaires. Azimuth subcontracted analysis of the Duncans First Nation and Horse Lake First Nation Country Foods Harvest Questionnaire data to Reciprocity Research Inc. Analyses of the Country Foods Harvest Questionnaire data started in 2022 and extended into 2023.

Limitations of Existing Baseline Fish Consumption Data

The MMP sought to minimize demands on Indigenous Nations, and for baseline fish consumption it relied on existing information. The existing information, however, had some important limitations. These included:

- The data were approximately 10 years old;
- The data were for adults only and did not include information on how much fish children eat; and
- The data were for wild-caught fish only; they did not include information on how much fish from stores or restaurants people eat.

Because of these limitations, efforts were also made to collect new data on baseline fish consumption.

7.2 New Data on Baseline Fish Consumption

Collecting new data on baseline fish consumption was started in 2022. This involved two activities:

- Designing and implementing a creel survey fish consumption questionnaire; and
- Having discussions with Indigenous Nations to determine interest in participating in a baseline fish consumption survey.

These activities are described in more detail below.

7.2.1 Creel Survey Fish Consumption Questionnaire

Aski Reclamation Inc. and LGL Ltd. conducted a creel survey on the Peace River from July 2022 to June 2023. The Peace River Creel Survey (Mon-2, Task 2c of the FAHMFP; BC Hydro 2015) included interviews with anglers at locations on the Peace River between Peace Canyon dam and Many Islands, Alberta.

Azimuth, in collaboration with Karen Fediuk (Reciprocity Research Inc.), designed a fish consumption questionnaire to be administered during the creel interviews with anglers. The creel survey fish consumption questionnaire was in the format of a food frequency questionnaire and included questions on how often people eat fish from the Peace River, other wild-caught fish, and fish from stores and restaurants. The creel survey fish consumption questionnaire also included questions on the average amount of fish people eat in a meal.

In June 2022, Azimuth provided training to technicians from Aski Reclamation Inc. that included background information on methylmercury in fish and the creel survey fish consumption questionnaire. Technicians from Aski Reclamation Inc. began implementing the creel survey fish consumption questionnaire in July 2022. Forty creel survey fish consumption questionnaires were completed during creel survey interviews conducted in July, August, and September 2022. An additional 57 creel survey fish consumption questionnaires were completed in the spring of 2023.

Responses to the creel survey fish consumption questionnaires provide information on the rates at which interviewees and members of their households consume fish. Data from the creel survey fish consumption questionnaires will be analyzed and reported at a future date.

7.2.2 Discussions with Indigenous Nations

Indigenous Nations were briefed on the reasons for collecting new data on baseline fish consumption and invited to participate. Discussions with Indigenous Nations on this topic occurred on the following occasions:

- May 2022 Methylmercury Subcommittee meeting;
- October 2022 Environmental Forum meeting;
- October 2022 Doig River First Nation community open house;
- November 2022 Saulteau First Nations community dinner; and
- 2022 fourth quarter Quarterly Project Update meetings.

By the end of 2022, the following Nations expressed interest in participating in a process to provide new data on baseline fish consumption:

- Blueberry River First Nation;
- Halfway River First Nation;
- McLeod Lake Indian Band; and
- Saulteau First Nations.

Follow-up discussions with the Nations listed above regarding the timing and format of data collection continued into 2023.

7.3 Baseline Fish Consumption Data Analyses and Reporting

It is anticipated that collecting and analyzing the baseline fish consumption data will be completed in a future year, and a stand-alone report on fish consumption during the baseline period will be issued .



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APPENDICES

APPENDIX A: DATA QUALITY ASSESSMENT (2021-2022)

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APPENDICES

Appendix A1: SINLAB Interpretation Guide



A.1 INTRODUCTION

A.1.1 Quality Assurance/Quality Control

A Quality Assurance/Quality Control (QA/QC) program helps to ensure that the chemical and biological data collected for the Site C MMP are representative of the material or populations being sampled, are of known quality, have sufficient laboratory precision to be highly repeatable, are properly documented, and are scientifically defensible.

- Quality Assurance (QA) are the practices employed (e.g., use of experienced field staff, Standard
 Operating Procedures [SOPs], field data sheets, and certified laboratories) to collect scientifically
 defensible data meeting data quality objectives (DQOs).
- Quality Control (QC) are the measures taken to verify that the specific DQOs (e.g., limits for bias and precision) are met. QC measures can be based in the field (e.g., field duplicates, equipment blanks, and travel blanks) or laboratory (e.g., laboratory duplicates, method blanks, certified reference materials [RM], and laboratory standards).

The Site C MMP fish mercury data collection to-date has been integrated into other monitoring programs (e.g., FAHMFP Mon-2). Data quality of MMP-related data from 2010 though 2020 has already been assessed (Azimuth 2021). This appendix includes data from 2021 and 2022. An overview of the QA/QC workflow for the MMP is provided in **Table A1-1**.

The data quality assessment evaluated each component of the MMP dataset, which is comprised of the following key data:

- Fish morphometrics (i.e., size and shape) measured in the field and limited to length and weight.
- Tissue chemistry focusing on mercury, methylmercury, and moisture; analyzed in an analytical laboratory using tissue samples. Tissue preferentially obtained using non-destructive techniques (Baker et al. 2004).
- Tissue stable isotopes analysis (SIA) typically limited to carbon and nitrogen only; analyzed in an analytical laboratory using a tissue sample. Tissue preferentially obtained using non-destructive techniques (Baker et al. 2004).
- Fish age a combination of methods, including capture history and aging structures (otoliths [destructive], fin rays [non-destructive] and scales [non-destructive]). Where available capture history and aging results are used together to refine age estimates (Golder and Gazey 2018, 2019, 2020; Golder 2020, 2022; WSP 2023).



Data Quality Assessment (2021-2022)

• Supporting media – samples of surface water, porewater, sediment, and invertebrate tissue collected in locations associated with fish sampling using a range of techniques (surface water sampling, Ponar/Ekman dredge, zooplankton tows).

For each data type, QA/QC assessment methods and findings are presented to demonstrate that the chemical and biological data collected meet the data quality needs of the Site C MMP.

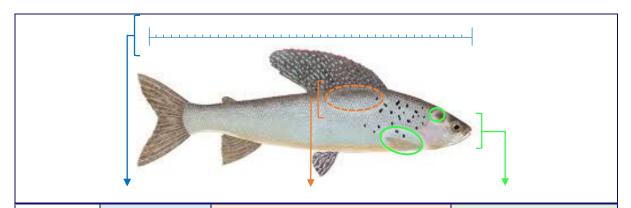
A.1.2 Document Structure

The remainder of this document is structured as follows:

- Quality Assurance (Section A.2) outlining the practices employed to ensure data quality
 including data recording (field datasheets), standard operating procedures, and sample integrity.
- Quality Control (Section A.3) reporting on the quantitative findings from QC samples used to verify that Data Quality Objectives (DQOs) are met.
 - QC Methods and Data Quality Objectives (Section A.3.1) describing the methods used in QC assessment including a detailed listing of all DQOs.
 - Fish QC Results (Section A.3.2) reporting QC results for fish morphometrics, tissue chemistry, tissue stable isotope analysis, and fish age analysis.
 - Supporting Media QC Results (Section A.3.3) reporting QC results for each supporting media (surface water, porewater, sediment, invertebrate tissue).



Table A1-1. Summary of QA/QC workflow for baseline Site C mercury and supporting data.



	Morphometrics	Tissue A	Analysis	Age Analysis
Workflow	Length (L) & Weight (W)	Mercury (Hg)	Stable Isotope Analysis (SIA)	Aging Structures
Field ¹	Electronic entry with QA features built in.	Field duplicate samples	Field duplicate samples	Age structure collected: Finray (GR, GE, MW, RB), Scales (GE, NP, LT, BT, WP). ² Otoliths where fish succumbed to sampling only.
Laboratory	n/a	Laboratory QC (ALS): laboratory duplicates, lab control samples, method blanks and certified reference materials.	Laboratory QC (SINLAB): laboratory duplicates, secondary standards and check standards.	Two experienced Golder personnel independently age each structure. Aging methods evaluated annually and adjusted based on QC results.
Database	Electronic entry completed in the field.	Direct electronic import from laboratory reports.	Direct electronic import from laboratory reports.	Direct electronic import.
Statistical Analysis	L vs W in coarse outlier assessment.	L vs Hg & δ15N vs Hg in coarse outlier assessment.	δ15N vs Hg in coarse outlier assessment.	None, less precise measurement than length

Note:



 $^{^{\}scriptsize 1}$ Field sampling conducted by Golder (now WSP).

² Species Codes: BT = Bull Trout, MW = Mountain Whitefish, RB = Rainbow Trout, LSU = Longnose Sucker, RSC = Redside Shiner, WP = Walleye, GE = Goldeye.

A.2 QUALITY ASSURANCE

Careful collection, documentation and handling of all samples and data, regardless of media, data type, or frequency is a key component of QA on a field program. For all data sources, field programs were carried out by experienced field crews that follow standard field procedures. Below is an assessment of the QA component of the Site C baseline fish mercury data.

Field Datasheets

As of 2015¹, BC Hydro implemented a system of electronic entry of all field data, which has a number of benefits from a data quality perspective. 1) there is no extra data-handling required as is the case with field hard copy to office electronic copy transcription. 2) the Fisheries and Aquatic Habitat Monitoring and Follow-up Program (FAHFMP) database has built-in QC features. For example, a warning prompt if the fish body condition measure is outside an acceptable range. For further information see the FAHMFP study design document (BC Hydro 2015).

Standard Operating Procedures (SOPs)

Tissue sampling methods for mercury and SIA for both the early and recent MMP baseline periods were based on Baker et al. (2004). A brief synopsis of these procedures is as follows:

Samples of dorsal muscle tissue are acquired from all fish. Fish captured alive are anesthetized, biopsied, then released alive. Tissue plugs (one to two for mercury and one for SIA) are collected from anaesthetized fish using single-use tissue biopsy sampler. The tissue samples are placed into sterile, individually-labeled vials, kept on ice, and frozen at the end of the field day. Note that for fish that succumb to capture, a combination of biopsy and/or fillet samples may be collected depending on the needs of the program; inadvertent mortalities are generally used to collect QC samples to minimize the stress of collecting additional biopsy samples on live fish.

Details on ageing structure collection methods are provided in the annual FAMHFP reports (WSP 2023).

Sample Integrity

Sample shipping and handling integrity QA involved documenting any issues with the sample submission across all sampling components (e.g., fish tissue, surface water, porewater, sediment, invertebrate tissue). ALS reports concerns surrounding sample submission as "Sample Integrity" issues in the Sample

¹ While the FAHMFP has been collecting data since 2015, mercury data collection under this program began in 2017.



Receipt Confirmation (SRC) email after the samples were received. Sample integrity issues are typically noted for two reasons: samples were damaged during transport or the recommended hold time for a particular parameter was exceeded prior to analysis. SINLAB reports concerns with samples submitted for SIA via email; typical issues identified are discrepancies between the chain-of-custody (CoC) form and the sample containers.

No samples were reported damaged by the laboratories. Hold time exceedances occurred in several supporting media samples:

Surface water: pH (0.25 h), nitrite (3 days)

Porewater: pH (0.25 h), nitrite (3 days)

Sediment: TOC (3 days)

Sample integrity issues do not necessarily mean the data were unusable; rather, this information is meant to help the client make an informed decision on how to proceed with analysis and interpret the results.

Certified Laboratories

Shipments of samples to the analytical laboratories were accompanied by CoC forms detailing sample identification, reporting requirements, and sample handling information. CoC forms not only inform the laboratory of sample details, they also help ensure that sample handling instructions are followed, sample hold-times are met, and that all samples are accounted for.

Tissue, Water and Sediment (Chemistry) Analysis

All tissue analyses for mercury and moisture along with water and sediment analyses for various parameters has been conducted by ALS Environmental (ALS), a CALA-accredited laboratory in Burnaby, BC. The BC environmental laboratory QA/QC procedures are detailed in Austin (2020).

Carbon and Nitrogen Stable Isotopes Analysis (SIA)

All SIA analyses were completed by the University of New Brunswick's (UNB) Stable Isotopes in Nature laboratory (SINLAB). SINLAB was established in 1999 as part of UNB's Canadian Rivers Institute. They specialize in SIA in environmental samples to support academic, private sector and government researchers.

Age Analysis

Golder (now WSP) has conducted all the fish ageing for the MMP. QA/QC procedures for all MMP baseline data sources included independent verification of individual fish age estimates by two or more experienced practitioners for each aging structure sample.



To continually increase the accuracy of ages assigned using aging structures, specifically fin rays, ageing methods are modified relative to previous study years based on lessons learned on this project and on best practices as published in the literature. Aging methods, including changes, are described in the annual FAHFMP Mon-2, Task 2a reports, the most recent of which is particularly thorough (WSP 2023).

Generalizing across species, the hierarchy of the quality of aging methods is: encounter history & years at-large > otoliths > fin rays > scales (WSP 2023). However, rather than assign a qualitative value to the data (i.e., good, moderate, poor), the MMP Database instead provides the method that was used for ageing, thereby leaving the decision of whether or not to include the ages in an analysis up to the user (i.e., does the user consider fin rays, as an example, to be accurate enough for their purposes).

To date, the MMP has utilized age and weight data as supporting variables, not as primary variables like length, in the assessment of size-mercury relationships in fish. For this reason, all age data have been deemed acceptable for the MMP assessments and included in analysis, recognizing that there is known bias in subsets of the data. To ensure full transparency for future MMP data assessments involving fish age, aging data and aging methods have been carefully documented in the MMP database.



A.3 QUALITY CONTROL

This section provides a summary of QC methods outlining quality control samples and the data quality objectives (DQOs) used to evaluate them. QC results are then reported for fish tissue and supporting media (surface water, porewater, sediment, and invertebrate tissue). Any DQO failures are highlighted, followed by an overall statement of data quality for each of the five main data types.

A.3.1 QC Methods and Data Quality Objectives

Quality control (QC) refers to the formal goals, called data quality objectives (DQOs), that are used to assess data quality, the statistical assessment of data quality, and the remedial measures taken whenever DQOs are not met. DQOs are evaluated through analysis of QC-specific samples that are either collected in the field (field QC samples) or are part of internal QC assessments conducted by certified laboratories (laboratory QC samples).

Field and laboratory QC sample types can be generally categorized as follows:

- Duplicate samples: Field Duplicates (FD) or Laboratory Duplicates (LD)
- Blank samples: Equipment Blanks (EB), Travel Blanks (TB), or Matrix Blanks (MB)
- Positive control QC samples: Matrix Spikes (MS), Laboratory Control Samples (LCS), Certified Reference Material (RM), Secondary Standards & Check Standards (Standards).

Some QC samples only apply to specific media (e.g., Travel Blanks for surface water and porewater only), while others apply to all media (e.g., Field Duplicates).

The level of confidence in the laboratory results is assessed by comparing the QC sample results to DQOs. The DQOs for field and laboratory QC samples are specific to each analyte and type of QC sample and are based on long-term method performance and/or prescribed in the reference methods. It is important to note that DQOs are a guide to data quality. Ultimately, the assessment of overall data quality is made by integrating across all QC results to make a professional judgement decision on the usability of the data for the project. For example, a single DQO does not necessarily mean that the underlying data are unusable for the project. Rather, QC failures are examined on a case-by-case basis to determine their significance. Depending on the situation, assessed data will fall into one of these categories:

- No issues all QC samples meet DQOs
- Minor issues majority of QC samples meet DQOs, but there are infrequent, low-magnitude QC failures that are unlikely to affect overall data usability. Care should be taken not to place too much emphasis on individual results, but general spatial or temporal patterns should be robust.



- Moderate issues frequency or magnitude of QC failures is such that there is sufficient
 uncertainty in the results that they are considered usable, but that caution should be used when
 making conclusions regarding low to moderate magnitude temporal or spatial patterns. These
 data receive a 'cautionary' QC flag that is permanently associated with the data to allow their
 easy identification in future analyses.
- *Major issues* frequency and/or magnitude of QC failures is such that the results are deemed unusable. These data are considered unusable, receive an 'unreliable' QC flag, and are excluded from future analyses.

DQOs for all QC samples utilized in the Site C MMP are discussed in detail below and are summarized in **Table A3-2** and **Table A3-3**.

DQOs for Duplicate QC Samples (FD and LD)

Chemical Analysis (ALS)

Results of the field and laboratory duplicates are assessed by measuring the relative percent difference (RPD) and comparing results to predefined DQOs. The RPD is the percent difference between original and duplicate measurements and is a measure of precision by the laboratory and the magnitude of variability between original and duplicate samples. In the case of field duplicates, an added level of variability may be attributed to sampling procedures but may also be attributed to natural conditions (i.e., spatial heterogeneity in the sampling media). The equation used to calculate the RPD is as follows:

$$RPD = \frac{(A-B)}{\left(\frac{A+B}{2}\right)} x \ 100$$

where: A = analytical result; B = duplicate result.

RPD values may be either positive or negative, and ideally should provide a mix of the two, clustered around zero. Consistently positive or negative values may indicate a bias. The DQOs for laboratory duplicates are parameter specific. The DQO for methylmercury in water is an RPD between laboratory duplicate samples of less than 30%. DQOs for other parameters are lower (e.g., 20% for metals, 15% for dissolved organic carbon, 10% for alkalinity species, and 5% for conductivity). To account for higher variability in low concentration laboratory duplicates, an RPD DQO exceedances only applies when the absolute difference between duplicate pairs is greater than 2 times the detection limit (denoted by "DIFF"; Table A3-2 and Table A3-3). In certain cases, comparisons of duplicate samples will receive a 'not-determined' qualifier when detection limits are not the same (Table A3-1).

For the field duplicates, the DQOs were defined as 1.5 times the laboratory RPD DQOs from ALS for chemistry analysis. This approach is consistent with guidance from CCME (2016). Use of 1.5-times multiplier for the field duplicates accounts for the fact that field duplicates are inherently more variable



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compared to laboratory duplicates. If ALS did not report an RPD limit for a particular analyte, the DQO was set to an RPD of 40%. This multiplier also applies to absolute difference calculations such that RPD DQO exceedances only apply when the absolute difference (DIFF) between duplicate pairs is greater than 3 times the detection limit (DL).

Procedures followed for all potential combinations of sample and duplicate outcomes are outlined in **Table A3-1**.

Table A3-1. Procedure used to determine whether duplicates samples receive a `not-determined` qualifier or are assessed normally.

Ca	ses	DL		(Commont	
Samp	Dup	Comparison	DIFF	RPD	Final	Comment
< Target DL	< Target DL	Identical and low	0	0	Pass	-
< Target DL	< Higher DL	Different	NA	Value	Pass (RPD pass) or ND (RPD fail)	Can't calculate DIFFx due to different DLs
Detect	< Target DL	Identical	Value	Value	Normal	-
Detect	< Higher DL	Different	NA	Value	Pass (RPD pass) or ND (RPD fail)	Can't calculate DIFFx due to different DLs
Detect	Detect	Different	NA	Value	Pass (RPD pass) or ND (RPD fail)	Can't calculate DIFFx due to different DLs
Detect	Detect	Identical	Value	Value	Normal	-

Note: 'DL' = detection limit, 'ND' = not determined, 'DIFFx' = detection limit standardized difference, 'RPD' = relative percentage difference.

Stable Isotope Analysis (SINLAB)

SINLAB uses absolute differences between laboratory duplicate results as a QC check. It is generally expected that laboratory duplicates will be within 1% of each other; they are generally re-analyzed if there are larger discrepancies between results (Nakamoto pers. comm. 2022). However, the laboratory does not use this as a strict DQO, but rather to flag it for potential methodological issues, as reproducibility from replicate analysis of unknown samples is often driven by study design and preparation of the sample (e.g., homogenization).

Generally, FD DQO values are set at 1.5x higher than those used for laboratory; however, as SINLAB does not provide formal laboratory duplicates DQOs, FD DQOs were not developed in advance for SIA. Rather, FD for SIA were evaluated following the same approach as laboratory duplicates (absolute difference), with consideration as to how they provide insights into laboratory precision.

DQOs for Blank QC Samples (EB, TB, MB)

For field travel blanks and equipment blanks, the DQO is analyte concentrations below the DLs. In cases where analytes are detected, the relevance of these concentrations is assessed by comparison to the concentrations found in regular samples:



Sample result < DL – no flag

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- Sample result >5 x the concentration detected in the blank QC sample no flag
- Sample result <5 x blank QC sample and sample results consistent with historical data –
 cautionary flag
- Sample result <5 x blank QC sample and sample results unrepresentative of historical data unreliable flag

For laboratory matrix blanks, the DQO is also analyte concentrations below DLs. In cases where analytes are detected, two qualifiers are used by ALS to identify sample results that are still deemed reliable:

- "B" qualifier associated sample results which were less than DL or greater than 5 x blank levels are considered reliable
- "MB" qualifier DLs were adjusted for samples with positive hits below 5 x blank levels.

DQOs for Positive Control QC Samples (MS, LCS, RM, Standards) Chemical Analysis (ALS)

For matrix spikes, laboratory control samples, and reference material the DQO is 100% recovery, plus or minus a certain percentage (generally \pm 10 to 30% depending on the analyte).

Stable Isotope Analysis (SINLAB)

SINLAB provides an Interpretation Guide (**Appendix A1**) which includes expected values (mean \pm SD) for both secondary and check standards. Although SINLAB conducts this assessment internally, Azimuth has double checked results of the secondary and check standard runs to ensure that their mean \pm SD overlaps with that of expected values.

Other QC targets

QC Sample frequency

The target number of QC samples analyzed relative to the total number of samples is outlined in **Table A3-2** and **Table A3-3**. Following guidance from the *BC Field Sampling Manual* (BC Gov, 2013), the target frequency of FD is one every 10 samples (10%), while the frequency of EB and TB varies, but is generally once every sampling event. In chemical analyses conducted by ALS, the frequency for LD, MB, MS, LCS, and RM is 1 in 20 (5%), For SINLAB, the recommended number of samples run in duplicate is 1 in 25 (4%; SINLAB 2023), while Secondary Standards and Check Standards are run at a frequency of 1 to 9%.

Detection Limit (DL) targets

Target detection limits (DL) may not be met for a range of reasons, most commonly due to dilution requirements (high dissolved solids/electrical conductivity), insufficient sample mass, or sample matrix



effects (chemical interference, colour, turbidity). ALS identifies these instances and the adjusted detection limit is assessed for potential implication to the interpretation of results.



Data Quality Assessment (2021-2022)

Table A3-2. Summary of field quality control (QC) samples and the associated data quality objectives (DQO) specific to laboratory and media type.

QC Sample Group	Quality Control Sample	Sample Description	Media	Laboratory Analysis	Frequency Target	Data Quality Objectives (DQO)	
	Field Duplicate (FD)	FD provide insights into (a) variability in field conditions and (b) the precision of laboratory analyses. Duplicate samples are collected from the same location and treated independently through the sampling and analysis process.	All media	Chemistry (ALS)	1 in 10	RPD < 1.5 x Lab DQO *IF* DIFF > 3 x DL Same methods as lab duplicates (i.e., DQO and DIFF; see below for more details), but using 1.5x lab duplicate RPD and 3x DL for DIFF, reflecting higher field variability in field samples. Analytes are flagged if both the RPD and DIFF exceed targets. Cases where the detection limits varied between the sample and duplicate are considered "ND" (not determined).	
Field				Stable isotopes (SINLAB)	1 in 10	<u> SAMP - DUP ≤ 1‰</u> No formal DQO. As a QC check, absolute differences between the original and duplicate samples were compared to $1‰$ as a guide.	
rieid	Equipment Blank (EB)	These samples are analyzed to assess cross contamination in the sampling equipment that could lead to elevated concentrations or false positive data. These samples are comprised of analyte-free deionized water passed through the sampling equipment.	Surface water Porewater Sediment	Chemistry	1 per sampling	Blank < DL *OR* Result > 5 x Blank conc. *OR* Result < DL. Blank conc. is <dl, associated="" is="" or="" result="" sample="" the="">5x the concentration</dl,>	
	Travel Blank (TB)	Analyzed to verify the "analyte-free" status of the deionized water within the TB sample bottles. Provided by the laboratory and taken into the field unopened. TB assess possible contamination caused by the sample bottles, and cross-contamination from shipping/storage or at the laboratory.	Surface water Porewater	(ALS)	event	detected in the blank, or associated sample result is < DL. If associated result is < 5x blank conc. and is consistent with historical results = cautionary flag; unrepresentative of historical = unreliable flag.	

Note: DL = Detection Limit; RPD = Relative Percent Difference; DQO = Data Quality Objective.



Table A3-3. Summary of laboratory quality control (QC) samples and the associated data quality objectives (DQO) specific to laboratory and media type.

QC Sample Group	Quality Control Sample	Sample Description	Media	Laboratory Analysis	Frequency Target	Data Quality Objectives (DQO)
	Lab Duplicate (LD)	Aliquots taken from the samples and run through part (post digestion) or all (from the sample bottle) of the laboratory analytical process. Laboratory duplicates provide an estimate of the precision of the analytical method (reproducibility).	All media	Chemistry (ALS)	1 in 20	(RPD < Lab DQO) *IF* (DIFF > 2 x DL) Two methods are used to compare measurements from original and duplicate samples: relative percent difference (RPD) between duplicates and absolute difference (DIFF) between duplicates. RPD DQO limits are set by the lab for each parameter and the threshold for DIFF is 2x DL. Analytes are flagged if both the RPD and the DIFF exceed targets. Cases where the detection limits varied between the sample and duplicate are considered "ND" (not determined).
				Stable isotopes (SINLAB)	1 in 25	SAMP - DUP ≤ 1 % No formal DQO, used as QC check. Absolute differences of original sample and duplicate should not exceed 1 %.
	Matrix Blank (MB) ¹	An analyte-free matrix used to assess background interference or contamination that exists in the lab environment and reagents that could lead to elevated concentrations and false positive data.	All media	Chemistry (ALS)	1 in 20	Blank < DL Blank conc. is <dl. als="" are="" blank="" by="" dls,="" exceeds="" if="" qualifiers="" to<br="" two="" used="">identify sample results that are still deemed reliable.¹</dl.>
Laboratory	Matrix Spike (MS)	These samples involve the analysis of actual samples, to which a known amount of method analytes are added in amounts high enough that the spikes are clearly discernible relative to existing concentrations. These samples provide insights into the degree that the sample matrix could interfere with analyses.	Surface water Porewater Sediment	Chemistry (ALS)	1 in 20	100% Recovery ± 10 to 40% Recovery (measured concentration of parameter in actual sample, relative to spiked amount) should be +/- 30% for most analytes and +/- 40% for MeHg. Cases where the spiked amount is not sufficiently high relative to concentrations already in the sample are considered "ND" (not determined).
	Lab Control Sample (LCS)	Samples of known concentration which undergo processing identical to that carried out for test samples. These samples provide an estimate of the accuracy of the analytical method.	All media	Chemistry (ALS)	1 in 20	100% Recovery ± 10 to 30% Results (measured concentration of parameter in reference material, relative to spiked amount) should typically be within +/- 20% for most analytes and +/- 30% for MeHg.
	Certified Reference Material (RM)	Homogenous material with known and well-established analyte concentrations. RM are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix.	Tissue (fish & invertebrate) Sediment	Chemistry (ALS)	1 in 20	100% Recovery ± 30% Results (measured concentration of parameter in reference material, relative to spiked amount) +/- 30% for Hg and MeHg.
	Secondary standards are SINLAB's internal working standards calibrated against International Atomic Energy Agency (IAEA) primary standards. Check Standards Check standards are commercially available standards analyzed in each SINLAB sample batch to assess analytical accuracy.		Tissue (fish & invertebrate)	Stable isotopes (SINLAB)	1 to 9%	Within mean ± SD of expected value. See SINLAB Interpretation Guide (Appendix A1) for expected values.

Note: DL = Detection Limit; RPD = Relative Percent Difference; DQO = Data Quality Objective.



¹Two qualifiers are used by ALS if MB exceed DQOs (MB Result > DL): "B" qualifier - associated sample results which were less than DL or greater than 5 x blank levels were considered reliable; "MB" qualifier - DLs were adjusted for samples with positive hits below 5x blank levels.

A.3.2 Fish QC Results

A.3.2.1 Fish ID and Morphometrics

Fish identification and morphometric data for the Site C MMP are comprised of species, maturity, body length, and body weight measurements.

Field QC

Fish identification and morphometric data were recorded directly into an electronic database in the field. This electronic system included instantaneous QC checks of length and weight by calculating condition (K) and comparing the results for each fish to expected norms.

Laboratory QC

There is no laboratory QC component for these data.

Overall QC Assessment

These data meet the data quality needs of the MMP.

A.3.2.2 Tissue Chemistry

Field QC

Field Duplicates (FD)

Field QC results for 2021 and 2022 are summarized in **Table A3-4**. A total of 104 FD samples were analyzed: 94 were for fish tissue (73 for total mercury [70% of total] and 21 for methylmercury [20% of total]) and 10 were for invertebrate tissue (5 for total mercury and 5 for methylmercury [10% of total samples for both]). FD were explicitly included in both the 2021 and 2022 events for the MMP, but none were collected for the ICSP (note that FD will be added to the ICSP in 2023). The frequency of FD for mercury in fish tissue (presented as a percentage) was slightly below the target (1 in 10) across years, with 8% of samples for 2022 and 4% of samples in 2021 (not a formal MMP event). There were no FD fails for total mercury (0%) and one fail for methylmercury (4.8%); two FD for total mercury were not determined ('ND') due to detection limit differences. Overall, the FD results indicate that both total mercury and methylmercury results generally meet their respective accuracy-based DQOs.

Laboratory QC

ALS' laboratory QC results are summarized in **Table A3-6**; details on each QC sample type and their respective results are described below:



- Laboratory Duplicates (LD) Forty-three LD samples were analyzed, 33 for total mercury and 7 for methylmercury (Table A3-6). Regarding fish tissue, the target frequency for LD was exceeded for methylmercury (9%) and slightly lower than the target for mercury (3%). For invertebrate tissue, the target frequency for LD was met for mercury (5%) and slightly lower for methylmercury (2%). All total mercury LD samples met the DQO except for two that were not determined due to different detection limits (Table A3-7). For methylmercury, one of 7 LD samples (14%) failed to meet the DQO (Table A3-7). These results indicate good reproducibility for total mercury, but suggest some caution be used in the interpretation of individual sample results involving methylmercury (see Overall QC Assessment for more information).
- Laboratory Control Samples (LCS) One hundred sixty-three (140 for total mercury; 23 for methylmercury) LCS samples were analyzed (Table A3-6). Only one of 140 of total mercury LCS samples (0.7%), and none of the methylmercury LCS samples (0%), failed to meet the DQO (Table A3-8). Note that the one LCS failure for total mercury was only marginally outside the 80 to 120% recovery range; the measured value was barely less than the 80% lower recovery cutoff and rounded up to 80% (Table A3-8). Overall, these results indicate good accuracy in ALS' mercury or methylmercury analyses relative to their internal reference standards.
- Matrix Blanks (MB) None of the 163 MB samples (140 for total mercury; 23 for
 methylmercury) contained detectable amounts of total mercury or methylmercury (Table A3-6),
 suggesting that the sensitivity of the analytical instruments were set appropriately.
- Certified Reference Materials or Reference Materials (RM) All 163 RM samples (140 for total mercury; 23 for methylmercury) met the DQOs (Table A3-6). These results confirm the accuracy of ALS' tissue mercury or methylmercury analyses.

Overall QC Assessment

Overall, the results of the 636 mercury-related field and laboratory QC checks conducted on the 2021 and 2022 tissue chemistry samples indicate that the DQOs for the Site C MMP were generally met. Results for total mercury were very good, with only one marginal LCS failure across all QC sample types. Methylmercury showed more mixed results, with higher DQO failure results for duplicates (4.8% for FD and 14% for LD) relative to MB (0%), LCS (0%) and RM (0%). The contrasting QC results for methylmercury warrant caution in the interpretation of individual sample results, but are reliable when interpreting overall trends. The QC results verify that the total mercury and methylmercury tissue chemistry results meet the data quality needs of the MMP.



A.3.2.3 Tissue Stable Isotopes

Field QC

Field Duplicates (FD)

Field QC results across year, program, and tissue type for stable isotopes are provided in **Table A3-9**. FD tissue samples were run for δ^{13} C (104 total; 96 fish; 8 invertebrates) and δ^{15} N (104 total; 96 fish; 8 invertebrates). The minimum target for FD frequency (10% as a percentage) was met for invertebrate tissue (21%) and was slightly below for fish tissue (9%). Absolute differences were higher than 1% for 10 of 104 δ^{13} C samples (9.6%) and for 5 of 104 δ^{15} N samples (4.8%) (**Table A3-10**). For perspective, an absolute difference of 1.5 % on a sample result of -30% would represent a 5% difference. Results for invertebrates showed that 37.5% of FD samples had absolute differences greater than 1% for both δ^{13} C and δ^{15} N (i.e., 3 of 8). The much higher result for the invertebrate tissue FD is likely the result of compositing a number of organisms for each sample type.

Laboratory QC

Laboratory Duplicates (LD)

There was a total of 141 laboratory duplicate samples across years, programs, and tissue types (**Table A3-11**). The target for LD frequency (4% as a percentage) was met for both fish and invertebrate tissue (7% for fish and 5% for invertebrates). Absolute differences from only one laboratory duplicate exceeded 1‰ in comparison to the original run, with a difference only slightly in exceedance (i.e., 1.4 ‰; **Table A3-12**). The high number of laboratory duplicates that met DQOs (99 %) suggest results from the stable isotope analysis provided precise results.

Secondary Standards and Check Standards (Standards)

Results for secondary and check standards were all within their respective expected range (**Table A3-13**). This indicates that these results are calibrated to the international scale and that there was analytical accuracy between runs.

Overall QC Assessment

SIA data are used in the MMP to provide ecological context to the tissue mercury results. They can provide high-level insights into why tissue mercury concentrations might be different among species, locations or time periods, or help to understand the results for individual fish (e.g., those with different feeding strategies than their cohorts).

The QC results were fairly good overall. The results for fish had some elevated FD results for δ^{13} C, but not they were generally minor. The biggest concern was the results for the benthic invertebrate tissue samples, which had elevated FDs for both δ^{13} C and δ^{15} N. While the δ^{13} C FD differences were on the



order of 10% (i.e., the absolute difference between the sample and the duplicate was approximately 10% of the measured value in the sample), the $\delta^{15}N$ FDs were quite a bit higher (e.g., 50% or more). Note that the lack of issues with the LDs suggests that despite careful sorting of the individuals by order and size, there may have still be unnoticed differences (e.g., in feeding preferences) that lead to inadvertent bias between the samples and the duplicates. However, while that could explain the results, it does not correct the issue.

Consequently, the results for fish (both $\delta^{13}C$ and $\delta^{15}N$) and the $\delta^{13}C$ results for benthic invertebrates can be relied on in their supportive role in the MMP. However, the $\delta^{15}N$ results for benthic invertebrates will receive a 'cautionary flag' that will be added to the Site C MMP Database.

A.3.2.4 Fish Age

Field QC

For information on the age data field QC procedure, see each program's reports (Golder 2022, WSP 2023)

Laboratory QC

For information on the age data field QC procedure, see each program's reports (Golder 2022, WSP 2023)

Overall QC Assessment

The relative variability of fish age data is typically much higher than either fish length or weight. Golder (now WSP) has introduced methods meant to improve the accuracy and precision of estimates, but not to a level where the results would be similar to fish length from a measurement variability perspective. As discussed in **Section A.2** (see Age Analysis), the magnitude of variability, and hence confidence in the aging results, depends on the aging structures used.

Age is used in the MMP to help inform fish growth rates, which can affect tissue mercury concentrations (e.g., faster growing fish tend to "dilute" tissue mercury concentrations relative to slower growing fish). While fish mercury programs are usually limited to the ages of fish sampled in the program, the MMP has the added benefit of the full FAHMFP dataset to make inferences about different growth rates among locations, populations or time periods. In addition, both the MMP and FAHMFP databases include a field identifying the aging structure used, providing a means of understanding the degree of confidence associated with each age estimate.

Overall, the aging data meets the needs of the MMP.



A.3.2.5 Tissue Chemistry QC Tables

Data Quality Assessment (2021-2022)

Table A3-4. Summary of mercury-related tissue chemistry field quality control results for the Site C MMP dataset, 2021 and 2022.

	Events: 2021 to 2022										
Year	Year Program Type		Analyte	Pass	Fail	ND					
Field D	Duplicate										
2021	Pre-MMP	Fish	Mercury	11	0	1					
2022	MMP	Fish	Mercury	60	0	1					
2022	MMP	Fish	Methylmercury	20	1	0					
2022	MMP	Inverts	Mercury	5	0	0					
2022	MMP	Inverts	Methylmercury	5	0	0					

Note: 'ND' = not determined.

Table A3-5. Details for mercury-related tissue chemistry field duplicate samples not explicitly meeting data quality objectives for the Site C MMP dataset, 2021 and 2022.

	Events: 2021 to 2022												
Year	Group	Analyte	Species	Units	DL	Samp	Dup	RPD	DIFFx	FD.QC			
Field [Field Duplicate												
2022	44	Mercury	Walleye	mg/kg dwt	0.019	0.345	2.58	152.8	NA	ND			
2021	1	Mercury	Mountain Whitefish	mg/kg wwt	0.0029	0.16	0.0416	117.5	NA	ND			
2022	34	Methylmercury	Mountain Whitefish	μg/kg dwt	5	56.7	28.1	67.5	5.7	Fail			

Note: `DL` = detection limit, `RPD` = relative percentage difference, `DIFFx` = detection limit standardized difference, FD.QC = QC outcome for FD, `ND` = not determined, 'Samp' = sample result, 'Dup' = " duplicate result, `dwt` = dry weight, and `wwt` = wet weight.



Table A3-6. Summary of mercury-related tissue chemistry laboratory quality control results for the Site C MMP dataset, 2021 and 2022.

	Events: 2021 to 2022														
Year	Program	Туре	Analyte	Pass	Fail	ND									
					LD			LCS			MB			RM	
2021	ICSP	Fish	Mercury	1	0	0	1	0	0	1	0	0	1	0	0
2021	Pre-MMP	Fish	Mercury	3	0	0	28	1	0	29	0	0	29	0	0
2022	ICSP	Fish	Mercury	2	0	0	4	0	0	4	0	0	4	0	0
2022	ICSP	Fish	Methylmercury	2	0	0	4	0	0	4	0	0	4	0	0
2022	MMP	Fish	Mercury	26	0	1	101	0	0	101	0	0	101	0	0
2022	MMP	Fish	Methylmercury	4	1	0	15	0	0	15	0	0	15	0	0
2022	MMP	Inverts	Mercury	1	0	1	5	0	0	5	0	0	5	0	0
2022	MMP	Inverts	Methylmercury	1	0	0	4	0	0	4	0	0	4	0	0

Note: 'LB' = Laboratory Blanks, 'LCS' = Laboratory Control Samples, 'MB' = Matrix Blanks, and 'RM' = Certified Reference Materials), 'ND' = not determined.

Table A3-7. Details for mercury-related tissue chemistry laboratory duplicates not explicitly meeting data quality objectives for the Site C MMP, 2021 and 2022.

	Events: 2021 to 2022										
Year	Program	Туре	Reference	Analyte	RPD	DIFFx	LD.QC				
Laboratory Duplicate											
2022	MMP	Fish	FJ2203438-099	Mercury (Hg)-Total	43.8	NA	ND				
2022	MMP	Fish	FJ2203438-099	Methylmercury (as MeHg)	139.6	4.6	Fail				
2022	MMP	Inverts	FJ2203485-040	Mercury (Hg)-Total	41.5	NA	ND				

Note: `RPD` = relative percentage difference, `DIFFx` = detection limit standardized difference, and LD.QC = QC outcome for LD, 'ND' = not determined.

Table A3-8. Details for mercury-related tissue chemistry laboratory control samples not explicitly meeting data quality objectives for the Site C MMP dataset, 2021 and 2022.

	Events: 2021 to 2022										
Year	Program	Туре	ALSQC ID	QC Lot	Analyte	Percent	Limit	LCS.QC			
Labora	Laboratory Control Sample										
2021	Pre-MMP	Fish	QC-MRG2-444219002	444219	Mercury	80*	80-120	Fail			

Note: 'ND' = not determined, LCS.QC = QC outcome for laboratory control sample, and*= value slightly lower than 80% (so QC fail) but rounded up for table.



Table A3-9. Summary of stable-isotope-related tissue chemistry field duplicate quality control results for the Site C MMP dataset, 2021 and 2022.

	Events: 2021 to 2022								
Year	Veer Dreament Tune		Sample Type	Stable Isotope -	Absolute Difference (%)				
Teal	Program	Туре	Sample Type	Stable isotope	≤1	> 1			
Field Dup	olicate								
2021	MMP	Fish	Biopsy Plug	d13C	22	4			
2021	MMP	Fish	Biopsy Plug	d15N	26	0			
2021	MMP	Fish	Fillet	d13C	10	0			
2021	MMP	Fish	Fillet	d15N	10	0			
2022	MMP	Fish	Biopsy Plug	d13C	29	2			
2022	MMP	Fish	Biopsy Plug	d15N	30	1			
2022	MMP	Fish	Fillet	d13C	28	1			
2022	MMP	Fish	Fillet	d15N	28	1			
2022	MMP	Inverts	Invertebrate	d13C	5	3			
2022	MMP	Inverts	Invertebrate	d15N	5	3			



Table A3-10. Details for stable-isotope-related tissue chemistry field duplicate quality control not explicitly meeting data quality objectives for the Site C MMP, 2021 and 2022.

					Even	ts: 2021 to 2022				
Sample Type	Year	Program	Туре	Workorder	SI	Samp Label Name	Samp	Dup Label Name	Dup	Absolute Difference (‰)
Field Duplicate										
Biopsy Plug	2021	MMP	Fish	22GOLD 001-318	d13C	SIA-2021-039	-29.3	SIA-2021-117	-28	1.31
Biopsy Plug	2021	MMP	Fish	22GOLD 001-318	d13C	SIA-2021-091	-30.5	SIA-2021-121	-32.2	1.66
Biopsy Plug	2021	MMP	Fish	22GOLD 001-318	d13C	SIA-2021-128	-27.5	SIA-2021-114	-28.7	1.11
Biopsy Plug	2021	MMP	Fish	22GOLD 001-318	d13C	SIA-2021-101	-28.8	SIA-2021-119	-30.6	1.78
Biopsy Plug	2022	MMP	Fish	22GOLD 319-926	d13C	SIA-2022-4114	-29.1	SIA-2022-4299	-30.9	1.8
Biopsy Plug	2022	MMP	Fish	22GOLD 319-926	d13C	SIA-2022-4220	-29	SIA-2022-4221	-27.1	1.84
Biopsy Plug	2022	MMP	Fish	22GOLD 319-926	d15N	SIA-2022-4114	7.9	SIA-2022-4299	10.5	2.56
Fillet	2022	MMP	Fish	23AZ 034-169	d13C	Hg-2022-3397	-28.7	Hg-2022-3398	-32.5	3.81
Fillet	2022	MMP	Fish	23AZ 034-169	d15N	Hg-2022-3397	8	Hg-2022-3398	10.6	2.61
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d13C	PR2-TT-A	-31.6	PR2-TT-B	-29.3	2.28
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d13C	PD1-PB-A	-32.5	PD1-PB-B	-28.8	3.74
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d13C	PD1-PB-A	-32.5	PD1-PB-C	-28.9	3.66
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d15N	PR2-TT-A	7	PR2-TT-B	3.2	3.81
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d15N	PD1-PB-A	7	PD1-PB-B	2.4	4.58
Invertebrate	2022	MMP	Inverts	23AZ 034-169	d15N	PD1-PB-A	7	PD1-PB-C	2.5	4.49

Note: 'SI' = stable isotope.



Table A3-11. Summary of laboratory duplicate quality control results for the Site C baseline stable Isotope dataset, 2021 and 2022.

	Events: 2021 to 2022								
Veer	Ducanana	T	Chable leatens	Absolute Difference (‰)					
Year	Program	Туре	Stable Isotope -	≤1	> 1				
Laboratory Du	plicate								
2021	ICSP	Fish	d13C	1	0				
2021	ICSP	Fish	d15N	1	0				
2021	MMP	Fish	d13C	20	1				
2021	MMP	Fish	d15N	18	0				
2022	ICSP	Fish	d13C	2	0				
2022	ICSP	Fish	d15N	2	0				
2022	MMP	Fish	d13C	46	0				
2022	MMP	Fish	d15N	46	0				
2022	MMP	Inverts	d13C	2	0				
2022	MMP	Inverts	d15N	2	0				

Table A3-12. Details for laboratory duplicate quality control not meeting data quality objectives for the Site C baseline stable isotope dataset, 2021 and 2022.

Events: 2021 to 2022									
Year	Program	Workorder	Туре	Stable Isotope	Samp	Dup	Absolute Difference		
Laboratory Duplicate									
2021	MMP	22GOLD 001-318	Fish	d13C	-30.7	-32	1.4		
	plicate	plicate	Year Program Workorder	Year Program Workorder Type	Year Program Workorder Type Stable Isotope	Year Program Workorder Type Stable Isotope Samp	Year Program Workorder Type Stable Isotope Samp Dup		

Note: 'Samp' = sample result, 'Dup' = duplicate result.

Table A3-13. Summary of laboratory standard quality control results for the Site C baseline stable Isotope dataset, 2021 and 2022.

	Events: 2021 to 2022									
Year	Program	Туре	Workorder	Standard	SI	Pass	Fail			
Labor	atory Stando	ard								
2021	ICSP	Fish	21LAB 264-282	Check standards	d13C	2	0			
2021	ICSP	Fish	21LAB 264-282	Check standards	d15N	2	0			
2021	ICSP	Fish	21LAB 264-282	Secondary standards	d13C	3	0			
2021	ICSP	Fish	21LAB 264-282	Secondary standards	d15N	3	0			
2021	MMP	Fish	22GOLD 001-318	Check standards	d13C	2	0			
2021	MMP	Fish	22GOLD 001-318	Check standards	d15N	2	0			
2021	MMP	Fish	22GOLD 001-318	Secondary standards	d13C	3	0			
2021	MMP	Fish	22GOLD 001-318	Secondary standards	d15N	3	0			
2022	MMP	Fish	22GOLD 319-926	Check standards	d13C	2	0			
2022	MMP	Fish	22GOLD 319-926	Check standards	d15N	2	0			
2022	MMP	Fish	22GOLD 319-926	Secondary standards	d13C	3	0			
2022	MMP	Fish	22GOLD 319-926	Secondary standards	d15N	3	0			
2022	ICSP	Fish	23AZ 001-033	Check standards	d13C	2	0			
2022	ICSP	Fish	23AZ 001-033	Check standards	d15N	2	0			
2022	ICSP	Fish	23AZ 001-033	Secondary standards	d13C	3	0			
2022	ICSP	Fish	23AZ 001-033	Secondary standards	d15N	3	0			
2022	MMP	Inverts and Fish	23AZ 034-169	Check standards	d13C	2	0			
2022	MMP	Inverts and Fish	23AZ 034-169	Check standards	d15N	2	0			
2022	MMP	Inverts and Fish	23AZ 034-169	Secondary standards	d13C	3	0			
2022	MMP	Inverts and Fish	23AZ 034-169	Secondary standards	d15N	3	0			

Note: 'SI' = stable isotope.



A.3.3 Supporting Media QC Results

A.3.3.1 Surface Water

Core MMP surface water sampling focuses on the primary and supplemental MMP parameters (**Table 3-3** in the Main Report) during the August and October sampling events. The QC assessment screened the 2022 MMP surface water results against each of the DQOs outlined in **Section A.3.1**.

Surface water sampling in 2022 occurred at eight stations along the Peace River from the Williston Reservoir downstream to Many Islands, AB (W1, D1, PR1, PR2, PR3, PD1, PD3, PD5). All of the surface water field and laboratory QC sample results met the DQO requirements in 2022 (**Table A3-14**), including QC sample frequency and DL targets. Details of the results are provided below.

Field QC

Across the 23 surface water samples collected, there were 12 Field Duplicates (FD), an Equipment Blank (EB), and three Travel Blanks (TB) collected for QC evaluation. No DQO failures occurred for any of the parameters and all QC sample frequency targets were met. **Table A3-15** and **Table A3-16**.

Laboratory QC

Laboratory QC results compared to DQOs for Laboratory Duplicates (LD), Laboratory Control Samples (LCS), Matrix Spikes (MS), and Matrix Blanks (MB) from 2022 are outlined in **Table A3-14**. No DQO failures occurred in any of the laboratory QC samples. A detailed summary of the laboratory QC evaluation for mercury parameters is provided in **Table A3-17** and **Table A3-18**.

There were 20 MS results from 2022 where a "not determined" result occurred (**Table A3-19**). These occurrences do not indicate a QC failure, but rather that the spiked amount was not sufficiently high relative to the concentration in the sample.

Overall QC Assessment

Across the 594 DQO checks on the primary and supplementary parameters analyzed for each of the field and laboratory QC samples, no DQO failures occurred (**Table A3-14**). The QC results confirm the accuracy of the surface water analyses and meet the data quality needs of the MMP.



Surface Water QC Tables

Table A3-14. Surface water field and laboratory QC sample results compared to DQOs across all parameters.

Event(s): 2022.08, 2022.09, 2022.10									
Pass Fail ND									
Field									
Field Duplicate	71	0	0						
Equipment Blank	2	0	0						
Travel Blank	16	0	0						
Laboratory									
Lab Duplicate	128	0	0						
Lab Control Sample	143	0	0						
Matrix Spike	80	0	20						
Matrix Blank	134	0	0						
Sum	574	0	20						

Note: 'ND' = not determined.

Table A3-15. Summary of surface water field duplicates for mercury parameters in 2022.

	Max	RPD		
Analyte	RPD	Limit	Pass	Fail
Field Duplicate (FD)				
Mercury, dissolved	0%	30%	12	0
Mercury, total	37.3% ¹	30%	12	0
Methylmercury (as MeHg), dissolved	22.2%	45%	12	0
Methylmercury (as MeHg), total	16.7%	45%	12	0

Note:



^{&#}x27;RPD' = Relative Percent Difference; 'Max RPD' = maximum across all duplicate-sample comparisons.

¹ Absolute difference < 3x: RPD DQO exceedances only apply if absolute differences between duplicates is 3 x DL.

Table A3-16. Summary of surface water field blanks for mercury parameters in 2022.

Analyte	Result (ng/L)	DL (ng/L)	Pass	Fail
Equipment Blank (EB)				
Mercury, total	<0.5	0.5	1	0
Methylmercury (as MeHg), total	< 0.02	0.02	1	0
Travel Blank (TB)				
Mercury, total	<0.5	0.5	3	0
Methylmercury (as MeHg), total	<0.02	0.02	3	0

Note: 'DL' = Detection Limit.

Table A3-17. Summary of surface water laboratory duplicates for mercury parameters in 2022.

	Max	RPD		
Analyte	RPD	Limit	Pass	Fail
Laboratory Duplicate (LD)				
Mercury, dissolved	7.4%	20%	8	0
Mercury, total	11.6%	20%	8	0
Methylmercury (as MeHg), dissolved	26.8%	30%	9	0
Methylmercury (as MeHg), total	2.2%	30%	12	0

Note: 'RPD' = Relative Percent Difference; 'Max RPD' = maximum across all duplicate-sample comparisons.



Table A3-18. Summary of surface water laboratory LCS, MB, and MS results for mercury parameters in 2022.

Analyte	Recovery (%)	Limits	Pass	Fail	ND
Laboratory Control Sample (LCS)					
Mercury, dissolved	100-107	80-120	8	0	-
Mercury, total	100-115	80-120	8	0	-
Methylmercury (as MeHg), dissolved	74-89	70-130	9	0	-
Methylmercury (as MeHg), total	76-93	70-130	15	0	-
Matrix Blank (MB)					
Mercury, dissolved	0	DL	8	0	-
Mercury, total	0	DL	8	0	-
Methylmercury (as MeHg), dissolved	0	DL	9	0	-
Methylmercury (as MeHg), total	0	DL	15	0	-
Matrix Spike (MS)					
Mercury, dissolved	91-105	70-130	8	0	0
Mercury, total	99-100	70-130	8	0	0
Methylmercury (as MeHg), dissolved	61-86	60-140	8	0	0
Methylmercury (as MeHg), total	69-86	60-140	12	0	0

Note: 'ND' = not determined; 'DL' = Detection Limit; 'Limits' = the percent recovery range which passes DQOs.



Table A3-19. Surface water parameters where matrix spike results were not determined (ND).

QC Lot	Analyte	ALS QC ID ¹	ID Name	Samp Type
624673	Nitrate (as N)	Anonymous	NA	NA
624762	Calcium, dissolved	Anonymous	NA	NA
624762	Magnesium, dissolved	Anonymous	NA	NA
622631	Calcium, dissolved	Anonymous	NA	NA
622631	Magnesium, dissolved	Anonymous	NA	NA
624762	Calcium, dissolved	Anonymous	NA	NA
624762	Magnesium, dissolved	Anonymous	NA	NA
632979	Calcium, dissolved	Anonymous	NA	NA
632979	Magnesium, dissolved	Anonymous	NA	NA
631727	Calcium, dissolved	Anonymous	NA	NA
706622	Chloride	Anonymous	NA	NA
706621	Sulfate (as SO4)	Anonymous	NA	NA
712298	Calcium, dissolved	Anonymous	NA	NA
712298	Magnesium, dissolved	Anonymous	NA	NA
712946	Calcium, dissolved	Anonymous	NA	NA
712946	Magnesium, dissolved	Anonymous	NA	NA
718309	Calcium, dissolved	PR1	Upper Site C	Sample
718309	Magnesium, dissolved	PR1	Upper Site C	Sample
720452	Calcium, dissolved	Anonymous	NA	NA
720452	Magnesium, dissolved	Anonymous	NA	NA

Note:



 $^{^{\}rm 1}\,{\rm ALS}$ QC ID listing of 'Anonymous' indicates QC sample from another client used.

A.3.3.2 Porewater

Core MMP primary and supplementary porewater parameters are outlined in **Table 3-4 in the Main Report**. The QC assessment examined the results for these parameters from field and laboratory QC samples which were evaluated against each of the DQOs outlined in **Section A.3.1**.

Seven porewater samples were collected in 2022 along the Peace River from the Site C Tailrace downstream to Many Islands, AB. All of the porewater field and laboratory QC sample results met the DQO requirements in 2022 with the exception of methylmercury within a field duplicate from station PD1 and a laboratory duplicate for pH (**Table A3-20**). All QC sample frequency targets were met, however, there were a number of porewater samples where methylmercury DLs were raised from 0.02 to 0.04 ng/L; these changes did not impact the results. Details of the QC evaluation are provided below.

Field QC

Field Duplicates (FD)

One FD was collected for porewater, corresponding to approximately 14% of the total number of porewater samples (n=7). Of the 20 parameters analyzed, only methylmercury failed to meet the DQO (Table A3-21).

The porewater FD (PD1-B) that exceeded DQOs was collected from a sediment sample in tandem with sample PD1-A. Although the two sediment samples were collected at the same sampling station, Ponar sampling collects sediment off the bottom over a spatial scale that can range up to 10s of meters depending on water depth and boat movement and could cause heterogeneity in sampling results. Despite this, the porewater analyses confirmed the presence of suspended solids (TSS) in the PD1-B FD (8.7 mg/L) which is unusual for a filtered sample. TSS concentrations were also elevated above DLs in samples PD1-A (collected with PD1-B on August 24) and PR1 (collected on August 26).

While only one FD was collected for porewater, 12 were collected for surface water (**Table A3-15**) with no DQO failures for any of the mercury parameters. Additionally, no porewater laboratory duplicates failed to meet the DQOs for the mercury parameters. These findings indicate field sampling (TSS present in sample), rather than low precision in the laboratory analysis, is likely responsible for the single FD DQO failure.

Equipment Blanks (EB) and Travel Blanks (TB)

All mercury parameters measured in the EB (mercury parameters were not measured in the TB) met the DQOs (**Table A3-22**), however nitrate was detected in the EB and failed the DQO as the corresponding sample concentration was <5 x the concentration detected in the blank (**Table A3-23**). This data point was given a cautionary flag as the sample result only marginally exceeded the detection limit. Nitrate in 2023 field blank QC samples will be observed closely. All QC sample frequency targets were met for field blanks.



Laboratory QC

Laboratory Duplicates (LD)

Across the 71 LD DQO checks conducted in 2022 on the porewater parameters, no failures occurred for any of the mercury parameters (**Table A3-24**). In one travel blank LD, pH was flagged (**Table A3-25**), though it did still meet the ALS DQO since the pH was measured in water of low ionic strength (QDO = \pm 1 pH unit where EC<200 \pm 3).

Laboratory Control Samples (LCS), Matrix Blanks (MB), and Matrix Spikes (MS)

All LCS, MB, and MS samples met the DQOs and all QC sample frequency targets were met (**Table A3-20**). A detailed summary of the number of laboratory QC samples is provided in **Table A3-26**. Sixteen MS samples from 2022 were "not determined" for calcium, DOC, magnesium, nitrate, and sulfate. These occurrences do not indicate a QC failure, but rather that the spiked amount was not sufficiently high relative to the concentration in the sample.

Overall QC Assessment

All analyte/QC sample types were considered to have met their respective DQOs except for methylmercury in the field duplicate and nitrate in the field blank. The methylmercury field duplicate showed higher variability than specified in the data quality objective (RPD \leq 45 %). While this result could be due to small-scale differences in conditions in the sediments at a particular location, the porewater analyses confirmed the presence of suspended solids (TSS) in about half the samples (Section 3.3.3 in the Main Report). As discussed for surface water, the presence of TSS can influence concentrations of both total mercury and methylmercury; Azimuth is working with the sampling team (Ecofish/Aski) to better understand this issue with the aim of improving methods for the next event.

Regardless of the underlying reason why, the field duplicate results for methylmercury indicate the potential for moderately high variability in the porewater methylmercury data. Consequently, given that the results do not appear anomalous relative to other porewater data collected in the watershed, a 'cautionary' QC flag will be applied to these data (see details on QC flags in **Section A.3.1**). This means that the 2022 porewater methylmercury data will be clearly marked so that future interpretation of trends considers the variability of the 2022 porewater methylmercury data.

The detection of nitrate in the EB is considered minor since the concentration was only marginally above the detection limit. Nitrate in porewater has been given a cautionary flag and will be observed closely in 2023 field blank QC samples.



Porewater QC Tables

Table A3-20. Porewater laboratory and field QC sample results compared to DQOs across all parameters.

Event: 2022.08 Date(s): Aug 2022					
	Pass	Fail	ND		
Field					
Field Duplicate	12	1	0		
Equipment Blank	11	1	0		
Travel Blank	7	0	0		
Laboratory					
Lab Duplicate	70	1	0		
Lab Control Sample	71	0	0		
Matrix Spike	39	0	16		
Matrix Blank	66	0	0		
Sum	276	3	16		

Note: 'ND' = not determined.

Table A3-21. Summary of porewater field duplicates for mercury parameters in 2022.

Analyte	Max RPD¹	RPD Limit	Pass	Fail
Field Duplicate (FD)				
Mercury, dissolved	29.5%	30%	1	0
Methylmercury (as MeHg), dissolved	69.8%	45%	0	1 ¹

Note:

'RPD' = Relative Percent Difference (DQO = RPD < 1.5 x Laboratory Duplicate DQO). RPD DQO exceedances only apply if absolute differences between duplicates is 3 x DL (Section A.3.1).

Table A3-22. Summary of porewater field blanks for mercury parameters in 2022.

Analyte	Result (ng/L)	DL (ng/L)	Pass	Fail
Equipment Blank (EB)				
Mercury, dissolved	<0.50	0.5	1	0
Methylmercury (as MeHg), total	<0.02	0.02	1	0

Note:

'DL' = Detection Limit.

No mercury parameters were analyzed in the travel blank.



 $^{^{1}}$ PD1-B taken as duplicate of sample PD1-A (ALS workorder: FJ2202312_0).

Table A3-23. Porewater parameters not meeting field blank DQOs.

Event: 2022.08 Date(s): Aug 2022						
QC Lot	Blank Type	Analyte	Results	DL	FB QC	
621464	ЕВ	Nitrate (as N)	0.0095	0.005	Fail	

Table A3-24. Summary of porewater laboratory duplicates for mercury parameters in 2022.

Analyte	Max RPD	RPD Limit	Pass	Fail
Laboratory Duplicate (LD)				_
Mercury, dissolved	7.0	20	5	0
Methylmercury (as MeHg), dissolved	12.2	30	5	0

Note: 'RPD' = Relative Percent Difference; 'Max RPD' = maximum across all duplicate-sample comparisons.

Table A3-25. Porewater parameters not meeting laboratory duplicate DQOs.

Event: 2022.08 Date(s): Aug 2022						
ALS Work Order	QC Lot	Analyte	RPD ¹	DIFFx ²	LD QC	
FJ2202370_0	628287	рН	6.1%	3.6	Fail ³	

Note:



 $^{^{1}}$ 'RPD' = Relative Percent Difference (DQO = RPD < 1.5 x Laboratory Duplicate DQO; Section A.3.1).

² 'DIFFx' = absolute difference: RPD DQO exceedances only apply if absolute differences between duplicates is 2 x DL (Section A.3.1).

 $^{^3}$ pH was measured in water of low ionic strength (QDO = +/- 1 pH unit where EC<200 μ S) and passed ALS DQOs.

Table A3-26. Summary of porewater laboratory LCS, MB, and MS results for mercury parameters in 2022.

Analyte	Recovery (%)	Limits	Pass	Fail	ND
Laboratory Control Sample (LCS)					
Mercury, dissolved	98-101	80-120	5	0	-
Methylmercury (as MeHg), dissolved	77-89	70-130	5	0	-
Matrix Blank (MB)					
Mercury, dissolved	0	DL	5	0	-
Methylmercury (as MeHg), dissolved	0	DL	5	0	-
Matrix Spike (MS)					
Mercury, dissolved	88-100	70-130	5	0	0
Methylmercury (as MeHg), dissolved	71-86	60-140	5	0	0

Note: 'ND' = not determined; 'DL' = Detection Limit; 'Limits' = the percent recovery range which passes DQOs.



A.3.3.3 Sediment

The QC assessment for sediment examined the results from field and laboratory QC samples for the parameters outlined in **Table 3-5 in the Main Report**. Each parameter was compared to the DQOs outlined in **Section A.3.1**.

Six sediment samples were collected in 2022 along the Peace River from the Site C Tailrace downstream to Many Islands, AB. All of the sediment field and laboratory QC sample results met the DQO requirements in 2022, with the exception of TOC within a field equipment blank from station PD3 (**Table A3-27**). All QC sample frequency targets were met, however, there were a number of sediment samples where TOC and organic matter content DLs were raised marginally which had no affect on results. Details of the results are provided below.

Field QC

Across the 6 sediment samples there was a single field duplicate (FD) and an equipment blank (EB) collected for QC evaluation (**Table A3-28** and **Table A3-29**). No DQO failures occurred except for total organic carbon (TOC), which was detected in an equipment blank (PD3-FB). The FB results marginally exceeded the DL and was deemed inconsequential to result interpretation when compared to the 10-fold higher TOC concentrations recovered in the corresponding sample (10.2 versus 0.77 mg/L in PD3 and PD3-FB respectively).

Laboratory QC

Laboratory QC results compared to DQOs for laboratory duplicates (LD), laboratory control samples (LCS), matrix blanks (MB), and certified reference material (RM) from 2022 are outlined in **Table A3-27**. No DQO failures occurred in any of the laboratory QC samples. A detailed summary of the laboratory QC results is provided for LDs (**Table A3-30**) and for LCS, MB and RM (**Table A3-31**).

There was a single TOC matrix spike from 2022 where a "not determined" result occurred indicating that the spiked amount was not sufficiently high relative to the concentration in the sample.

Overall QC Assessment

Across the 118 field and laboratory QC checks, a single DQO failure occurred in an EB which did not affect the interpretation of results. The QC results confirm the accuracy of the sediment analyses and meet the data quality needs of the MMP.



Sediment QC Tables

Table A3-27. Sediment laboratory and field QC sample results compared to DQOs across all parameters for MMP.

Event: 2022.08	Date(s): Au	ıg 2022	
	Pass	Fail	ND
Field			
Field Duplicate	12	0	0
Equipment Blank	1	1	0
Laboratory			
Lab Duplicate	38	0	0
Lab Control Sample	32	0	0
Matrix Spike	1	0	1
Matrix Blank	32	0	0
Sum	116	1	1

Note: 'ND' = not determined.

Table A3-28. Summary of sediment field duplicates for mercury parameters in 2022.

Analyte	Max RPD	RPD Limit	Pass	Fail
Field Duplicate (FD)				
Mercury, dissolved	2.9%	60%	1	0
Methylmercury (as MeHg), dissolved	24.6%	45%	1	0

Note: 'RPD' = Relative Percent Difference; 'Max RPD' = maximum across all duplicate-sample comparisons.

Table A3-29. Summary of results from sediment field blanks in 2022.

Analyte	Result	DL	Pass	Fail
Equipment Blank (EB)				
Carbon, total organic [TOC]	0.7 mg/L	0.5 mg/L	0	1
Mercury, total	5 ng/L	5 ng/L	1	0

Note: 'DL'= Detection Limit.



Table A3-30. Summary of sediment laboratory duplicates for mercury parameters in 2022.

Analyte	Max RPD	RPD Limit	Pass	Fail
Laboratory Duplicate (LD)				
Mercury	3.2%	20%	6	0
Methylmercury (as MeHg)	4.1%	30%	6	0

Note: 'RPD' = Relative Percent Difference; 'Max RPD' = maximum across all duplicate-sample comparisons.

Table A3-31. Summary of sediment laboratory LCS, MB, and RM results for mercury parameters in 2022.

Analyte	Recovery (%)	Limits	Pass	Fail	ND
Laboratory Control Sample (LCS)					
Mercury	100-108	80-120	6	0	-
Methylmercury (as MeHg)	98-104	70-130	6	0	-
Matrix Blank (MB)					
Mercury	0	DL	6	0	-
Methylmercury (as MeHg)	0	DL	6	0	-
Certified Reference Material (RM)					
Mercury	98-102	70-130	6	0	0
Methylmercury (as MeHg)	96-106	70-130	6	0	0

Note: 'ND'' = not determined; 'DL'' = Detection Limit; 'Limits' = the percent recovery range which passes DQOs.



A.3.3.4 Benthic Invertebrate & Zooplankton Tissue

Benthic invertebrate and zooplankton tissue chemistry results were assessed along with the fish tissue samples (Section A.3.2); results are presented below. The QC assessment focused only on total mercury, methylmercury, and SIA.

Field QC

Field QC samples (FDs) for invertebrate tissue met their DQOs (Table A3-4). See Section A.3.2.2 for additional details.

FDs for stable isotope data are provided in **Table A3-9**. Three of 8 field duplicate samples did not meet their DQOs for both δ^{13} C and δ^{15} N (**Table A3-10**), with all three being benthic invertebrates. Absolute differences for δ^{15} N were generally higher (3.81-4.49 ‰) compared to δ^{13} C (2.28-3.66‰). Further, measured values of δ^{15} N were much lower than δ^{13} C, so the relative differences were much higher for δ^{15} N. These samples were collected using benthic invertebrate baskets and differences are likely explained by differences in species composition within each sample, as δ^{15} N is an indicator of trophic level of an organism and δ^{13} C is an indicator of source of energy for a given food chain. See **Section A.3.2.3** for additional details.

Laboratory QC

Results for laboratory QC samples for chemistry data can be found in **Table A3-6**. All laboratory QC samples for invertebrate tissue (i.e., laboratory duplicates, laboratory control samples, matrix blanks, and controlled reference materials) met their DQOs (**Table A3-6**). See **Section A.3.2.2** for additional details.

Results for laboratory QC samples for stable isotope data showed that all laboratory duplicate samples for invertebrate tissue met their DQOs (**Table A3-11**). Secondary and check standards met their DQOs for all batches run (**Table A3-13**). See **Section A.3.2.3** for additional details.

General QC Assessment

A total of 30 field and laboratory QC checks related to tissue mercury or methylmercury were conducted in 2022. All laboratory and field QC samples met their DQOs. These results suggest that QA protocols facilitated effective collection, handling, and preparation samples. Overall, the QC results verify that the accuracy and precision of tissue mercury analyses meet the data quality needs of the MMP.

A total of 20 field and laboratory QC checks related to tissue stable isotope analysis were conducted in 2022. All laboratory QC samples met their DQOs; however, 37.5% of field QC samples did not meet their DQOs. While the δ^{13} C deviations from the DQOs were relatively minor, the δ^{15} N deviations were substantial. The latter was likely caused by variation in species composition between the original sample and the duplicate. Regardless of the underlying reason, the 2022 δ^{15} N results for benthic invertebrates



warrant a 'cautionary flag' in the Site C MMP Database; while we will still use the results, they will be identified in as cautionary when included in any future analyses.



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Appendix A:	
Data Quality Ass	essment (2021-2022

July 2024

APPENDIX A1: SINLAB INTERPRETATION GUIDE





SINLAB INTERPRETATION GUIDE

For further information please visit our website:

https://www.isotopeecology.com/

Instrumentation

Continuous Flow-Isotope Ratio Mass Spectrometry (CF-IRMS) is used for stable isotope analysis of δ^{13} C, δ^{15} N and δ^{2} H. The SINLAB currently operates the following mass spectrometer/conflo combinations:

- Delta^{Plus} XP Conflo III
- Delta V Plus Conflo IV

(All manufactured by Thermo Finnigan; Bremen, Germany)

Carbon & Nitrogen Methodology

Dried, ground and homogeneous samples are weighed into tin capsules and analyzed for $\delta^{13}C$ and $\delta^{15}N$ by an Elemental Analyzer (EA) coupled to one of the IRMS/Conflo combinations listed above. Samples are introduced into the EA by an autosampler where complete combustion occurs in the presence of oxygen to generate CO_2 and nitrogen oxide (N_xO_x) gases. Combustion occurs in a quartz tube filled with chromium oxide and silvered cobaltous oxide. A second quartz tube filled with fine copper wire is used for the reduction of nitrogen oxides (N_xO_x) to N_2 gas. Gas Chromatography (GC) is used to separate CO_2 and N_2 peaks with helium as a carrier gas. A water trap of magnesium perchlorate & silica chips is located before the GC column to remove water.

The SINLAB currently utilizes two elemental analyzers for δ^{13} C and δ^{15} N analyses.

Elemental Analyzer	Autosampler	Combustion	Reduction	GC Length	GC
		Temperature	Temperature		Temperature
CE NC2500	PN150	1050°C	650°C	4m	50°C
(Carlo Erba; Milan, Italy)					
Costech 4010	Zero Blank	1000°C	650°C	3m	40°C
(Costech; California, USA)					

Stable isotope measurements are reported as isotope delta δ in parts per thousand (‰) relative to the international standard: Vienna Pee Dee Belemnite (VPDB) for carbon, and atmospheric air (AIR) for nitrogen. Isotope values are normalized using secondary standards: USGS61, BLS, and MLS for animal tissues; and CMS, SPS, SPL and EPS for sediments and plant material. All of these standards were calibrated against IAEA standards. See below for standard descriptions.

Hydrogen Methodology

Samples are weighed into silver capsules and loaded into a Costech Zeroblank autosampler. Samples are converted to hydrogen (H₂) gas by pyrolysis using a Thermo-Finnigan High Temperature Conversion Elemental Analyzer (TC/EA). Pyrolysis occurs in a ceramic tube lined with a glassy carbon reactor and filled with glassy carbon chips at a temperature of 1400°C. Helium is used as the carrier gas and a 1.5m GC column held at 100°C separates H₂ sample gas and other interfering gases produced

Stable-hydrogen isotope (δ^2 H) measurements for keratin tissues are normalized to the international standard VSMOW (Vienna Standard Mean Ocean Water). We determine the non-exchangeable δ^2 H of samples using the comparative equilibration approach (Wassenaar and Hobson 2003) with two secondary keratin standards (EC1 and EC2). These standards were previously calibrated to account for the H exchangeability between the H atoms of ambient water vapor and tissues (Wassenaar and Hobson 2000, 2003). This technique requires that samples along with these standards of known H isotope ratios are left to exchange with local atmospheric hydrogen for 72 hours prior to analysis. See below for standard descriptions.

Standards

<u>Secondary Standards</u> – These are SINLAB working standards used to bring data to the international scale. They are calibrated against and traceable to IAEA primary standards (CH6, CH7, N1, and N2). These standards are subjected to round robin testing for verification as a part of our QA/QC protocol. Values below- used as check standards within a run

```
USGS61 = commercially available pure compound (caffeine)
\delta^2 H_{\text{(VSMOW)}} = 96.9 \% + -0.9
\delta^{13}C<sub>(VPDB)</sub> = -35.05‰ +/- 0.04
\delta^{15}N (AIR) = -2.87 % +/- 0.04
BLS = Bovine Liver Standard developed by SINLAB
\delta^{13}C (VPDB) = -18.76 % +/- 0.14
\delta^{15}N (AIR) = 7.17 ‰ +/- 0.17
MLS = Muskellunge muscle standard developed by SINLAB
\delta^{13}C (VPDB) = -22.30 % +/- 0.18
\delta^{15}N (AIR) = 14.00 %0 +/- 0.11
CMS = Corn Meal Standard developed by SINLAB
\delta^{13}C<sub>(VPDB)</sub> = -13.25 % +/- 0.11
\delta^{15}N (AIR) = 4.42 ‰ +/- 0.12
EPS = Ephedra Plant Standard developed by SINLAB
\delta^{13}C <sub>(VPDB)</sub> = -30.96 ‰ +/- 0.09
\delta^{15}N <sub>(AIR)</sub> = 0.35 ‰ +/- 0.12
```

SPL = Spirulina standard developed by SINLAB

$$\delta^{13}$$
C_(VPDB) = -24.97 %₀ +/- 0.12

$$\delta^{15}$$
N (AIR) = 12.94 ‰ +/- 0.09

SPS = Seaweed plant standard developed by SINLAB

$$\delta^{13}$$
C (VPDB) = -28.40 % +/- 0.10

$$\delta^{15}$$
N _(AIR) = 21.10 ‰ +/- 0.10

EC1 = caribou hoof keratin standard- Environment Canada, Saskatoon, Canada

$$\delta^2$$
H (VSMOW) = -197.00 % +/- 1.8

$$\delta^{18}O_{(VSMOW)} = 2.40 \% + -0.6$$

EC2 = kudu horn keratin standard - Environment Canada, Saskatoon, Canada

$$\delta^2$$
H (VSMOW) = -54.10 % +/- 0.6

$$\delta^{18}O_{(VSMOW)} = 21.20 \% + -0.6$$

KERATIN STANDARD = Keratin powder purchased from Spectrum. B/N SJ1400

$$\delta^2$$
H (VSMOW) = -121.60 % +/- 2.0

$$\delta^{18}O_{(VSMOW)} = 10.60 \% + -0.6$$

THS = Topi horn keratin standard developed by SINLAB, δ^{18} O unverified

$$\delta^2 H_{\text{(VSMOW)}} = -40.60 \% + -2.0$$

$$\delta^{18}O_{(VSMOW)}$$
 = 20.28 % +/- 0.6 (unverified)

<u>Check Standards</u> – These standards are analyzed in each analytical run as part of SINLAB's QA/QC protocol to assess the analytical accuracy.

ACETANILIDE = commercially available pure compound

Batch 2880 (Feb 2010 – Apr 2011) -
$$\delta^{13}$$
C (VPDB) = -27.87 ‰ +/- 0.12

$$\delta^{15}N_{(AIR)} = -2.05 \% + -0.13$$

Batch 149699 (Apr 2011-Aug 2012) -
$$\delta^{13}$$
C (VPDB) = -31.59 % +/- 0.12

$$\delta^{\,15}N_{\,\,\text{(AIR)}}\!=\!-2.32~\%$$
 +/- 0.23

Costech (Aug 2012 – July 2020) -
$$\delta^{13}$$
C (VPDB) = -33.81 ‰ +/- 0.14

$$\delta^{\,15}N_{\,\,\text{(AIR)}}\!=\!-0.92~\%$$
 +/- 0.23

Batch 317490 (July 2020 – Present) -
$$\delta$$
 13C (VPDB) = -26.54 ‰ +/- 0.06

$$\delta_{15}$$
N (AIR) = -5.09 ‰ +/- 0.37

NICOTINAMIDE = commercially available pure compound

Batch 237264 (Mar 2018 – Present) -
$$\delta^{13}$$
C (VPDB) = -32.50 % +/-0.1

$$\delta^{15}$$
N (AIR) = -2.00 ‰ +/- 0.1

BENZOIC ACID = commercially available pure compound, δ^{18} O unverified HEKAtech (Feb 2010 – Present) δ^{2} H (VSMOW) = -76% +/- 2.0 (unverified)

$$\delta^{18}O_{(VSMOW)} = 25.7\% + -0.6$$
 (unverified)

N2 = ammonium sulfate – Primary standard certified by IAEA.

$$\delta^{15}$$
N _(AIR)= 20.3 ‰ +/- 0.14

CH7 = polyethylene foil – Primary standard certified by IAEA.

$$\delta^{13}$$
C _(VPDB) = -32.2 ‰ +/- 0.1

$$\delta^2$$
H (VSMOW) = 100.3 % +/- 2.0

PROTEIN = casein – Certified by Elemental Microanalysis Ltd.

$$\delta^{13}$$
C (VPDB) = -26.98 % +/- 0.13

$$\delta^{15}$$
N _(AIR) = 5.94 ‰ +/- 0.08

HIGH ORGANIC SEDIMENT = Certified by Elemental Microanalysis Ltd.

$$\delta^{13}$$
C (VPDB) = -26.27 % +/- 0.15

$$\delta^{15}$$
N _(AIR) = 4.42 ‰ +/- 0.2

SORGHUM FLOUR= Certified by Elemental Microanalysis Ltd.

$$\delta^{13}$$
C (VPDB) = -13.68 % +/- 0.19

$$\delta^{15}$$
N (AIR) = 1.58 % +/- 0.15

PEACH LEAF = NIST 1547 peach leaves - not certified

$$\delta^{13}$$
C (VPDB) = -26.17 % +/- 0.08

$$\delta^{15}$$
N (AIR)= 1.94 ‰ +/- 0.12

ATS = Atlantic salmon standard developed by SINLAB

$$\delta^2$$
H (VSMOW) = -113.8 ‰ +/- 2.0

$$\delta^{18}O_{(VSMOW)}$$
= 17.50 ‰ +/- 0.6 (unverified)

LAT = Lake trout standard developed by SINLAB, δ^{18} O unverified

$$\delta^2 H_{\text{(VSMOW)}} = -165.60 \% + /-2.0$$

$$\delta^{\,18}O_{(\mathrm{VSMOW})}{=}~4.70~\%$$
 +/- $0.6~(\text{unverified})$

Column Headings

CLIENT ID = ID code assigned to sample by the client.

SINLAB ID = ID code assigned to the client's samples; starting with the year, each client is given a two or three letter identifier and samples numbered sequentially; ex, 15ABC 001.

Date = date sample was analyzed.

Position = position in the analytical run for that particular day; samples are weighed into 96-well ELISA trays, a typical animal tissue run will consist of approximately 73 samples, 22 standards, and 1 blank.

Weight = weight of the tissue analyzed; animal tissues are weighed at 1.000 ± 0.100 milligrams and plant tissues are weighed at 3.100 ± 0.100 milligrams for C and N isotope analysis. Keratin tissues are weighed at 0.200 ± 0.020 mg for H isotope analysis.

CO2 ampl = the relative amount of CO_2 gas measured by the mass spectrometer in volts (V), a function of the weight of tissue used and the total amount of carbon (%C) it contains.

N2 ampl = the relative amount of N_2 gas measured by the mass spectrometer in volts (V), a function of the weight of tissue used and the total amount of nitrogen (%N) it contains.

H2 ampl = the relative amount of H_2 gas measured by the mass spectrometer in volts (V), a function of the weight of tissue used and the total amount of hydrogen (%H) it contains.

 δ^{13} C = the relative isotope ratio difference between the sample and the international standard (VPDB) according to the formula:

 δ^{13} C = [(R_{sample}/R_{standard})-1]*1000 where R is the isotopic ratio of the heavy to light (13 C/ 12 C)

 δ^{15} N = the relative isotope ratio difference between the sample and the international standard (AIR) according to the formula:

 δ^{15} N = [(R_{sample}/R_{standard})-1]*1000 where R is the isotopic ratio of the heavy to light (15 N/ 14 N)

 δ^2 H = the relative isotope ratio difference between the sample and the international standard (VSMOW) according to the formula:

 $\delta^2 H = [(R_{sample}/R_{standard})-1]*1000$ where R is the isotopic ratio of the heavy to light $(^2H/^1H)$

%C = percent of carbon in the sample by weight; calculated with NICOTINIMIDE for animals and ACETANILIDE for plants

%N = percent of nitrogen in the sample by weight; calculated with NICOTINIMIDE for animals and ACETANILIDE for plants

C/N = ratio of carbon to nitrogen in the sample; simple division of %C by %N.

%H= percent of hydrogen in the sample by weight; calculated with BENZOIC ACID

%0= percent of oxygen in the sample by weight; calculated with BENZOIC ACID

Comment Codes

NR = no repeat; not enough sample tissue to allow another analysis

No drop = equipment malfunction wherein autosampler fails to turn; often leads to a "double-up" with the following sample

Double-up = two samples drop together

LR = lipid-rich. Samples may contain high lipid content according to the C/N ratio (Logan et al. 2008)

Whole bug = individual analyzed without grinding

1/4, 1/8, 1/16, 1/32 = indicates the size of a filter paper sample that was cut into a "pie-slice" for analysis

Scraped from paper = filtered material was scraped from the top of filter rather than analyzed as a "pie slice"

LE = Lipid extracted, a common technique to remove lipids from tissues such as liver, eggs, and muscle of some fishes. Lipids have different δ^{13} C than proteins and carbohydrates.

AT = Acid treated, a common technique to remove carbonates (that have different δ^{13} C values than organic tissues) from organisms such as crustaceans.

Colours

Gray shading = repeated sample as part of regular QA/QC routine (four of every 73 samples) *Red text* = highlights low amplitude peaks or a poor repeat

Please address any questions about this document to:

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B.1 INTRODUCTION

This appendix provides additional details on the methods of the 2022 Core MMP supporting media sampling program (Section 3 in the Main Report), as well as reporting additional data in supplementary tables and figures. The appendix is organized as follows:

- Surface water quality (Section B.2)
- Porewater quality (Section B.3)
- Sediment quality (Section B.4)
- Benthic invertebrate tissue (Section B.5)
- Zooplankton tissue (Section B.6)

As mentioned in **Section 3.1.1 of the Main Report**, all sampling was conducted by Ecofish Research Ltd (Ecofish) and Aski Reclamation LP (Aski) in conjunction with the FAHFMP Mon-8/9 water and sediment quality program.



B.2 SURFACE WATER QUALITY

B.2.1 Methods

B.2.1.1 Sampling

Water samples can be collected by a variety of methods. In 2022, MMP samples were collected from a boat using a peristaltic equipped with silicone intake and outlet tubes. Filtration, where appropriate (e.g., for dissolved parameters), was conducted in the field using an in-line 0.45 μ m filter. Water samples were collected from surface water only (0.2 m), except at the reservoir stations where deeper (5 m) samples were also collected.

2022 surface water sampling protocols were generally consistent with methods used in previous years of sampling for the program. These protocols were based on those provided in the BC Field Sampling Manual (Gov BC, 2013), but are modified to reflect current practices for mercury-related analytes. Information for other analytes, and for more description on general sampling methods, are provided in the 2022 FAHFMP Mon-8/9 (Ganshorn et al., 2023).

Low-level mercury sampling is typically conducted using ultra-clean techniques to avoid cross-contamination of samples. The 'clean hands / dirty hands' technique (e.g., US EPA Method 1669) is conducted as follows:

- Sample containers should be labelled and double-bagged in a clean area in advance of the sampling trip.
- Upon arrival at the sampling site, one member of the two-person sampling team is designated as "dirty hands"; the second member is designated as "clean hands". All operations involving contact with the sample bottle and the transfer of the sample from the collection vessel to the sample bottle are handled by the individual designated as "clean hands". "Dirty hands" is responsible for preparation of the sample, and for all other activities that do not involve direct contact with the sample or sample container (e.g., opening the two bags to provide "clean hands" with direct access to the sampling bottle).
- "Dirty hands" deploys the sampler overboard within a water mass not affected by the presence of the boat or samplers, collects the sample and brings it on board the boat.
- "Clean hands" opens sample bottle and rinses it with sample water prior to filling and recapping.
 The same procedure is followed to collect a filtered sample. "Dirty hands" handles the filter
 apparatus while "clean hands" handles the bottle to be filled. If additional filtered samples (e.g.,
 for other metals, anions) are to be taken the same procedure is followed for additional bottles.
- "Dirty hands" secures the water collection device for storage between samples.



- Water samples are preserved as necessary and placed on ice in a cooler. Until ready for shipping, samples are stored in a cooler or refrigerator.
- When shipping samples, samples should be appropriately packed with ice packs to maintain optimum temperature and wrapped to prevent breakage. A Chain of Custody form should accompany all shipments

Details on sampling containers, field filtering and sample preservation for mercury-related analytes is provided in **Table B2-1**.

Table B2-1. Sampling information for total mercury and methylmercury in surface water.

Parameter	Target Volume	Container	Field Filtering / Preservative	MDL			
Metals							
Total Mercury - Filtered	40 ml	40 ml 0.45 μm / None					
Total Mercury - Unfiltered	401111	glass vial	None / None	0.5 ng/L			
Speciated Metals							
Methylmercury - Filtered	125 ml	125 ml amber glass	0.45 μm / HCl	0.02 ng/L			
Methylmercury - Unfiltered		(or Teflon)	None / HCl	ne / HCl			

B.2.1.2 Laboratory Analyses

Surface water samples collected in the 2022 program were analyzed by ALS. See **Appendix B1** for the ALS reports.

B.2.2 Data Tables

The 2022 MMP surface water data are tabulated in **Table B2-2**, Surface water quality results for 2022.



Supporting Media Supplemental Information

Table B2-2. Surface water quality results for 2022.

		Date	2022-08-25	2022-08-25	2022-08-25	2022-08-25	2022-08-25	2022-08-25	2022-08-25	2022-08-25	2022-08-26	2022-08-26	2022-08-26	2022-08-26	2022-08-26	2022-08-25	2022-08-25	2022-08-24	2022-08-24	2022-08-23	2022-08-23	2022-08-24	2022-08-24
	ALS Sa	mple ID	FJ2202327- 007	FJ2202327- 008	FJ2202327- 009	FJ2202327- 010	FJ2202327- 003	FJ2202327- 004	FJ2202327- 005	FJ2202327- 006	FJ2202360- 001	FJ2202360- 003	FJ2202360- 002	FJ2202360- 004	FJ2202360- 005	FJ2202327- 001	FJ2202327- 002	FJ2202315- 002	FJ2202315- 003	FJ2202286- 001	FJ2202286- 002	FJ2202315- 004	FJ2202315- 005
	s	ite Type	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Peace River Upstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream						
	ι	ocation.	Williston Shallow (W1S)	Williston Shallow (W1S)	Williston Deep (W1D)	Williston Deep (W1D)	Dinosaur Shallow (D1S)	Dinosaur Shallow (D1S)	Dinosaur Deep (D1D)	Dinosaur Deep (D1D)	Upper Site C (PR1*)	Upper Site C (PR1*)	Upper Site C (PR1*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Lower Site C (PR3*)	Lower Site C (PR3*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Beatton- Kiskatinaw (PD3*)	Beatton- Kiskatinaw (PD3*)	Many Islands (PD5*)	Many Islands (PD5*)
	R	eplicate	W1-Shallow-	W1-Shallow- B	W1-Deep-A	W1-Deep-B	D1-Shallow- A	D1-Shallow- B	D1-Deep-A	D1-Deep-B	PR1-A	PR1-C	PR1-B	PR2-A	PR2-B	PR3-A	PR3-B	PD1-A	PD1-B	PD3-A	PD3-B	PD5-A	PD5-B
Analyte	Units	MDL																					
Alk-Tot	mg/L	1	79.6	-	78.3	-	81.7	-	80.1	-	82	82.7	-	82.1	-	81	-	86.9	-	88.3	-	91.8	-
Ca-F	mg/L	0.05	25.6	-	26.3	-	27.4	-	27.4	-	26.7	26.2	-	26	-	26.6	-	30.1	-	28.8	-	31	-
DOC	mg/L	0.5	3.04	-	3.04	-	2.83	-	3.13	-	2.83	2.77	-	2.77	-	2.83	-	2.66	-	3.24	-	3.41	-
lab pH		0.1	7.86	-	7.85	-	7.78	-	7.82	-	7.95	7.97	-	7.98	-	8.12	-	8.18	-	8.17	-	8.17	-
TSS	mg/L	3	<3	-	<3	-	3.3	-	3.7	-	<3	<3	-	5.3	-	5.3	-	9.7	-	9.3	-	<3	-
NO3-N	mg/L	0.01	0.0396	-	0.0398	-	0.0756	-	0.0775	-	0.0771	0.078	-	0.0711	-	0.0675	-	0.0656	-	0.0576	-	0.0497	-
NO2-N	mg/L	0	<0.001	-	<0.001	-	0.0024	-	0.0016	-	0.0014	0.0014	-	<0.001	-	<0.001	-	0.002	-	0.0018	-	0.0011	-
SO4	mg/L	0.3	11.9	-	11.9	-	13.4	-	13.3	-	13.1	13.1	-	13.2	-	13.9	-	14.5	-	15.3	-	14.8	-
CI	mg/L	0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-	<0.5	-
F	mg/L	0.02	0.033	-	0.034	-	0.035	-	0.035	-	0.038	0.037	-	0.037	-	0.038	-	0.044	-	0.044	-	0.043	-
Mg-F	mg/L	0.01	6.22	-	6.01	-	6.13	-	6.48	-	5.81	6.13	-	6.15	-	6.5	-	7.05	-	6.88	-	7.37	-
THg-F	ng/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
MeHg-UI	ng/L	0.02	<0.02	<0.02	0.021	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.021	0.03	0.029	0.022	0.026	<0.02	<0.02	<0.02	0.022	0.024	0.023



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Appendix B:

Supporting Media Supplemental Information

Table B2-2 continued

		Date	2022-10-19	2022-10-19	2022-10-19	2022-10-19	2022-10-21	2022-10-21	2022-10-21	2022-10-18	2022-10-22	2022-10-20	2022-10-20	2022-10-20	2022-10-17	2022-10-20
	ALS Sample ID		FJ2202978- 001	FJ2202978- 002	FJ2202978- 003	FJ2202978- 004	FJ2203009- 001	FJ2203009- 002	FJ2203009- 003	FJ2202956- 001	FJ2203012-001	FJ2202994-001	FJ2202994-002	FJ2202994-004	FJ2202949-004	FJ2202994-003
	S	ite Type	Reservoirs	Reservoirs	Reservoirs	Reservoirs	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream
	Location		Williston Shallow (W1S)	Williston Deep (W1D)	Dinosaur Shallow (D1S)	Dinosaur Deep (D1D)	Peace Canyon (PC1)	Upper Site C (PR1*)	Mid Site C (PR2*)	Lower Site C (PR3*)	Site C Tailrace (PD1*)	Pine-Beatton (PD2)	Pine-Beatton (PD2)	Beatton- Kiskatinaw (PD3*)	Alces-Pouce Coupe (PD4)	Many Islands (PD5*)
	Replicate		W1-Shallow- A	W1-Deep-A	D1-Shallow-A	D1-Deep-A	PC1-A	PR1-A	PR2-A	PR3-A	PD1-A	PD2-A	PD2-B	PD3-A	PD4-A	PD5-A
Analyte	Units	MDL														
Alk-Tot	mg/L	1	74.8	76.1	83	81	71	71.4	71	74.7	73.8	77.2	77.3	78.5	77.3	79.2
Ca-F	mg/L	0.05	26.6	25.9	26.8	26.1	23.6	23.7	24.4	26.5	27.5	25.3	25.7	25.9	25.8	25.9
DOC	mg/L	0.5	2.69	2.3	3.07	2.58	2.77	2.87	2.83	3.77	2.57	3.06	2.86	2.93	2.93	3.53
lab pH		0.1	8.07	8	7.97	7.97	8.07	8.09	8.11	8.14	8.17	8.18	8.2	8.21	8.12	8.2
TSS	mg/L	3	<3	<3	<3	<3	<3	<3	<3	6.6	<3	10.2	12.6	10.6	7	13.4
NO3-N	mg/L	0.01	0.0688	0.0615	0.0667	0.0654	0.0641	0.064	0.0596	0.0602	0.0615	0.061	0.0594	0.0547	0.0526	0.0556
NO2-N	mg/L	0	0.0017	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO4	mg/L	0.3	11.9	11.6	12	12	11.8	12	12	12.3	12.9	13	12.9	13	13.7	13.4
Cl	mg/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
F	mg/L	0.02	0.034	0.032	0.034	0.033	0.037	0.036	0.035	0.032	0.04	0.038	0.037	0.037	0.041	0.038
Mg-F	mg/L	0.01	6.26	6.1	6.28	6.09	5.42	5.62	5.69	5.83	6.43	5.58	5.53	5.73	5.95	6.28
THg-F	ng/L	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1.76	<0.5	<0.5	<0.5	<0.5	1.41	<0.5
MeHg-UF	ng/L	0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.023	0.065	<0.02	0.148



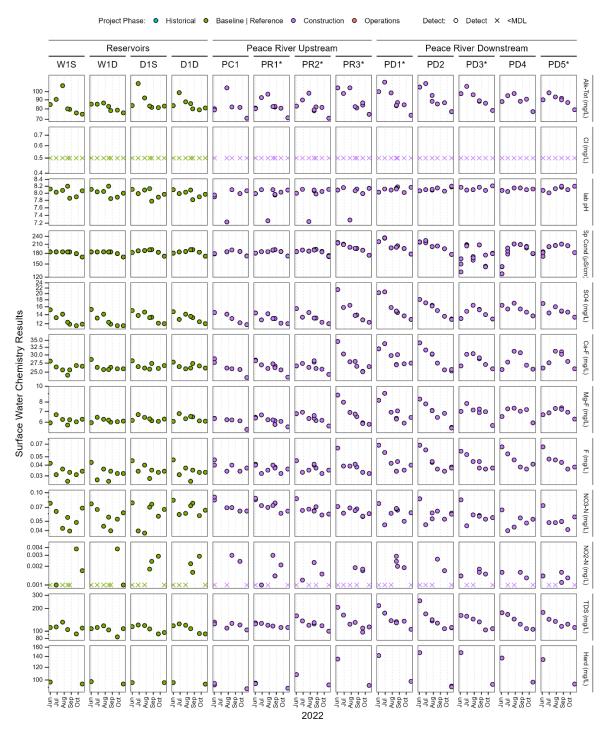
B.2.3 Supplemental Results

Additional figures for primary (tributaries only) and secondary (tributaries and reservoirs/Peace River) surface water parameters, including results for non-MMP stations, are provided below:

- 2022 results for reservoir and Peace River stations (Figure B2-1).
- Temporal trends for reservoir and Peace River (Figure B2-2).
- 2022 results for primary analytes in tributary stations (Figure B2-3).
- 2022 results for secondary analytes in tributary stations (Figure B2-4).
- Temporal trends for primary analytes in tributary stations (Figure B2-5).
- Temporal trends for secondary analytes in tributary stations (Figure B2-6).



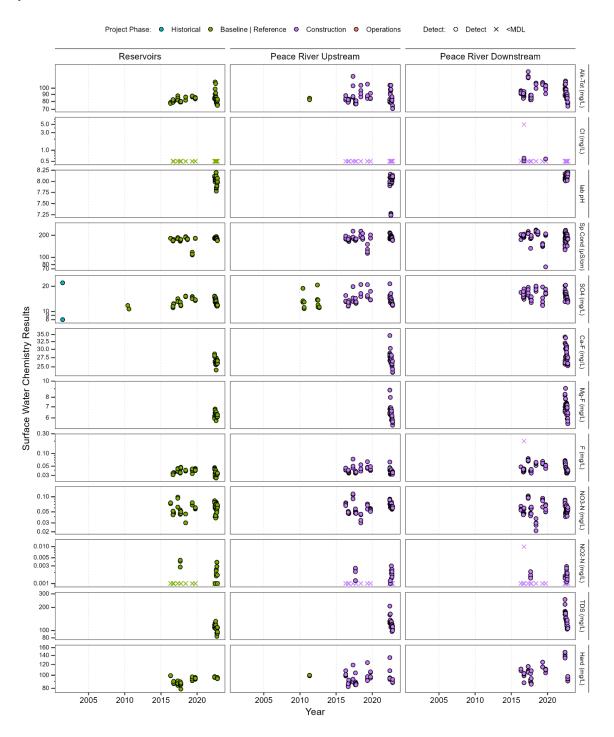
Figure B2-1. Results for other mercury-related surface water quality parameters by station and station group in 2022 for Reservoir and main-stem Peace River locations. Site C MMP stations noted with an asterisk (*). Log scale used for all parameters.



Note: For Reservoir samples, station names ending in "S" were collected at the surface, while station names ending in "D" were collected at depth.



Figure B2-2. Temporal trends of other mercury-related surface water quality parameters by station and station group for Reservoir and main-stem Peace River locations. Log scale used for all parameters.





Supporting Media Supplemental Information

Figure B2-3. Results for key mercury-related surface water quality parameters by station and station group in 2022 for Peace River Tributaries. Log scale used for all parameters except Pct MeHg and pH.

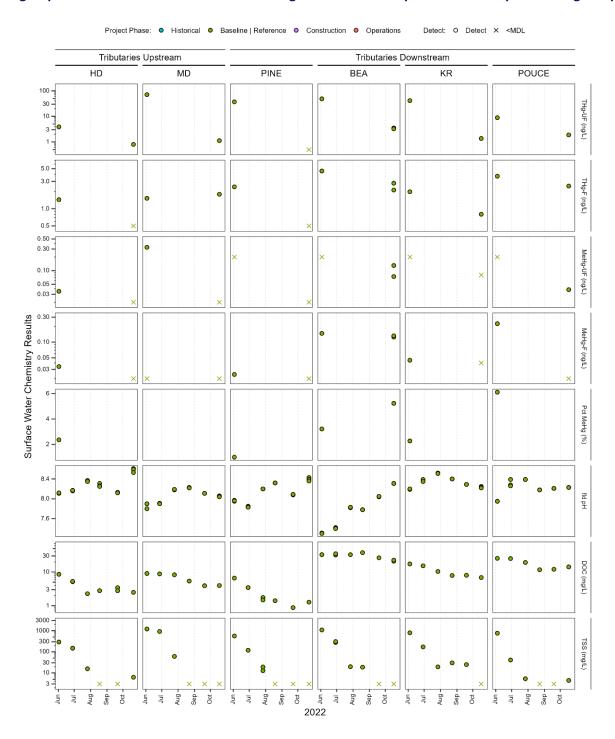




Figure B2-4. Results for secondary surface water quality parameters by station and station group in 2022 for Peace River Tributaries. Log scale used for all parameters.

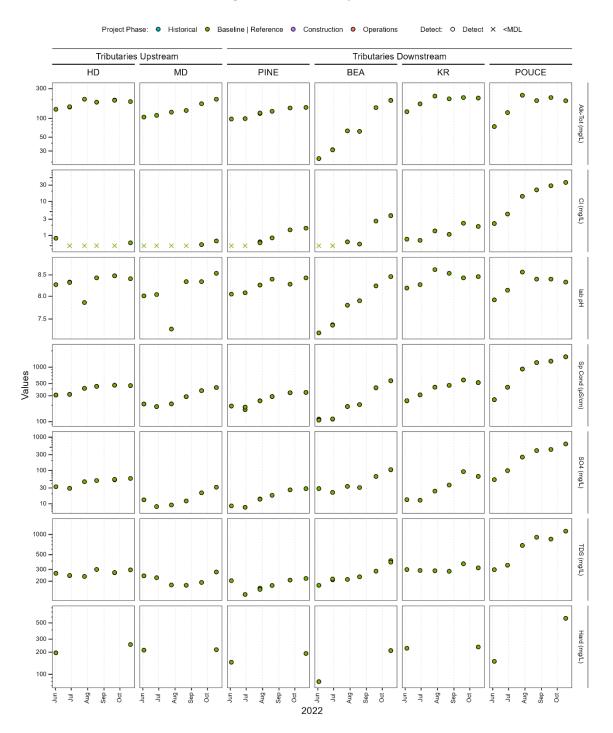




Figure B2-5. Temporal trends in key mercury-related surface water quality parameters by station group for Peace River tributaries. Log scale used for all parameters except Pct MeHg and pH.

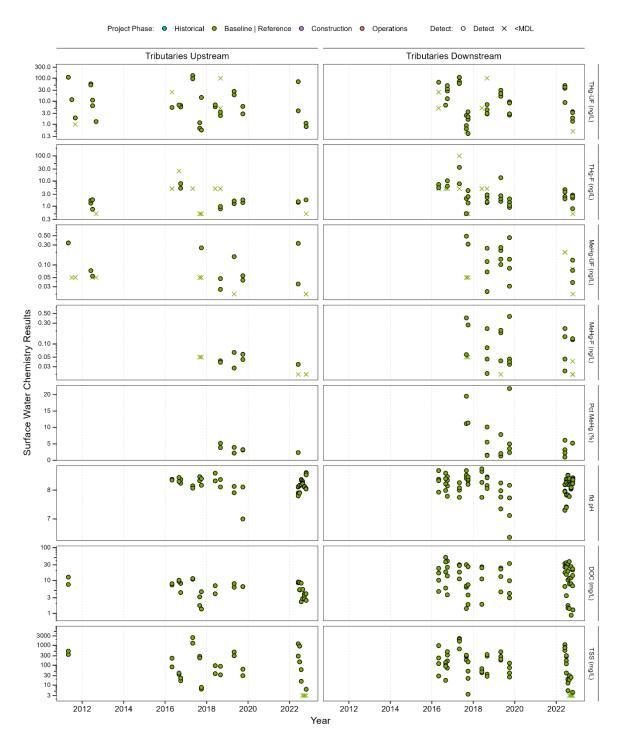
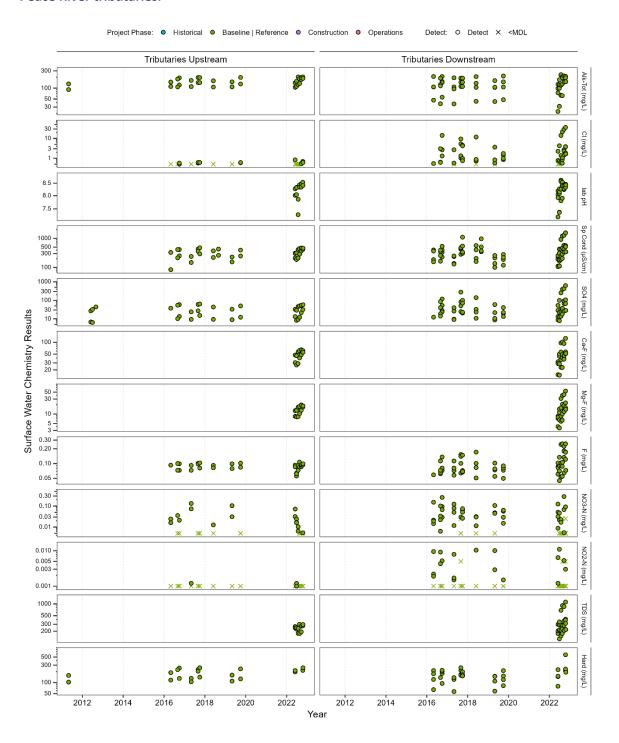




Figure B2-6. Temporal trends in secondary surface water quality parameters by station group for Peace River tributaries.





B.3 POREWATER QUALITY

B.3.1 Methods

B.3.1.1 Sampling

Sediment sampling methods are described in **Section B.4.1.1**; these methods assume that a good grab sample of sediment has been obtained. These methods work best on finer sediments (e.g., silt/clay); they will not likely work well in sandy sediments or in highly reduced (anoxic) sediments with high porewater concentrations of manganese and iron.

To minimize the potential for cross-contamination, the "clean hands/dirty hands" procedure is applied too (principles described in **Section B.2.1.1**). Porewater is extracted from sediments using vacuum filtration (hand or powered) and a Nalgene® disposable, sterile filtration unit (e.g., #167-0045, 0.45 μ m filter, 1000 ml capacity). The upper 0 to 5 cm of sediment is removed from the grab and placed into the top of the filtration device with minimal disturbance. Once full, vacuum pressure is applied until filtration is complete. The resulting porewater is handled as per surface water (**Section B.2.1.1**).

Details on sample containers, field filtering and sample preservation for mercury-related analytes is provided in **Table B3-1**.

Table B3-1. Sampling information for total mercury and methylmercury in porewater.

Parameter	Target Volume	Container	Field Filtering / Preservative	MDL
Metals				
Total Mercury - Filtered	40 ml	40ml glass vial	0.45 μm / None	0.5 ng/L
Speciated Metals				
Methylmercury - Filtered	125 ml	125mL amber glass (or Teflon)	0.45 μm / HCl	0.02 ng/L

B.3.1.2 Laboratory Analyses

Porewater samples collected in the 2022 program were analyzed by ALS. See **Appendix B2** for the ALS reports.

B.3.2 Data Tables

The 2022 MMP porewater data are tabulated in **Table B3-2**, Porewater quality results for 2022.



Table B3-2. Porewater quality results for 2022.

		Date	2022-08-26	2022-08-26	2022-08-25	2022-08-19	2022-08-24	2022-08-24	2022-08-23	2022-08-24
		ALS Sample ID	FJ2202370-001	FJ2202370-002	FJ2202328-001	FJ2202226-001	FJ2202312-001	FJ2202312-004	FJ2202288-001	FJ2202312-003
		Site Type	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream
		Location	Upper Site C (PR1*)	Mid Site C (PR2*)	Lower Site C (PR3*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Beatton-Kiskatinaw (PD3*)	Many Islands (PD5*)
		Replicate	PR1-A	PR2-A	PR3-A	PD1-A	PD1-A	PD1-B	PD3-A	PD5-A
Analyte	Units	MDL								
Alk-Tot	mg/L	1	NA	NA	206	340	287	292	296	329
Cond	μS/cm	2	NA	NA	401	661	613	633	519	603
Ca	mg/L	0.05	78.3	49	65.7	114	101	104	88.4	98.1
DOC	mg/L	0.5	19.9	23.8	11.1	11.9	12.5	16	11.7	16
Hard	mg/L	0.6	264	158	222	386	352	360	307	345
lab pH		0.1	NA	NA	8.31	8.28	8.24	8.32	8.48	8.33
TSS	mg/L	3-7.5	7.9	<3	10.1	<3	6.1	8.7	<7.5	<3
NO3-N	mg/L	0.005-0.025	<0.025	0.0379	0.0157	0.0196	0.0197	0.0189	0.0205	0.0191
NO2-N	mg/L	0.001-0.005	< 0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
SO4	mg/L	0.3-1.5	6.53	16.1	28.5	51.4	73.8	70.7	20.4	23.9
Cl	mg/L	0.5-2.5	10.8	1.08	0.78	<0.5	<0.5	<0.5	<0.5	0.8
F	mg/L	0.02-0.1	0.145	<0.037	0.156	0.065	0.086	0.082	0.073	0.062
Mg	mg/L	0.005	16.6	8.61	14	24.6	24.2	24.3	21	24.3
THg-F	ng/L	0.5-5	11.3	8.56	8.17	<5	5.32	7.16	3.44	8.27
MeHg-F	ng/L	0.02-0.04	0.927	0.201	0.692	NA	0.165	0.342	0.332	0.545

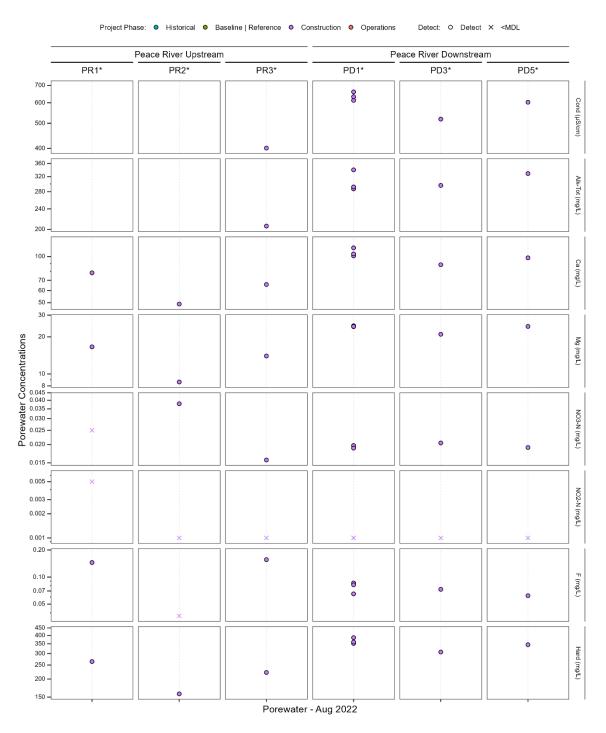


B.3.3 Supplemental Results

Secondary analytes for porewater chemistry are shown in **Figure B3-1**. While historical data were available for the primary analytes (**Section 3.3.4 in the Main Report**), none were available for the secondary analytes.



Figure B3-1. Results for secondary porewater quality parameters by station and station group in 2022 for Reservoir and main-stem Peace River locations. Site C MMP stations noted with an asterisk (*). Log scale used for all parameters.



Note: For Reservoir samples, station names ending in "S" were collected at the surface, while station names ending in "D" were collected at depth.



B.4 SEDIMENT QUALITY

B.4.1 Methods

B.4.1.1 Sampling

Sediment sampling protocols used in 2022 were consistent with methods used in previous years of sampling for the program. These protocols were based on those provided in the BC Field Sampling Manual (Gov BC, 2013) and are described in more detail in the 2022 report for FAHMFP Mon-8/9 (Ganshorn et al., 2023).

Details on sampling containers, field filtering and sample preservation for mercury-related analytes in sediment is provided in **Table B4-1**.

Table B4-1. Sampling information for total mercury and methylmercury in sediment.

Parameter	Target Volume	Container	Preservative	MDL
Metals				
Total Mercury	125 ml	125 ml	None	5 ng/g dw
Speciated Metals Methylmercury	123 [[]]	glass	None	0.05 ng/g dw

B.4.1.2 Laboratory Analyses

Sediment samples collected in the 2022 program were analyzed by ALS. See **Appendix B3** for the ALS reports.

B.4.2 Data Tables

The 2022 MMP sediment quality data are tabulated in Table B4-2, Sediment quality results for 2022.



Table B4-2. Sediment quality results for 2022.

		Date	2022-08-17	2022-08-26	2022-08-18	2022-08-19	2022-08-23	2022-08-24	2022-08-24
		ALS Sample ID	FJ2202206-001	FJ2202371-001	FJ2202202-002	FJ2202228-001	FJ2202311-001	FJ2202314-002	FJ2202314-003
		Site Type	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream
		Location	Upper Site C (PR1*)	Mid Site C (PR2*)	Lower Site C (PR3*)	Site C Tailrace (PD1*)	Beatton-Kiskatinaw (PD3*)	Many Islands (PD5*)	Many Islands (PD5*)
		Replicate	PR1	PR2	PR3	PD1	PD3	PD5-A	PD5-B
Analyte	Units	MDL							
TIC	%	0.05	0.219	1.07	0.676	0.688	0.527	0.4	0.394
TOC	%	0.118-0.283	0.801	1.5	1.19	1.65	1.49	1.33	1.38
lab pH		0.1	8.1	8.31	8.19	8.25	8.08	8.27	8.33
MeHg	μg/kg	0.05	0.639	<0.05	0.49	0.759	<0.05	0.064	<0.05
THg	μg/kg	5	52.8	41.3	42	58.2	51.1	55.4	53.8
Clay	<4 μm	1	1.9	9.5	6.6	8.6	7.3	6	6
Silt	0.004 - 0.063 mm	1	14.5	51.7	34	62.7	48.5	24.4	24.8
Sand	0.063 - 2.0 mm	1	83.6	38.8	59.4	28.7	44.2	69.6	69.2
Gravel	>2 mm	1	<1	<1	<1	<1	<1	<1	<1

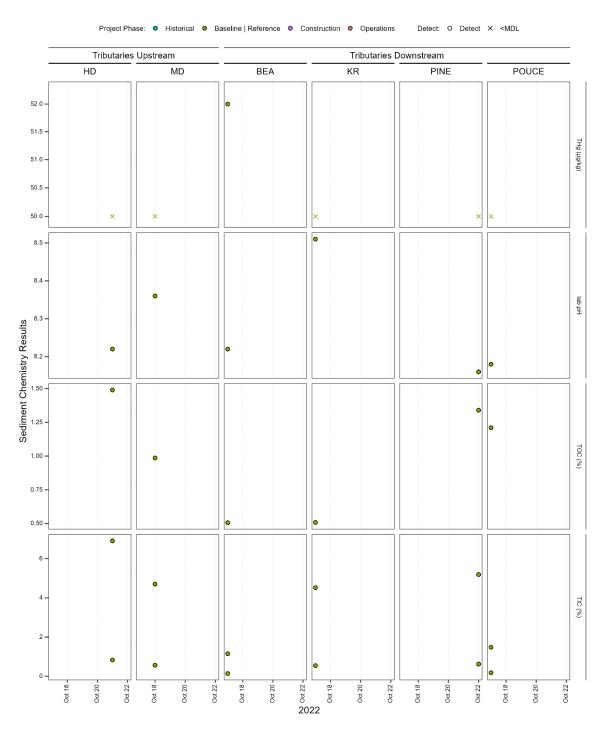


B.4.3 Supplemental Results

Results for tributary stations are provided for 2022 (Figure B4-1) and across years (Figure B4-2).



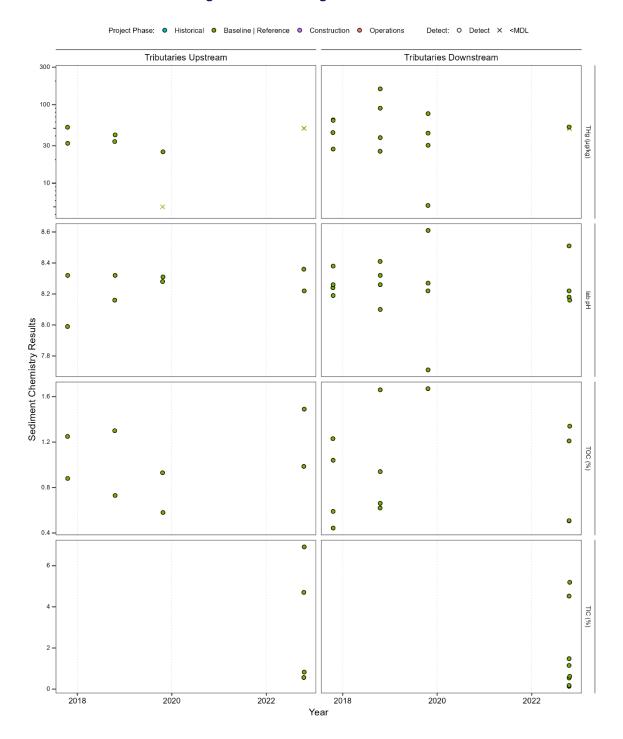
Figure B4-1. Results for key mercury-related sediment quality parameters by station and station groups in 2022 for Peace River Tributaries. Log scale used for THg.





Supporting Media Supplemental Information

Figure B4-2. Temporal trends in key mercury-related sediment quality parameters by station groups for Peace River Tributaries. Log scale used for THg.





B.5 BENTHIC INVERTEBRATE TISSUE

B.5.1 Methods

B.5.1.1 Sampling

Artificial substrates (rock baskets) were used to collect benthic invertebrates for tissue sampling.

Methods were summarized in Section 3.5.1 of the Main Report. Additional details are provided below:

- Baskets were deployed in early August and retrieved in late September.
- Baskets were installed such that each site contained four replicate baskets. They were originally
 intended to be treated as true replicates. However, recovery of invertebrates was variable, so all
 baskets were processed first.
- After the invertebrates were collected, allocation to individual samples was conducted following a few basic principles:
 - Where sufficient organisms were available, individual taxa were sampled (by size if possible).
 For example, larger Trichoptera were pooled together if enough were present.
 - Where sufficient numbers were present, field duplicate samples were collected. See
 Appendix A for details for the 2022 program.
 - Composite samples were used when insufficient numbers of individual taxa were present to make a discrete sample.

Details on sampling containers, field filtering and sample preservation for mercury-related analytes in sediment is provided in **Table B5-1**.

Table B5-1. Sampling information for total mercury and methylmercury in benthic invertebrate tissue.

Parameter	Target Volume	Container	Preservative	MDL
Metals Total Mercury Speciated Metals Methylmercury Stable Isotopes Ar	Ideal: 5 to 10 g ww Acceptable: 2 to 4 g ww	Vial or Whirlpack bag	None	5 ng/g dw
C & N	1 g ww	Vial or Whirlpack bag		NA



B.5.1.2 Laboratory Analyses

Benthic invertebrate tissue samples collected in the 2022 program were analyzed for chemistry parameters by ALS, and for stable isotope analysis (SIA) by SINLab. See **Appendix B5** for the ALS reports and **Appendix B6** for the SINLab reports.

B.5.2 Data Tables

The 2022 MMP benthic invertebrate tissue data are tabulated in **Table B5-2**, Benthic invertebrate tissue quality results for 2022.



Supporting Media Supplemental Information

Table B5-2. Benthic invertebrate tissue quality results for 2022.

· ,		Date 26-9	Sep-22	26-Sep-22	26-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22	27-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22	30-Sep-22
	ALS Samp		485-003	FJ2203485-001	FJ2203485-002	FJ2203485-004	FJ2203485-005	FJ2203485-006	FJ2203485-007	FJ2203485-008	FJ2203485-009	FJ2203485-031	FJ2203485-028	FJ2203485-030	FJ2203485-02
	Site '	Peac	e River tream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream	Peace River Upstream				
	Loca	tion ''	er Site C R1*)	Upper Site C (PR1*)	Upper Site C (PR1*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Mid Site C (PR2*)	Lower Site C (PR3*)	Lower Site C (PR3*)	Lower Site C (PR3*)	Lower Site ((PR3*)
	Client Samp	le ID PR	1-M	PR1-TB	PR1-TS	PR2-P	PR2-TB	PR2-TS-A	PR2-TS-B	PR2-TT-A	PR2-TT-B	PR3-M	PR3-TB	PR3-TC	PR3-TS
Analyte	Units N	IDL													
Mercury	μg/kg dw	8.9	38.9	74.1	75.8	23.5	35.4	33.2	32.5	30.2	30.5	28.2	27	17	26.7
Methylmercury		1 - 0.9	3.7	57.7	16.9	13.1	30.8	30.3	26.4	19.8	16.4	16.8	17.2	13.2	13
Site C Tailrace (PD1)	-	<u>-</u>			<u>-</u>	<u>-</u>	-			<u>-</u>	-	-	-		-
	I	Date 28-9	Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	28-Sep-22	
	ALS Samp	le ID FJ2203	485-021	FJ2203485-010	FJ2203485-011	FJ2203485-012	FJ2203485-013	FJ2203485-014	FJ2203485-015	FJ2203485-016	FJ2203485-020	FJ2203485-017	FJ2203485-018	FJ2203485-019	
	Site '	vne	e River Istream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream					
	Loca	tion	Tailrace D1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)	Site C Tailrace (PD1*)					
	Client Samp	l e ID PI	D1-E	PD1-PB-A	PD1-PB-B	PD1-PB-C	PD1-PS	PD1-TB-A	PD1-TB-B	PD1-TB-C	PD1-TC-	PD1-TS-A	PD1-TS-B	PD1-TS-C	
Analyte	Units N	IDL													
Mercury	μg/kg dw	8.9	8.7	23.7	22.1	23.6	26	33.5	34	34	16.2	29.2	33	35.5	
Methylmercury		l - 0.9	6.3	9.2	9.3	8.8	12.3	26.8	20.5	27.3	9.6	16.5	16.7	15.4	
Beatton-Kiskatinaw	(PD3) to Many Islands	(PD5)													
	I	Date 29-9	Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	29-Sep-22	01-Oct-22	01-Oct-22	01-Oct-22	01-Oct-22	01-Oct-22		
	ALS Samp	le ID FJ2203	485-027	FJ2203485-022	FJ2203485-023	FJ2203485-025	FJ2203485-026	FJ2203485-024	FJ2203485-036	FJ2203485-032	FJ2203485-035	FJ2203485-033	FJ2203485-034		
	Site ⁻	vne	e River Istream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream	Peace River Downstream						
	Loca	tion	atton- aw (PD3*)	Beatton- Kiskatinaw (PD3*)	Many Islands (PD5*)										
	Client Samp	l e ID PI	D3-E	PD3-PB	PD3-TB	PD3-TC-A	PD3-TC-B	PD3-TS	PD5-E	PD5-TB	PD5-TC	PD5-TS-A	PD5-TS-B		
Analyte	Units N	IDL													
Mercury	HG/KG GW	l - 8.9	7.1	20.4	22.1	15.7	16.3	21.9	26.8	20	18	36.4	30.1		
Methylmercury	ua/ka dw	l - 0.9	9.9	8.3	12.6	8	7.5	12.7	12.1	7.9	5	11.3	9.6		

AZIMUTH

B-24

B.5.3 Supplemental Results

Results for stable isotopes analysis of benthic invertebrate tissue are provided in the following figures:

- 2022 results by project phase (Figure B5-1).
- 2022 results by taxonomic group (Figure B5-2).
- Historical data by project phase (Figure B5-3).



Figure B5-1. Results for benthic invertebrate tissue stable isotopes analysis by station and station group for Reservoir and Peace River locations in 2022. Site C MMP stations noted with an asterisk (*).

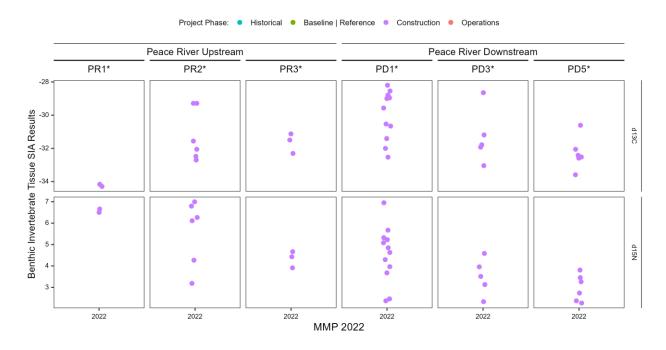




Figure B5-2. Results for benthic invertebrate tissue stable isotopes analysis by station and station group for Reservoir and Peace River locations in 2022 highlighting taxonomic group. Site C MMP stations noted with an asterisk (*).

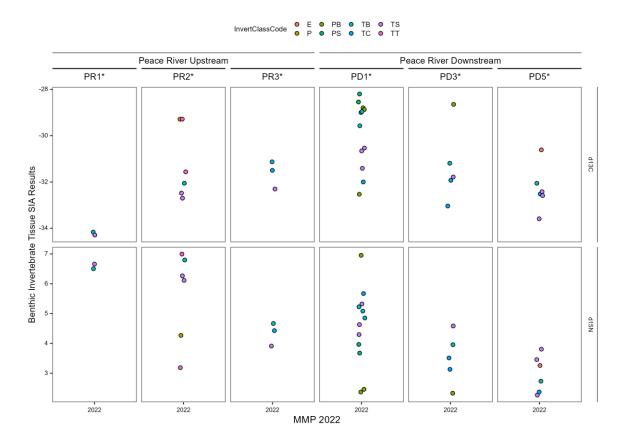
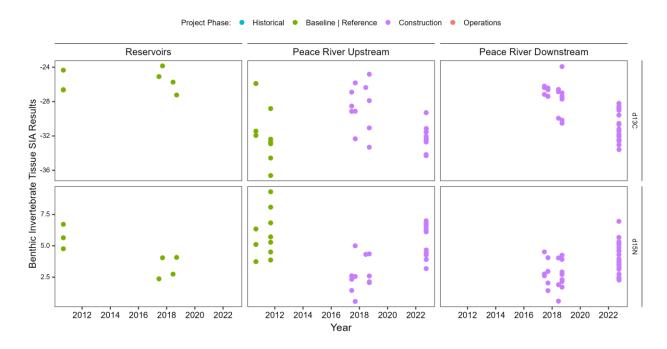




Figure B5-3. Temporal trends in benthic invertebrate tissue stable isotopes analysis by station and station group for Reservoir and Peace River locations in 2022. Site C MMP stations noted with an asterisk (*).





B.6 ZOOPLANKTON TISSUE

B.6.1 Methods

B.6.1.1 Sampling

Zooplankton were sampled in conjunction with surface water. Samples were collected by towing a Wisconsin-style zooplankton net (diameter, mesh, net length) approximately 20 to 50 cm below the surface behind a moving boat, or by holding it against the flow of the river. Where the collected sample was visually confirmed to contain primarily zooplankton, the net was rinsed and then emptied directly into amber glass bottles (this container type was not specified, but is fine) for mercury analyses and HDPE scintillation vials for stable isotope analysis. However, when samples were primarily didymo (the invasive diatom *Didymosphenia geminata*), or other unwanted organisms (e.g., chironomids, mayfly nymphs), the sample was passed through a five-stage filter (4000, 2000, 500, 250, and 125 μ m mesh) to facilitate isolating the zooplankton. Larger zooplankton were retained on the 500 μ m sieve, and smaller zooplankton were retained on the 250 and 125 μ m sieves. Each of these sieves was placed in a water-filled tray to manually separate out the desired sample organisms before transferring the sample to the appropriate sample containers.

Details on sampling containers, field filtering and sample preservation for mercury-related analytes in sediment is provided in **Table B5-1**.

Table B6-1. Sampling information for total mercury and methylmercury in zooplankton tissue.

Parameter	Target Volume	Container	Preservative	MDL
Metals Total Mercury Speciated Metals Methylmercury Stable Isotopes A	Ideal: 5 to 10 g ww Acceptable: 2 to 4 g ww	Vial or Whirlpack bag	None	5 ng/g dw
C & N	1 g ww	Vial or Whirlpack bag		NA

B.6.1.2 Laboratory Analyses

Zooplankton tissue samples collected in the 2022 program were analyzed for chemistry parameters by ALS, and for stable isotope analysis (SIA) by SINLAB. See **Appendix B7** for the ALS reports and **Appendix B8** for the SINLAB reports.



B.6.2 Data Tables

The 2022 MMP benthic invertebrate tissue data are tabulated in **Table B6-2**, Zooplankton tissue quality results for 2022.



Table B6-2. Zooplankton tissue quality results for 2022.

	Date	e 19-Oct-22	16-Aug-22	16-Aug-22	16-Aug-22	21-Aug-22	19-Oct-22	19-Oct-22	21-Aug-22	20-Aug-22
	ALS Sample II	FJ2203485-041	FJ2203485-038	FJ2203485-044	FJ2203485-039	FJ2203485-040	FJ2203485-042	FJ2203485-043	FJ2203485-045	FJ2203485-037
	Site Type		Reservoir	Reservoir	Reservoir	Reservoir	Reservoir	Reservoir	Reservoir	Peace River Upstream
	Location		Williston Shallow (W1)	Williston Shallow (W1)	Williston Shallow (W1)	Dinosaur Shallow (D1)	Dinosaur Shallow (D1)	Dinosaur Shallow (D1)	Dinosaur Shallow (D1)	Upper Site C (PR1*)
	Client Sample II	W1-Shallow-Z	W1-Shallow-Z-A	W1-Shallow-Z-A- DUP	W1-Shallow-Z-B	D1-Shallow-Z	D1-Shallow-Z-A	D1-Shallow-Z-B	D1-Shallow-Z- DUP	PR1-Z
Analyte	Units MDL									
Mercury	μg/kg dw 1 - 38.9	9 49	58	63	62	65	60	22.1	99	120
Methylmercury	μg/kg dw 1 - 90.9	38.5	<83.3	NA	<90.9	<30.3	<76.9	<14.7	25.4	90.5



B.6.3 Supplemental Results

Results for stable isotopes analysis of zooplankton tissue are provided in the following figures:

- 2022 results by project phase (Figure B6-1).
- Historical data by project phase (Figure B6-2).



Figure B6-1. Results for zooplankton tissue stable isotopes analysis by station and station group for Reservoir and Peace River locations in 2022. Site C MMP stations noted with an asterisk (*).

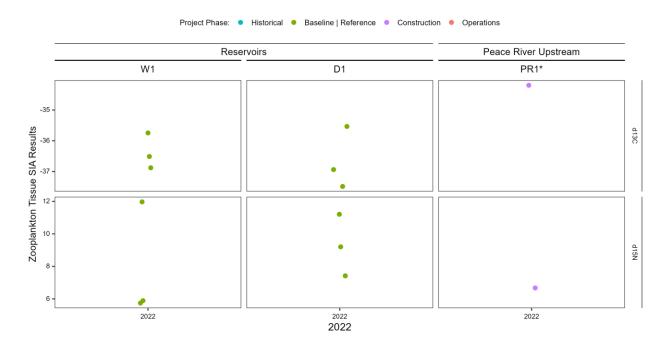
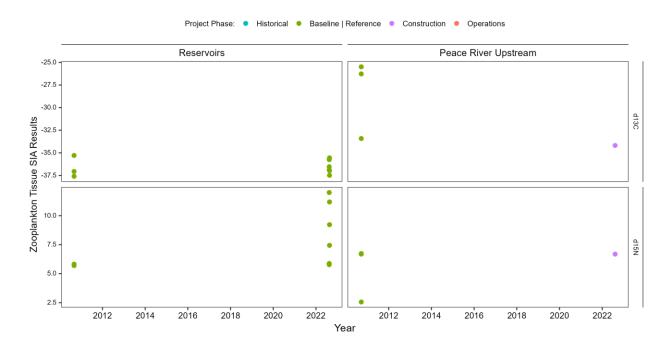




Figure B6-2. Temporal trends in zooplankton tissue stable isotopes analysis by station group for Reservoir and Peace River locations.





B.7 REFERENCES

- Ganshorn, K., Philibert, R., Suzanne, C., and Doucet, C. 2023. Site C Clean Energy Project, Site C Reservoir (Mon-8) and Peace River (Mon-9) Water and Sediment Quality Monitoring Program Task 2a Water and Sediment Quality, Construction Year 8 (2022). Consultant's report prepared for BC Hydro by Ecofish Research Ltd. and Aski Reclamation LP., September 8, 2023.
- Gov BC (Government of British Columbia). 2013. Ambient Freshwater and Effluent Sampling, Field Sampling Manual. Part E, Water and Wastewater Sampling.
- Gov BC. 2020. Ambient Freshwater and Effluent Sampling, Field Sampling Manual. Part D2, Sediment Sampling.



APPENDIX B1: SURFACE WATER CHEMISTRY ALS REPORTS



CERTIFICATE OF ANALYSIS

Work Order : FJ2202155

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 600 Comox Road

Courtenay BC Canada V9N3P6

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day 1

Sampler : ---

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 16-Aug-2022 12:55

Date Analysis Commenced : 17-Aug-2022

Issue Date : 09-Sep-2022 16:54

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Amber Montgomery	Account Manager Assistant	Administration, Calgary, Alberta
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 4
Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Description
No Unit
percent
micrograms per sample
Microsiemens per centimetre
colour units (1 CU = 1 mg/L Pt)
litres
milliequivalents per litre
milligrams per litre
pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			C	lient sample ID	W1-Shallow	W1-Deep	D1-Shallow	D1-Deep	Travel Blank
(Matrix: Water)									
			Client samp	oling date / time	16-Aug-2022 08:35	16-Aug-2022 07:50	16-Aug-2022 11:00	16-Aug-2022 10:20	16-Aug-2022
Analyte	CAS Number	Method	LOR	Unit	FJ2202155-001	FJ2202155-002	FJ2202155-003	FJ2202155-004	FJ2202155-005
					Result	Result	Result	Result	Result
Sample Preparation									
volume filtered		EF870B	0.001	L	0.070	0.070	0.070	0.070	0.070
Physical Tests									
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	80.1	82.7	83.1	85.7	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	80.1	82.7	83.1	85.7	
colour, true		E329	5.0	CU	6.9	7.1	8.6	6.9	
conductivity		E100	2.0	μS/cm	166	166	174	167	
hardness (as CaCO3), dissolved		EC100	0.50	mg/L	84.2	89.6	90.4	92.0	
рН		E108	0.10	pH units	8.20	8.20	8.13	8.09	
solids, total dissolved [TDS]		E162	10	mg/L	105	104	107	108	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0140	0.0075	0.0064	0.0056	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.026	0.026	0.028	0.026	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.072	0.131	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0550	0.0553	0.0704	0.0729	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0.0018	0.0022	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.127	0.186	0.072	0.075	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0053	0.0045	0.0045	0.0053	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.28	4.28	4.48	4.46	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.3	12.3	13.3	13.6	
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.18	2.73	2.78	3.29	
carbon, total organic [TOC]		E355-L	0.50	mg/L	3.08	2.90	3.10	2.82	
Ion Balance									

Page : 4 of 4
Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			C	lient sample ID	W1-Shallow	W1-Deep	D1-Shallow	D1-Deep	Travel Blank
(Matrix: Water)									
			Client samp	lling date / time	16-Aug-2022 08:35	16-Aug-2022 07:50	16-Aug-2022 11:00	16-Aug-2022 10:20	16-Aug-2022
Analyte	CAS Number	Method	LOR	Unit	FJ2202155-001	FJ2202155-002	FJ2202155-003	FJ2202155-004	FJ2202155-005
					Result	Result	Result	Result	Result
Ion Balance									
anion sum		EC101	0.10	meq/L	1.86	1.91	1.94	2.00	
cation sum		EC101	0.10	meq/L	1.74	1.85	1.87	1.90	
ion balance (APHA)		EC101	0.010	%	3.33	1.60	1.84	2.56	
Dissolved Metals									
calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.2	25.7	25.8	26.1	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.77	6.18	6.30	6.52	
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	
Plant Pigments									
chlorophyll a	479-61-8	E870B	0.0020	μg/sample	0.0724	0.0862	0.0256	0.0323	<0.0020

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202155** Page : 1 of 20

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 600 Comox Road Address : 11007 Alaska Road

Annual Politics Column de VONORO

Courtenay BC Canada V9N3P6 Fort St. John, British Columbia Canada V1J 6P3
Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 16-Aug-2022 12:55

 PO
 : 1200-25.03.02
 Issue Date
 : 09-Sep-2022 16:54

Sampler : ----

Site .

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



Page : 3 of 20 Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	raluation: × =	Holding time exce	edance ; •	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Holding T		Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D1-Deep	E298	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D1-Shallow	E298	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										,
W1-Deep	E298	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)	E298	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
W1-Shallow	E290	10-Aug-2022	17-Aug-2022				17-Aug-2022	20 days	Tuays	•
Anions and Nutrients : Chloride in Water by IC HDPE							I			
D1-Deep	E235.CI	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	1
Втосор	2200.01	10 / tag 2022	17 7 tag 2022				17 7 tag 2022	20 dayo	, dayo	•
Aniana and Nutrienta - Chlorida in Water by IC										
Anions and Nutrients : Chloride in Water by IC HDPE										
D1-Shallow	E235.CI	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
			J]	- ,-	, , ,	
Anions and Nutrients : Chloride in Water by IC										
HDPE										
W1-Deep	E235.CI	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
			-							
							l			

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🔹	✓ = Within	Holding 1
Analyte Group	Method	Sampling Date	Ext	traction / P	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
nions and Nutrients : Chloride in Water by IC			Date	Kec	Actual			Rec	Actual	
HDPE										
W1-Shallow	E235.Cl	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colouri	imetry (Ultra Trace Level 0 001									
mons and Nutrients . Dissolved Orthophosphate by Colour	inelly (Gilla Hace Level 0.001									
HDPE										
D1-Deep	E378-U	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colouri	imetry (Ultra Trace Level 0.001									
HDPE										
D1-Shallow	E378-U	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colouri	imetry (Ultra Trace Level 0.001									
HDPE										
W1-Deep	E378-U	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colouri	imetry (Ultra Trace Level 0.001									
UDDE							1	T		
HDPE W1-Shallow	E378-U	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	1
		Ů	J ·							
nions and Nutrients : Fluoride in Water by IC										
HDPE D1-Deep	E235.F	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	1
51-Беер	2200.1	10 / tag 2022	17-7 tug-2022				17-7 tag-2022	20 days	1 days	·
nions and Nutrients : Fluoride in Water by IC										
HDPE	E235.F	46 4 2000	47 4 2022				47 4 2000	20 -	4 -1	√
D1-Shallow	E235.F	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	i days	•
nions and Nutrients : Fluoride in Water by IC										
HDPE	F005 F	16 A 2002	47 A				47 4	00.4	4 -1	,
W1-Deep	E235.F	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	i days	✓
nions and Nutrients : Fluoride in Water by IC										
HDPE	F005 F	40.40000	47.40000				47.40000	00.1	4 1	,
W1-Shallow	E235.F	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Matrix: water						raidation. • –	noiding time exce	cuarice, .	- *************************************	Tiolding Time	
Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding Times		Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE											
D1-Deep	E235.NO3-L	16-Aug-2022	17-Aug-2022	3 days	1 days	✓	17-Aug-2022	3 days	0 days	✓	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE											
D1-Shallow	E235.NO3-L	16-Aug-2022	17-Aug-2022	3 days	1 days	✓	17-Aug-2022	3 days	0 days	✓	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE											
W1-Deep	E235.NO3-L	16-Aug-2022	17-Aug-2022	3 days	1 days	✓	17-Aug-2022	3 days	0 days	✓	
			-								
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE											
W1-Shallow	E235.NO3-L	16-Aug-2022	17-Aug-2022	3 days	1 days	✓	17-Aug-2022	3 days	0 days	✓	
			· ·		,			_			
Anions and Nutrients : Nitrite in Water by IC (Low Level)								1			
HDPE											
D1-Deep	E235.NO2-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓	
· ·			J								
Anions and Nutrients : Nitrite in Water by IC (Low Level)								1			
HDPE											
D1-Shallow	E235.NO2-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓	
		_	-				_	_			
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE											
W1-Deep	E235.NO2-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓	
•			Ü								
Anions and Nutrients : Nitrite in Water by IC (Low Level)								1			
HDPE											
W1-Shallow	E235.NO2-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓	
		" " "	J					, ,-	,-		
Anions and Nutrients : Reactive Silica by Colourimetry											
HDPE											
D1-Deep	E392	16-Aug-2022					19-Aug-2022	28 days	3 days	1	
· r		2022							,-		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Ext	raction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)							Analysis			
			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
D1-Shallow	E392	16-Aug-2022					19-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
W1-Deep	E392	16-Aug-2022					19-Aug-2022	28 days	3 days	✓
								_		
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
W1-Shallow	E392	16-Aug-2022					19-Aug-2022	28 days	3 days	✓
		-							-	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
D1-Deep	E235.SO4	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
·			· ·				J	_		
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
D1-Shallow	E235.SO4	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
			· ·				Ŭ			
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
W1-Deep	E235.SO4	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
·			· ·							
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
W1-Shallow	E235.SO4	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
			J				J	-	,	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
D1-Deep	E375-T	16-Aug-2022	17-Aug-2022				18-Aug-2022	28 days	2 davs	✓
- ·r		2022							,_	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
D1-Shallow	E375-T	16-Aug-2022	17-Aug-2022				18-Aug-2022	28 days	2 days	1
5. C.		107.09 2022								

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	e Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) W1-Deep	E375-T	16-Aug-2022	17-Aug-2022				18-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) W1-Shallow	E375-T	16-Aug-2022	17-Aug-2022				18-Aug-2022	28 days	2 days	4
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) D1-Deep	E318	16-Aug-2022	20-Aug-2022				20-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) D1-Shallow	E318	16-Aug-2022	20-Aug-2022				20-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) W1-Deep	E318	16-Aug-2022	20-Aug-2022				20-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) W1-Shallow	E318	16-Aug-2022	20-Aug-2022				20-Aug-2022	28 days	4 days	√
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) D1-Deep	E372-U	16-Aug-2022	17-Aug-2022				19-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) D1-Shallow	E372-U	16-Aug-2022	17-Aug-2022				19-Aug-2022	28 days	3 days	4
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) W1-Deep	E372-U	16-Aug-2022	17-Aug-2022				19-Aug-2022	28 days	3 days	✓

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Client : Ecofish Research Ltd

Amber glass dissolved (sulfuric acid)

W1-Shallow

Project : Surface Water MON8/9-No Metals



Date Rec Actual Rec Rec Actual Rec Rec Actual Rec Rec Actual Rec	nalyte Group	Method	Sampling Date	Ext	traction / Pr	reparation			Analysis		
Date Rec Actual	Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
Amber glass total (sulfuric acid) W1-Shallow E372-U 16-Aug-2022 17-Aug-2022 19-Aug-2022 28 days 3 days ✓ W2-Shallow W3-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 7 days ✓ W3-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 7 days ✓ W3-Shallow W3-Shallow W4-Shallow W4-Shallow W4-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 8 days ✓ W3-Box-Oed Metals in Water by CRC ICPMS W4-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 8 days ✓ W4-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 8 days ✓ W4-Deep W4-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 8 days ✓ W4-Deep W4-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 8 days ✓ W4-Deep W4-Deep E421 16-Aug-2022 180 8 days ✓ W4-Deep W4-Deep E421 16-Aug-2022 180 8 days ✓ W4-Shallow W4-Shallow E421 16-Aug-2022 180 8 days ✓ W4-Shallow W4-Shallow E421 16-Aug-2022 17-Aug-2022 23-Aug-2022 180 8 days ✓ W4-Shallow W4-Shallow E536-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep E356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ W4-Deep B356-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓				•	Rec	Actual					
W1-Shallow E372-U 16-Aug-2022 17-Aug-2022 19-Aug-2022 28 days 3 days 18-Aug-2022 3 days 3	nions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Sissolved Metals : Dissolved Metals in Water by CRC ICPMS	Amber glass total (sulfuric acid)										
E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days 7 days 1	W1-Shallow	E372-U	16-Aug-2022	17-Aug-2022				19-Aug-2022	28 days	3 days	✓
E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days 7 days 1											
D1-Shallow	issolved Metals : Dissolved Metals in Water by CRC ICPMS										
Sissolved Metals : Dissolved Metals in Water by CRC ICPMS	HDPE - dissolved (lab preserved)										
HDPE - dissolved Metals : Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) D1-Deep E421 16-Aug-2022 22-Aug-2022	D1-Shallow	E421	16-Aug-2022	22-Aug-2022				23-Aug-2022	180	7 days	✓
HDPE - dissolved (lab preserved)									days		
D1-Deep	issolved Metals : Dissolved Metals in Water by CRC ICPMS										
Amber glass dissolved (sulfuric acid)	·										
Second Metals : Dissolved Metals in Water by CRC ICPMS	D1-Deep	E421	16-Aug-2022	22-Aug-2022				23-Aug-2022	180	8 days	✓
HDPE - dissolved (lab preserved) W1-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days ### days ##									days		
W1-Deep E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days ✓	issolved Metals : Dissolved Metals in Water by CRC ICPMS										
issolved Metals : Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) W1-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓ rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	HDPE - dissolved (lab preserved)										
Issolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) W1-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days Variable Variabl	W1-Deep	E421	16-Aug-2022	22-Aug-2022				23-Aug-2022	180	8 days	✓
HDPE - dissolved (lab preserved) W1-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days 8 days Proganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Proganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Proganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow Proganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)									days		
W1-Shallow E421 16-Aug-2022 22-Aug-2022 23-Aug-2022 180 days Progranic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Progranic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Progranic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Progranic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	issolved Metals : Dissolved Metals in Water by CRC ICPMS										
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022	HDPE - dissolved (lab preserved)										
Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17	W1-Shallow	E421	16-Aug-2022	22-Aug-2022				23-Aug-2022	180	8 days	✓
Amber glass dissolved (sulfuric acid) D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days F358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 17-Aug-202									days		
D1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)											
Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	D1-Deep	E358-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Amber glass dissolved (sulfuric acid) D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)											
D1-Shallow E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days rganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)		I)									
erganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)											
Amber glass dissolved (sulfuric acid)	D1-Shallow	E358-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Amber glass dissolved (sulfuric acid)											
		1)									
W1-Deep E358-L 16-Aug-2022 17-Aug-2022 17-Aug-2022 28 days 1 days ✓	• • • • • • • • • • • • • • • • • • • •										
	W1-Deep	E358-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓

16-Aug-2022

E358-L

17-Aug-2022

17-Aug-2022

28 days 1 days

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viatrix: water						araara.	nolding time excee	Judinoo ,	***************************************	
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
D1-Deep	E355-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
D1-Shallow	E355-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion	on (Low Level)									
Amber glass total (sulfuric acid)										
W1-Deep	E355-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
W1-Shallow	E355-L	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-Deep	E290	16-Aug-2022	17-Aug-2022				17-Aug-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-Shallow	E290	16-Aug-2022	17-Aug-2022				17-Aug-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
W1-Deep	E290	16-Aug-2022	17-Aug-2022				17-Aug-2022	14 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
W1-Shallow	E290	16-Aug-2022	17-Aug-2022				17-Aug-2022	14 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
D1-Deep	E329	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viatrix: water						aldation. • -	Holding time exce	cuarice, •	- vvicini	riolaling riiii
Analyte Group	Method	Sampling Date	Ex	traction / P	reparation					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rec	Actual	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
D1-Shallow	E329	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
W1-Deep	E329	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
W1-Shallow	E329	16-Aug-2022	17-Aug-2022				17-Aug-2022	3 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
D1-Deep	E100	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
D1-Shallow	E100	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
W1-Deep	E100	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
W1-Shallow	E100	16-Aug-2022	17-Aug-2022				17-Aug-2022	28 days	1 days	✓
Physical Tests : pH by Meter										
HDPE										
D1-Deep	E108	16-Aug-2022	17-Aug-2022				17-Aug-2022	0.25	0.26	*
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
D1-Shallow	E108	16-Aug-2022	17-Aug-2022				17-Aug-2022	0.25	0.26	*
								hrs	hrs	EHTR-FM

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE W1-Deep	E108	16-Aug-2022	17-Aug-2022				17-Aug-2022	0.25 hrs	0.26 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE W1-Shallow	E108	16-Aug-2022	17-Aug-2022				17-Aug-2022	0.25 hrs	0.26 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE D1-Deep	E162	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry									1	
HDPE D1-Shallow	E162	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE W1-Deep	E162	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE W1-Shallow	E162	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry									<u> </u>	
HDPE D1-Deep	E160	16-Aug-2022					19-Aug-2022	7 days	3 days	1
Physical Tests : TSS by Gravimetry									1	
HDPE D1-Shallow	E160	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE W1-Deep	E160	16-Aug-2022					19-Aug-2022	7 days	3 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

water							nolaing time exce	,		
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE										
W1-Shallow	E160	16-Aug-2022					19-Aug-2022	7 days	3 days	✓
Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg)										
Opaque HDPE tube										
D1-Deep	E870B	16-Aug-2022	20-Aug-2022	28	4 days	✓	20-Aug-2022	28 days	0 days	✓
				days						
Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg)										
Opaque HDPE tube										
D1-Shallow	E870B	16-Aug-2022	20-Aug-2022	28	4 days	✓	20-Aug-2022	28 days	0 days	✓
				days						
Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg)										
Opaque HDPE tube										
Travel Blank	E870B	16-Aug-2022	20-Aug-2022	28	4 days	✓	20-Aug-2022	28 days	0 days	✓
				days						
Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg)										
Opaque HDPE tube										
W1-Deep	E870B	16-Aug-2022	20-Aug-2022	28	4 days	✓	20-Aug-2022	28 days	0 days	✓
				days						
Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg)										
Opaque HDPE tube										
W1-Shallow	E870B	16-Aug-2022	20-Aug-2022	28	4 days	✓	20-Aug-2022	28 days	0 days	✓
				days						
Sample Preparation : Chlorophyll-a Filtration by Support Laboratory										
Opaque HDPE										
D1-Shallow	EF870B	16-Aug-2022					17-Aug-2022	48 hrs	28 hrs	✓
Sample Preparation : Chlorophyll-a Filtration by Support Laboratory										1
Opaque HDPE										
D1-Deep	EF870B	16-Aug-2022					17-Aug-2022	48 hrs	29 hrs	✓
Sample Preparation : Chlorophyll-a Filtration by Support Laboratory										<u> </u>
Opaque HDPE										
Travel Blank	EF870B	16-Aug-2022					17-Aug-2022	48 hrs	30 hrs	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water

Evaluation: **x** = Holding time exceedance : ✓ = Within Holding Time

viatrix. Water					LV	aluation. * -	i lolding time excee	Juanice , •	- vviuiii	Tioluling II
Analyte Group	Method	Sampling Date	Ex	Extraction / Preparation						
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Sample Preparation : Chlorophyll-a Filtration by Support Laborator	у									
Opaque HDPE										
W1-Shallow	EF870B	16-Aug-2022					17-Aug-2022	48 hrs	30 hrs	✓
Sample Preparation : Chlorophyll-a Filtration by Support Laborator	у									
Opaque HDPE										
W1-Deep	EF870B	16-Aug-2022					17-Aug-2022	48 hrs	31 hrs	✓

Legend & Qualifier Definitions

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

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type		•	Co	ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	606476	1	15	6.6	5.0	1
Ammonia by Fluorescence	E298	605988	1	8	12.5	5.0	√
Chloride in Water by IC	E235.CI	606388	1	8	12.5	5.0	<u>√</u>
Chlorophyll-a by Fluorometry (Support Lab Filtered µg)	E870B	611401	1	15	6.6	5.0	
Colour (True) by Spectrometer (5 CU)	E329	606734	1	10	10.0	5.0	<u> </u>
Conductivity in Water	E100	606474	1	15	6.6	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	613855	1	4	25.0	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	605853	1	8	12.5	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	606247	1	15	6.6	5.0	√
Fluoride in Water by IC	E235.F	606387	1	8	12.5	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	606384	1	20	5.0	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	606386	1	20	5.0	5.0	√
pH by Meter	E108	606475	1	20	5.0	5.0	<u> </u>
Reactive Silica by Colourimetry	E392	610871	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	606385	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	609058	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	606192	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	608825	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	605854	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	606507	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	609064	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	606476	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	605988	1	8	12.5	5.0	1
Chloride in Water by IC	E235.Cl	606388	1	8	12.5	5.0	✓
Chlorophyll-a by Fluorometry (Support Lab Filtered μg)	E870B	611401	1	15	6.6	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	606734	1	10	10.0	5.0	✓
Conductivity in Water	E100	606474	1	15	6.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	613855	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	605853	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	606247	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	606387	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	606384	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	606386	1	20	5.0	5.0	✓
pH by Meter	E108	606475	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	610871	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	606385	1	8	12.5	5.0	✓

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Client : Ecofish Research Ltd



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

Quality Control Sample Type		·	Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
TDS by Gravimetry	E162	609058	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	606192	1	17	5.8	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	608825	1	19	5.2	5.0	√
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	605854	1	8	12.5	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	606507	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	609064	1	17	5.8	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	606476	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	605988	1	8	12.5	5.0	<u> </u>
Chloride in Water by IC	E235.Cl	606388	1	8	12.5	5.0	<u> </u>
Chlorophyll-a by Fluorometry (Support Lab Filtered µg)	E870B	611401	1	15	6.6	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	606734	1	10	10.0	5.0	<u> </u>
Conductivity in Water	E100	606474	1	15	6.6	5.0	<u>√</u>
Dissolved Metals in Water by CRC ICPMS	E421	613855	1	4	25.0	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	605853	1	8	12.5	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	606247	1	15	6.6	5.0	√
Fluoride in Water by IC	E235.F	606387	1	8	12.5	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	606384	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	606386	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	610871	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	606385	1	8	12.5	5.0	✓
TDS by Gravimetry	E162	609058	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	606192	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	608825	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	605854	1	8	12.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	606507	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	609064	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	605988	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.CI	606388	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	613855	1	4	25.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	605853	1	8	12.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	606247	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	606387	1	8	12.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	606384	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	606386	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	610871	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	606385	1	8	12.5	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	606192	1	17	5.8	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	608825	1	19	5.2	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Evaluation. — 40 inequality dutated specification, — 40 inequality within specification.									
Quality Control Sample Type			unt		Frequency (%)				
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Matrix Spikes (MS) - Continued									
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	605854	1	8	12.5	5.0	✓		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	606507	1	20	5.0	5.0	✓		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Calgary - Environmental			sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Calgary - Environmental			pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
	Calgary - Environmental			filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
Ammonia by Fluorescence	E298	Water	Method Fialab 100,	alkalinity values. Ammonia in water is determined by automated continuous flow analysis with membrane
A STATE OF THE OFFICE O	E290 Calgary - Environmental	valor	2018	diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
,	Calgary - Environmental			This method is approved under US EPA 40 CFR Part 136 (May 2021).

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Colour (True) by Spectrometer (5 CU)	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Chlorophyll-a by Fluorometry (Support Lab Filtered µg)	E870B Vancouver - Environmental	Water	EPA 445.0 (mod)	Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Chlorophyll-a Filtration by Support Laboratory	EF870B Calgary - Environmental	Water	EPA 445.0 (mod)	Filtration for chlorophyll-a analysis
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Chlorophyll-a Extraction	EP870 Vancouver - Environmental	Water	EPA 445.0 (mod)	Chlorophyll-a solvent extraction.

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Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Chlorophyll-a Extraction (Support Lab Filtered)	EP870B	Water	EPA 445.0 (mod)	Chlorophyll-a solvent extraction.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202155

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 600 Comox Road

Courtenay BC Canada V9N3P6

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day 1

Sampler : ---

Site

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 16-Aug-2022 12:55

Date Analysis Commenced : 17-Aug-2022

Labarrataria Barrantus and

Issue Date : 09-Sep-2022 16:54

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Amber Montgomery	Account Manager Assistant	Calgary Administration, Calgary, Alberta
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Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Elke Tabora		Calgary Inorganics, Calgary, Alberta
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Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Work Order : FJ2202155

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water	Case Case						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
	Lot: 606474)													
CG2210901-004	Anonymous	conductivity		E100	2.0	μS/cm	333	335	0.599%	10%				
Physical Tests (QC	Lot: 606475)													
CG2210901-004	Anonymous	рН		E108	0.10	pH units	8.77	8.79	0.228%	4%				
Physical Tests (QC	Lot: 606476)													
CG2210901-004	Anonymous	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	136	141	3.75%	20%				
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	16.0	17.2	7.23%	20%				
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR				
				E290	1.0	mg/L	8.0	8.6	0.6	Diff <2x LOR				
		· · · · · · · · · · · · · · · · · · ·		E290	1.0	mg/L	152	158	4.12%	20%				
Physical Tests (QC	Lot: 606734)													
CG2210845-001	Anonymous	colour, true		E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR				
Physical Tests (QC	C Lot: 609058)							'						
CG2210948-002	Anonymous	solids, total dissolved [TDS]		E162	20	mg/L	185	180	6	Diff <2x LOR				
Physical Tests (QC	Lot: 609064)													
FJ2202148-002	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	61.3	55.3	10.3%	20%				
Anions and Nutrien	its (QC Lot: 605988)													
FJ2202151-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	2.50	mg/L	39.6	39.3	0.586%	20%				
Anions and Nutrien	its (QC Lot: 606192)													
EO2206470-012	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0251	0.0251	0.240%	20%				
Anions and Nutrien	its (QC Lot: 606247)													
CG2210887-015	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0100	mg/L	0.122	0.119	2.62%	20%				
Anions and Nutrien	its (QC Lot: 606384)													
FJ2202154-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0730	0.0702	3.91%	20%				
Anions and Nutrien	its (QC Lot: 606385)							<u> </u>						
FJ2202154-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.4	13.4	0.00593%	20%				
Anions and Nutrien	its (QC Lot: 606386)													
FJ2202154-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0018	0.0018	0	Diff <2x LOR				
Anions and Nutrien	its (QC Lot: 606387)													
FJ2202154-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.030	0.026	0.004	Diff <2x LOR				
	ts (QC Lot: 606388)													
FJ2202154-001	Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR				

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Client : Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrier	nts (QC Lot: 606507)										
FJ2202155-001	W1-Shallow	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0053	0.0045	0.0008	Diff <2x LOR	
Anions and Nutrier	its (QC Lot: 608825)										
CG2210871-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	4.00	mg/L	44.3	44.1	0.366%	20%	
Anions and Nutrier	nts (QC Lot: 610871)										
FJ2202155-001	W1-Shallow	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.28	4.28	0.009	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 6058	53)									
FJ2202154-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.96	2.70	0.25	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 6058	54)									
FJ2202154-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.04	2.72	0.32	Diff <2x LOR	
Dissolved Metals (QC Lot: 613855)										
FJ2202155-001	W1-Shallow	calcium, dissolved	7440-70-2	E421	0.050	mg/L	24.2	25.9	6.70%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.77	6.58	13.1%	20%	
Plant Pigments (Q	C Lot: 611401)							1			
EO2206520-001	Anonymous	chlorophyll a	479-61-8	E870B	0.0020	µg/sample	1.01	0.876	14.1%	30%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 606474)					
conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 606476)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 606734)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 609058)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 609064)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 605988)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 606192)					
phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 606247)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 606384)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 606385)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 606386)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 606387)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 606388)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 606507)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 608825)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 610871)						
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 60	5853)					
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 60	5854)					
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 613855)						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	
Plant Pigments (QCLot: 611401)						
chlorophyll a	479-61-8	E870B	0.002	μg/sample	<0.0020	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 606474)										
conductivity		E100	1	μS/cm	146.9 μS/cm	101	90.0	110		
Physical Tests (QCLot: 606475)										
рН		E108		pH units	7 pH units	100	98.6	101		
Physical Tests (QCLot: 606476)										
alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	105	75.0	125		
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	102	85.0	115		
Physical Tests (QCLot: 606734)										
colour, true		E329	5	CU	100 CU	101	85.0	115		
Physical Tests (QCLot: 609058)										
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	95.6	85.0	115		
Physical Tests (QCLot: 609064)									•	
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	89.8	85.0	115		
Anions and Nutrients (QCLot: 605988)										
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	105	85.0	115		
Anions and Nutrients (QCLot: 606192)										
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	8.02 mg/L	103	80.0	120		
Anions and Nutrients (QCLot: 606247)										
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120		
Anions and Nutrients (QCLot: 606384)										
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110		
Anions and Nutrients (QCLot: 606385)										
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	109	90.0	110		
Anions and Nutrients (QCLot: 606386)										
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.2	90.0	110		
Anions and Nutrients (QCLot: 606387)									1	
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.5	90.0	110		
Anions and Nutrients (QCLot: 606388)									I	
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	99.7	90.0	110		
Anions and Nutrients (QCLot: 606507)									1	
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	107	80.0	120		
Anions and Nutrients (QCLot: 608825)									I	
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	101	75.0	125		
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Client : Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Anions and Nutrients (QCLot: 610871)										
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	98.0	85.0	115		
Organic / Inorganic Carbon (QCLot: 6058	53)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	93.5	80.0	120		
Organic / Inorganic Carbon (QCLot: 6058	54)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	98.2	80.0	120		
Dissolved Metals (QCLot: 613855)										
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	93.2	80.0	120		
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	108	80.0	120		
Plant Pigments (QCLot: 611401)										
chlorophyll a	479-61-8	E870B	0.002	μg/sample	1 μg/sample	92.2	80.0	120		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							•	e (MS) Report		
					Sp		Recovery (%)	Recovery	Limits (%)	
.aboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
Anions and Nutri	ents (QCLot: 605988)									
FJ2202152-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0966 mg/L	0.1 mg/L	96.6	75.0	125	
Anions and Nutri	ents (QCLot: 606192)									
EO2206470-013	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0680 mg/L	0.0676 mg/L	100	70.0	130	
Anions and Nutri	ents (QCLot: 606247)									
CG2210887-016	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0496 mg/L	0.05 mg/L	99.1	70.0	130	
Anions and Nutri	ents (QCLot: 606384)									
FJ2202154-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.46 mg/L	2.5 mg/L	98.6	75.0	125	
Anions and Nutri	ents (QCLot: 606385)									
FJ2202154-003	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	
Anions and Nutri	ents (QCLot: 606386)									
FJ2202154-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.466 mg/L	0.5 mg/L	93.2	75.0	125	
Anions and Nutri	ents (QCLot: 606387)									
FJ2202154-003	Anonymous	fluoride	16984-48-8	E235.F	0.886 mg/L	1 mg/L	88.6	75.0	125	
Anions and Nutri	ents (QCLot: 606388)									
FJ2202154-003	Anonymous	chloride	16887-00-6	E235.CI	98.3 mg/L	100 mg/L	98.3	75.0	125	
Anions and Nutri	ents (QCLot: 606507)									
FJ2202155-002	W1-Deep	phosphorus, total	7723-14-0	E372-U	0.0598 mg/L	0.0676 mg/L	88.5	70.0	130	
Anions and Nutri	ents (QCLot: 608825)									
CG2210893-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	ND mg/L	2.5 mg/L	ND	70.0	130	
Anions and Nutri	ents (QCLot: 610871)					ı				
FJ2202155-002	W1-Deep	silicate (as SiO2)	7631-86-9	E392	10.4 mg/L	10 mg/L	104	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 60)5853)								
FJ2202154-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	5.05 mg/L	5 mg/L	101	70.0	130	
Organic / Inorgan	nic Carbon (QCLot: 60	05854)								
FJ2202154-001	Anonymous	carbon, total organic [TOC]		E355-L	5.12 mg/L	5 mg/L	102	70.0	130	
Dissolved Metals	(QCLot: 613855)									
FJ2202155-002	W1-Deep	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	

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Client : Ecofish Research Ltd



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of

coc Number: 2022-Aug-MON8/9- Day 1

Reports / Recipients Turnaround Time (TAT) Requested Contact and company name below will appear on the final report Report To Select Report Format: IPPDF IP EXCEL I EDD (DIGITAL) Ecofish Research Ltd. Routine (R) if received by 3pm M-F - no surcharges apply Company: Merge QC/QCI Reports with COA ☑YES ☐ NO ☐N/A 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum Leah Hull Contact: AFFIX ALS BARCODE LABEL HERE B day [P3] if received by 3pm M-F - 25% rush surcharge minimum 250-334-3042 Compare Results to Criteria on Report - provide details below if box checked Phone: (ALS use only) 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ MAIL ☐ FAX ✓ EMAIL Select Distribution: Company address below will appear on the final report t day (F) if received by 3pm, M-E - 100% rush surcharge minimum. Same day [E2] if received by 10am M-S - 200% rush surcharge, Additional Email 1 or Fax Ihull@ecofishresearch.com 600 Comox Rd. Street: ees may apply to rush requests on weekends, statutory holidays and nontkasubuchi@ecofishresearch.com Courtenay, BC Email 2 City/Province: Date and Time Required for all E&P TATS: V9N 3P6 Email 3 waterqualitylabdata@ecofishresearch.com dd-mmm-yv hh:mm amioni Postal Code: For all tests with rush TATs requested, please contact your AM to confirm availability. ☐ YES ☑ NO Invoice Recipients Same as Report To Invoice To **Analysis Request** TYES INO Copy of Invoice with Report Email 1 or Fax accountspayable@ecofishresearch.com CONTAINERS Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below STORAGE REQUIRED Ecofish Research Ltd. Company: F/P F#P P accountspayable@ecofishresearch.com Email 2 Contact: Oil and Gas Required Fields (client use) Project Information SAMPLES ON HOLD PO# ALS Account # / Quote #: VA22-ECOF100-004 AFE/Cost Center Routing Code: Surface water MON8/9- no metals Major/Minor Code: 불 1200-25.03.02 Requisitioner PO / AFE: P. dissolved LSD: .ocation: NUMBER EXTENDED ONBALANCE ALS Lab Work Order # (ALS use only): ALS Contact: Sneha Sansare Sampler: Pat Beaupre Ec, pH, ortho P, Total Date Time Sample Identification and/or Coordinates ALS Sample # DOC, Sample Type (ALS use only) (dd-mmm-vv) (hh:mm) (This description will appear on the report) 0835 AJGLL R R R 5 R W1-Shallow Water 0750 16 AUG 22 R R Water 5 R R R R W1-Deep 1',00 Water 5 R R R R R R D1-Shallow 10:20 5 R R R R R R Water D1-Deep Water R Travel Blank 10 100 100 SAMPLE RECEIPT DETAILS (ALS use only) Notes / Specify Limits for result evaluation by selecting from drop-down below Drinking Water (DW) Samples¹ (client use) Cooling Method: NONE IIICE ICE PACKS IFROZEN COOLING INITIATED (Excel COC only) Are samples taken from a Regulated DW System? Submission Comments identified on Sample Receipt Notification: YES Пю Please send Azimuth a copy of the data in their EDD format: YES NO Cooler Custody Seals Intact: TYES TWA Sample Custody Seals Intact: □YES □V/A INITIAL COOLER TEMPERATURES OF FINAL COOLER TEMPERATURES C Are samples for human consumption/ use? gmann@azimuthgroup.ca imcivor@azimuthgroup.ca Add, for report: csuzanne@ecofishresearch.com,kganshorn@ecofishresearch.com ☐ YES ☑ NO FINAL SHIPMENT RECEPTION (ALS use only) INITIAL SHIPMENT RECEPTION (ALS use only). SHIPMENT RELEASE (client use) Date: Time: Received by Released by: ī'ime: Received by 16, AUG 2020 FRON REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202201 Page : 1 of 4

Amendment : 1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1

Fort St. John BC Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

Project : Surface Water MON8/9 No Motels Date Samples Received : 18 Aug 2023 19:3

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 18-Aug-2022 18:38

 PO
 : 1200-25.03.02
 Date Analysis Commenced
 : 21-Aug-2022

Sampler : Kevin Ganshorn, PD

Site

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA Vancouver - Environmental	8081 Lougheed Highway, Burnaby, British Columbia

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (6/6/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sarah Kennedy on 6/6/2023. All analysis results are as per the previous report.

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

(Matrix: Water) Analyte	CAS Number	Method/La		Client samp	ling date / time					
Analyte	CAS Number	Method/La		Client samp	ling date / time					
Analyte	CAS Number	Method/La			J	18-Aug-2022 10:20	18-Aug-2022 14:15	18-Aug-2022 14:15	18-Aug-2022 16:50	
			b	LOR	Unit	FJ2202201-001	FJ2202201-002	FJ2202201-003	FJ2202201-004	
						Result	Result	Result	Result	
Physical Tests	le	290/VA	Α	1.0	100 Gr /I	82.4	78.2	79.0	171	
Alkalinity, bicarbonate (as CaCO3)		290/VA 290/VA			mg/L	62.4 <1.0	76.2 <1.0		10.2	
Alkalinity, carbonate (as CaCO3)			A	1.0	mg/L			<1.0		
Alkalinity, hydroxide (as CaCO3)		290/VA	A	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
Alkalinity, phenolphthalein (as CaCO3)		290/VA	A	1.0	mg/L	<1.0	<1.0	<1.0	5.1	
Alkalinity, total (as CaCO3)		290/VA	A	1.0	mg/L	82.4	78.2	79.0	182	
Colour, true		329/VA	Α	5.0	CU	6.0	5.9	5.5	5.5	
Conductivity		100/VA	Α	2.0	μS/cm	187	185	184	421	
Hardness (as CaCO3), dissolved		C100/VA		0.60	mg/L	97.7	95.6	97.6	225	
pH		108/VA	Α	0.10	pH units	8.07	8.07	8.09	8.43	
Solids, total dissolved [TDS]		162/VA	Α	10	mg/L	131	125	130	300	
Solids, total suspended [TSS]	E	160/VA	Α	3.0	mg/L	12.4	12.0	<3.0	<3.0	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7 E		Α	0.0050	mg/L	0.0102	<0.0050	0.0055	<0.0050	
Chloride	16887-00-6 E	235.CI/VA	Α	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	
Fluoride	16984-48-8 E	235.F/VA	Α	0.020	mg/L	0.041	0.040	0.041	0.107	
Kjeldahl nitrogen, total [TKN]	E	318/VA	Α	0.050	mg/L	0.074	0.074	0.083	0.106	
Nitrate (as N)	14797-55-8 E	235.NO3-L/V	Α	0.0050	mg/L	0.0648	0.0647	0.0640	<0.0050	
Nitrite (as N)	14797-65-0 E	235.NO2-L/V	Α	0.0010	mg/L	0.0019	0.0023	0.0023	<0.0010	
Nitrogen, total	7727-37-9 E	366/VA	Α	0.030	mg/L	0.141	0.141	0.140	0.081	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E	378-U/VA	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	0.0013	
Phosphorus, total	7723-14-0 E	372-U/VA	Α	0.0020	mg/L	0.0095	0.0108	0.0116	0.0320	
Phosphorus, total dissolved	7723-14-0 E		Α	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	
Silicate (as SiO2)	7631-86-9 E		Α	0.50	mg/L	4.38	4.38	4.38	3.86	
Sulfate (as SO4)	14808-79-8 E		Α	0.30	mg/L	13.8	13.2	13.2	50.0	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	E	358-L/VA	Α	0.50	mg/L	2.43	2.55	2.48	2.80	
Carbon, total organic [TOC]	E	355-L/VA	Α	0.50	mg/L	2.84	2.69	2.97	2.71	

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			C	lient sample ID	PR3	PR2-A	PR2-B	HD	
(Matrix: Water)									
			Client samp	oling date / time	18-Aug-2022 10:20	18-Aug-2022 14:15	18-Aug-2022 14:15	18-Aug-2022 16:50	
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2202201-001	FJ2202201-002	FJ2202201-003	FJ2202201-004	
					Result	Result	Result	Result	
Ion Balance									
Anion sum		EC101/VA	0.10	meq/L	1.94	1.84	1.86	4.68	
Cation sum		EC101/VA	0.10	meq/L	2.01	1.97	2.01	4.64	
Ion balance (APHA)		EC101/VA	0.010	%	1.77	3.41	3.88	0.429	
Dissolved Metals									
Calcium, dissolved	7440-70-2	E421/VA A	0.050	mg/L	28.0	27.8	28.2	61.7	
Magnesium, dissolved	7439-95-4	E421/VA A	0.0050	mg/L	6.74	6.36	6.60	17.3	
Dissolved metals filtration location		EP421/VA	-	-	Laboratory	Laboratory	Laboratory	Laboratory	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202201** Page : 1 of 19

Amendment :1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3
Telephone : 250 334 3042 Telephone : +1 250 261 5517

Issue Date

: 06-Jun-2023 14:37

 Telephone
 : 250 334 3042
 Telephone
 : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 18-Aug-2022 18:38

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9- Day 2 Sampler : Kevin Ganshorn, PD

Site

Quote number : VA22-ECOF100-004

No. of samples received :4
No. of samples analysed :4

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

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Work Order · FJ2202201 Amendment 1 Client Ecofish Research Ltd

Project Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water				E	/aluation: ≭ =	Holding time excee	edance ; ✓ = Within	Holding Time	
Analyte Group	Method	Sampling Date	Exti	raction / Preparation		Analysis			

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Holding Times			Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
HD	E298	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)	<u> </u>				<u> </u>		<u> </u>			
PR2-A	E298	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PR2-B	E298	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PR3	E298	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
		J	Ü				Ŭ		,	
Anions and Nutrients : Chloride in Water by IC										
HDPE										
HD	E235.CI	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE	5005.01	40.4 0000	0.4.4					00.1		,
PR2-A	E235.CI	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anisma and Netricutes Oblaside in Wetsuber 10										
Anions and Nutrients : Chloride in Water by IC HDPE					l		<u> </u>			
PR2-B	E235.CI	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
		.07.49 2022	_ 1 / Mg 2022				/ tag		, 44,5	•

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd



Analyte Group	Method	Sampling Date	Fxt	raction / Pr	eparation		Analysis			
Container / Client Sample ID(s)	Wethou	Sampling Date	Preparation Date		g Times Actual	Eval	Analysis Date		g Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE PR3	E235.CI	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U	lltra Trace Level 0.001									
HDPE HD	E378-U	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	* EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U	litra Trace Level 0.001									
HDPE PR2-A	E378-U	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	x EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U	litra Trace Level 0.001									
HDPE								T		
PR2-B	E378-U	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	# EHT
		18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	
PR2-B Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U		18-Aug-2022 18-Aug-2022	21-Aug-2022 21-Aug-2022				22-Aug-2022 22-Aug-2022	3 days	4 days	
PR2-B Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U HDPE PR3 Anions and Nutrients : Fluoride in Water by IC	litra Trace Level 0.001									EHT
PR2-B Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (U	litra Trace Level 0.001								4 days	EHT
PR2-B Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (U HDPE PR3 Anions and Nutrients: Fluoride in Water by IC HDPE HD Anions and Nutrients: Fluoride in Water by IC	E378-U	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	EHT * EHT
PR2-B Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (U HDPE PR3 Anions and Nutrients: Fluoride in Water by IC HDPE HD Anions and Nutrients: Fluoride in Water by IC	E378-U	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	EHT * EHT
PR2-B Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (U HDPE PR3 Anions and Nutrients: Fluoride in Water by IC HDPE HD Anions and Nutrients: Fluoride in Water by IC HDPE HDPE	E378-U	18-Aug-2022 18-Aug-2022	21-Aug-2022 21-Aug-2022				22-Aug-2022 22-Aug-2022	3 days	4 days	EHT * EHT

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd



Matrix: Water					Ev	/aluation: 🗴 =	Holding time exce	edance ; 🛚	✓ = Within	Holding Tim
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analysis		
Container / Client Sample ID(s)			Preparation Date	Holding Rec	7 Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
PR3	E235.F	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE HD	E235.NO3-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)							•			
HDPE PR2-A	E235.NO3-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR2-B	E235.NO3-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR3	E235.NO3-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE HD	E235.NO2-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	x EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR2-A	E235.NO2-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	≭ EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR2-B	E235.NO2-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	* EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR3	E235.NO2-L	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	x EHT

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd



Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation					
Container / Client Sample ID(s)			Preparation Date	Holding Rec	Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE HD	E392	18-Aug-2022					23-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR2-A	E392	18-Aug-2022					23-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR2-B	E392	18-Aug-2022					23-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR3	E392	18-Aug-2022					23-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE HD	E235.SO4	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR2-A	E235.SO4	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR2-B	E235.SO4	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR3	E235.SO4	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) HD	E375-T	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓

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Work Order : FJ2202201 Amendment 1
Client : Ecofish Research Ltd



Matrix: Water					Ev	/aluation: ≭ =	Holding time exce	edance ; 🕥	= Within	Holding Tin
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	7 Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR2-A	E375-T	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR2-B	E375-T	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR3	E375-T	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) HD	E318	18-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR2-A	E318	18-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR2-B	E318	18-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	11 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR3	E318	18-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	11 days	√
Anions and Nutrients : Total Nitrogen by Colourimetry				1				1		
Amber glass total (sulfuric acid) HD	E366	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry				•						
Amber glass total (sulfuric acid) PR2-A	E366	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓

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Matrix: Water					Ev	aluation: × =	Holding time excee	edance ; 🔻	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PR2-B	E366	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PR3	E366	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) HD	E372-U	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR2-A	E372-U	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR2-B	E372-U	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR3	E372-U	18-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) HD	E421	18-Aug-2022	22-Aug-2022				22-Aug-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PR2-A	E421	18-Aug-2022	22-Aug-2022				22-Aug-2022	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PR2-B	E421	18-Aug-2022	22-Aug-2022				22-Aug-2022	180 days	4 days	✓

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Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Tin
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PR3	E421	18-Aug-2022	22-Aug-2022				22-Aug-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Amber glass dissolved (sulfuric acid) HD	E358-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Amber glass dissolved (sulfuric acid) PR2-A	E358-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Amber glass dissolved (sulfuric acid) PR2-B	E358-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Amber glass dissolved (sulfuric acid) PR3	E358-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) HD	E355-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PR2-A	E355-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PR2-B	E355-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PR3	E355-L	18-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓

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atrix: Water						aluation: × =	Holding time exce	edance ; •	= VVithin	Holding T
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
HD	E290	18-Aug-2022	21-Aug-2022				22-Aug-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PR2-A	E290	18-Aug-2022	21-Aug-2022				22-Aug-2022	14 days	4 days	✓
		Ĭ	Ü						,	
Physical Tests : Alkalinity Species by Titration										
HDPE							I			
PR2-B	E290	18-Aug-2022	21-Aug-2022				22-Aug-2022	14 days	4 days	1
11/2-0	2200	10 / lag 2022	217 (dg 2022				LE / lag LoLL	11 days	, dayo	
Physical Tests : Alkalinity Species by Titration					I I					
HDPE	F200	40 A 2000	04 4 0000				00.40000	44.1	4 1	1
PR3	E290	18-Aug-2022	21-Aug-2022				22-Aug-2022	14 days	4 days	∀
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
HD	E329	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	3C
										EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PR2-A	E329	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	æ
										EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PR2-B	E329	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	*
			_							EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE							I			
PR3	E329	18-Aug-2022	21-Aug-2022				22-Aug-2022	3 days	4 days	æ
	2020	10 / lag 2022	21710g-2022					Jaays	. days	EHT
										LIII
Physical Tests : Conductivity in Water										
HDPE	E400	40 4 2022	04 4 0000				00.40000	00.4	4 3	,
HD	E100	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓

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Matrix: Water						aluation: × =	Holding time exce			Holding Lir
Analyte Group	Method	Sampling Date	Ext	raction / Pi				Analys		
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE PR2-A	E100	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PR2-B	E100	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE PR3	E100	18-Aug-2022	21-Aug-2022				22-Aug-2022	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE HD	E108	18-Aug-2022	21-Aug-2022				22-Aug-2022	0.25 hrs	18.25 hrs	# EHTR-FI
Physical Tests : pH by Meter										
HDPE PR2-A	E108	18-Aug-2022	21-Aug-2022				22-Aug-2022	0.25 hrs	18.25 hrs	# EHTR-FN
Physical Tests : pH by Meter										
HDPE PR2-B	E108	18-Aug-2022	21-Aug-2022				22-Aug-2022	0.25 hrs	18.25 hrs	# EHTR-FN
Physical Tests : pH by Meter										
HDPE PR3	E108	18-Aug-2022	21-Aug-2022				22-Aug-2022	0.25 hrs	18.25 hrs	# EHTR-FN
Physical Tests : TDS by Gravimetry										
HDPE HD	E162	18-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE PR2-A	E162	18-Aug-2022					25-Aug-2022	7 days	7 days	✓

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nalyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
hysical Tests : TDS by Gravimetry										
H DPE PR2-B	E162	18-Aug-2022					25-Aug-2022	7 days	7 days	4
hysical Tests : TDS by Gravimetry										
HDPE PR3	E162	18-Aug-2022					25-Aug-2022	7 days	7 days	✓
hysical Tests : TSS by Gravimetry										
HDPE HD	E160	18-Aug-2022					25-Aug-2022	7 days	7 days	4
hysical Tests : TSS by Gravimetry										
HDPE PR2-A	E160	18-Aug-2022					25-Aug-2022	7 days	7 days	4
hysical Tests : TSS by Gravimetry										
H DPE PR2-B	E160	18-Aug-2022					25-Aug-2022	7 days	7 days	4
hysical Tests : TSS by Gravimetry										
HDPE PR3	E160	18-Aug-2022					25-Aug-2022	7 days	7 days	1

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Matrix: Water		Evaluation	on: × = QC freque	ency outside sp	ecification; ✓ = 0	QC frequency wit	thin specificatio
Quality Control Sample Type				ount			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	612174	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	618206	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.CI	612177	1	19	5.2	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	612183	1	5	20.0	5.0	✓
Conductivity in Water	E100	612175	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	613090	1	8	12.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618202	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612184	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	612176	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	612178	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	612179	1	19	5.2	5.0	✓
pH by Meter	E108	612173	1	18	5.5	5.0	✓
Reactive Silica by Colourimetry	E392	615320	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	612180	1	14	7.1	5.0	✓
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618207	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618201	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	618204	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618203	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618205	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	619261	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	612174	1	8	12.5	5.0	1
Ammonia by Fluorescence	E298	618206	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.CI	612177	1	19	5.2	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	612183	1	5	20.0	5.0	✓
Conductivity in Water	E100	612175	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	613090	1	8	12.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618202	1	15	6.6	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612184	1	13	7.6	5.0	✓
Fluoride in Water by IC	E235.F	612176	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	612178	1	11	9.0	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	612179	1	19	5.2	5.0	✓
pH by Meter	E108	612173	1	18	5.5	5.0	√
Reactive Silica by Colourimetry	E392	615320	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	612180	1	14	7.1	5.0	1

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Matrix: Water		Evaluati	ion: × = QC freque	ency outside sp	ecification; ✓ = 0	cification; \checkmark = QC frequency within specification			
Quality Control Sample Type				ount		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Control Samples (LCS) - Continued									
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	✓		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618207	1	4	25.0	5.0	✓		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618201	1	20	5.0	5.0	✓		
Total Nitrogen by Colourimetry	E366	618204	1	7	14.2	5.0	✓		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618203	1	16	6.2	5.0	✓		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618205	1	20	5.0	5.0	✓		
TSS by Gravimetry	E160	619261	1	20	5.0	5.0	✓		
Method Blanks (MB)									
Alkalinity Species by Titration	E290	612174	1	8	12.5	5.0	1		
Ammonia by Fluorescence	E298	618206	1	15	6.6	5.0	√		
Chloride in Water by IC	E235.CI	612177	1	19	5.2	5.0	√		
Colour (True) by Spectrometer (5 CU)	E329	612183	1	5	20.0	5.0	<u>√</u>		
Conductivity in Water	E100	612175	1	18	5.5	5.0	√		
Dissolved Metals in Water by CRC ICPMS	E421	613090	1	8	12.5	5.0	<u>√</u>		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618202	1	15	6.6	5.0	<u>√</u>		
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612184	1	13	7.6	5.0	√		
Fluoride in Water by IC	E235.F	612176	1	9	11.1	5.0	√		
Nitrate in Water by IC (Low Level)	E235.NO3-L	612178	1	11	9.0	5.0	√		
Nitrite in Water by IC (Low Level)	E235.NO2-L	612179	1	19	5.2	5.0	√		
Reactive Silica by Colourimetry	E392	615320	1	20	5.0	5.0	√		
Sulfate in Water by IC	E235.SO4	612180	1	14	7.1	5.0	√		
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	√		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618207	1	4	25.0	5.0	√		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618201	1	20	5.0	5.0	√		
Total Nitrogen by Colourimetry	E366	618204	1	7	14.2	5.0	√		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618203	1	16	6.2	5.0	√		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618205	1	20	5.0	5.0	√		
TSS by Gravimetry	E160	619261	1	20	5.0	5.0	✓		
Matrix Spikes (MS)									
Ammonia by Fluorescence	E298	618206	1	15	6.6	5.0	1		
Chloride in Water by IC	E235.CI	612177	1	19	5.2	5.0	√		
Dissolved Metals in Water by CRC ICPMS	E421	613090	1	8	12.5	5.0	√		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618202	1	15	6.6	5.0			
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612184	1	13	7.6	5.0	√		
Fluoride in Water by IC	E235.F	612176	1	9	11.1	5.0	√		
Nitrate in Water by IC (Low Level)	E235.NO3-L	612178	1	11	9.0	5.0	√		
Nitrite in Water by IC (Low Level)	E235.NO2-L	612179	1	19	5.2	5.0	√		
Reactive Silica by Colourimetry	E392	615320	1	20	5.0	5.0	<u> </u>		
Sulfate in Water by IC	E235.SO4	612180	1	14	7.1	5.0	<u> </u>		

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

Width At Trace	Evaluation	i. Qo noque	moy catorac ope	Jointoution,	ko nogaonoj mi	mir opodinounom.	
Quality Control Sample Type			Co	unt		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618207	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618201	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	618204	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618203	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618205	1	20	5.0	5.0	✓

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
				filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	Vancouver -			with gravimetric measurement of the residue.
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 Vancouver - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver -	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
	Environmental			Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above
	Vancouver - Environmental			100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	Vancouver - Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	Vancouver - Environmental			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	Vancouver - Environmental			used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
	Vancouver - Environmental			
Digestion for TKN in water	EP318	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the
	Vancouver - Environmental			analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355	Water		Preparation for Total Organic Carbon by Combustion
	Vancouver -			
	Environmental	10/-4-	ADUA 5240 D (m. 1)	Description for Disabled Operation Code
Preparation for Dissolved Organic Carbon for Combustion	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
	Vancouver -			
	Environmental			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Nitrogen in water	EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a
				persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : **FJ2202201** Page : 1 of 10

Amendment : 1

Address

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

: 1220 - 1175 Douglas Street Address : 11007 Alaska Road
Victoria BC Canada V8W 2E1 Fort St. John, British

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project :Surface Water MON8/9-No Metals Date Samples Received :18-Aug-2022 18:38

PO : 1200-25.03.02 Date Analysis Commenced : 21-Aug-2022

 C-O-C number
 : 2022-Aug-MON8/9- Day 2
 Issue Date
 : 06-Jun-2023 14:37

 Sampler
 : Kevin Ganshoyp_n PD_{4 3042}

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 4

No. of samples analysed : 4

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water	ub-Matrix: Water					Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC	Lot: 612173)												
FJ2202201-001	PR3	рН		E108	0.10	pH units	8.07	8.05	0.248%	4%			
Physical Tests (QC	Lot: 612174)												
FJ2202201-001	PR3	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	82.4	81.6	0.976%	20%			
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		Alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	82.4	81.6	0.976%	20%			
Physical Tests (QC	Lot: 612175)												
FJ2202201-001	PR3	Conductivity		E100	2.0	μS/cm	187	188	0.427%	10%			
Physical Tests (QC	Lot: 612183)												
FJ2202201-001	PR3	Colour, true		E329	5.0	CU	6.0	5.6	0.3	Diff <2x LOR			
Physical Tests (QC	Lot: 619261)												
FJ2202201-001	PR3	Solids, total suspended [TSS]		E160	3.0	mg/L	12.4	12.8	0.4	Diff <2x LOR			
Physical Tests (QC	Lot: 619264)												
FJ2202201-001	PR3	Solids, total dissolved [TDS]		E162	13	mg/L	131	124	6	Diff <2x LOR			
Anions and Nutrien	its (QC Lot: 612176)												
VA22B9308-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 612177)												
VA22B9308-001	Anonymous	Chloride	16887-00-6	E235.CI	2.50	mg/L	42.9	42.8	0.326%	20%			
Anions and Nutrien	its (QC Lot: 612178)												
VA22B9308-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	0.0257	0.0007	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 612179)												
VA22B9308-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0284	0.0290	0.0006	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 612180)												
VA22B9308-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	18.6	18.8	0.647%	20%			
Anions and Nutrien	ts (QC Lot: 612184)												
FJ2202201-001	PR3	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 615320)												
CG2211043-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	5.00	mg/L	37.4	36.9	0.54	Diff <2x LOR			

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Client: Ecofish Research Ltd



Sub-Matrix: Water	b-Matrix: Water						Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Anions and Nutrient	ts (QC Lot: 618201)											
FJ2202201-001	PR3	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.074	0.080	0.006	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 618204)											
FJ2202201-001	PR3	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.141	0.144	0.003	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 618205)											
FJ2202201-001	PR3	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0095	0.0095	0.00006	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 618206)											
FJ2202201-001	PR3	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0102	0.0103	0.00005	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 618207)											
FJ2202201-001	PR3	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 618202											
FJ2202201-001	PR3	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.43	2.56	0.13	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 618203											
FJ2202201-001	PR3	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.84	2.71	0.13	Diff <2x LOR		
Dissolved Metals (C	QC Lot: 613090)											
CG2210819-009	Anonymous	Calcium, dissolved	7440-70-2	E421	0.100	mg/L	488	498	2.20%	20%		
		Magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	248	253	2.14%	20%		

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 612174)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 612175)					
Conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 612183)					
Colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 619261)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 619264)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 612176)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 612177)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 612178)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 612179)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 612180)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 612184)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 615320)					
Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 618201)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 618204)					
Nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 618205)	- continued					
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 618206)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 618207)						
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	
Organic / Inorganic Carbon (QCLot: 61	18202)					
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 61	18203)					
Carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 613090)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	

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Work Order: FJ2202201 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Physical Tests (QCLot: 612173)	Sub-Matrix: Water	-Matrix: Water						ntrol Sample (LCS)	Report	
Physical Tests (OCLot: 612173)						Spike	Recovery (%)	Recovery	Limits (%)	
Physical Tests (QCLot: 512175) Physical Tests (QCLot: 512175) Control of the State (QCLot: 512175) Physical Tests (QCLot: 512175) Control of the State (QCLot: 512175) Control of the State (QCLot: 512175) Control of the State (QCLot: 512183) Color of the State (QCLot: 512183)	Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tosts (OCLot: 612174)	Physical Tests (QCLot: 612173)									
Albalania, phenophinalen (as CaCaS)	рН		E108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 612175)	Physical Tests (QCLot: 612174)									
Physical Tests (QCLot: 612176)	Alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	106	75.0	125	
Conductivity Find	Alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	102	85.0	115	
Physical Tests (QCLot: 612183)	Physical Tests (QCLot: 612175)									
Colour, true	Conductivity		E100	1	μS/cm	146.9 μS/cm	97.6	90.0	110	
Physical Tests (QCLot: 619261) E160 3 mg/L 150 mg/L 98.0 85.0 115 mg/L Physical Tests (QCLot: 619264) E162 10 mg/L 1000 mg/L 113 85.0 115 mg/L Mg/	Physical Tests (QCLot: 612183)									
Solids, total suspended [TSS]	Colour, true		E329	5	CU	100 CU	104	85.0	115	
Physical Tosts (QCLot: 619264) Solids, total dissolved [TDS] E162 10 mg/L 1000 mg/L 113 85.0 115 Anions and Nutrients (QCLot: 612176) Fluoride 16884498-8 E235.F 0.02 mg/L 1 mg/L 95.4 90.0 110 Anions and Nutrients (QCLot: 612177) Chioride 16887-00-6 E235.CI 0.5 mg/L 100 mg/L 96.1 90.0 110 Anions and Nutrients (QCLot: 612178) Nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L 2.5 mg/L 96.5 90.0 110 Anions and Nutrients (QCLot: 612179) Nitrate (as N) 14797-65-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 94.9 90.0 110 Anions and Nutrients (QCLot: 612180) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-8 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618201) Killidalih nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Physical Tests (QCLot: 619261)									
Solids, total dissolved [TDS]	Solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	98.0	85.0	115	
Anions and Nutrients (QCLot: 612176) Fluoride 16984-48-8	Physical Tests (QCLot: 619264)									
Fluoride 16984-48-8 [235.F 0.02 mg/L 1 mg/L 95.4 90.0 110	Solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	113	85.0	115	
Anions and Nutrients (QCLot: 612177) Chloride 16887-00-6 E235.Cl 0.5 mg/L 100 mg/L 96.1 90.0 110 Anions and Nutrients (QCLot: 612178) Nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L 2.5 mg/L 96.5 90.0 110 Anions and Nutrients (QCLot: 612179) Nitrile (as N) 14797-65-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 94.9 90.0 110 Anions and Nutrients (QCLot: 612180) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Sulfate (as SiO2) 7631-86-9 E338 0.05 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN]	Anions and Nutrients (QCLot: 612176)									
Chloride 16887-00-6 E235.Cl 0.5 mg/L 100 mg/L 96.1 90.0 110 Anions and Nutrients (QCLot: 612178) Nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L 2.5 mg/L 96.5 90.0 110 Anions and Nutrients (QCLot: 612179) Nitride (as N) 14797-65-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 94.9 90.0 110 Anions and Nutrients (QCLot: 612180) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahi nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.4	90.0	110	
Anions and Nutrients (QCLot: 612178) Nitrate (as N)	Anions and Nutrients (QCLot: 612177)									
Nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L 2.5 mg/L 96.5 90.0 110	Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	96.1	90.0	110	
Anions and Nutrients (QCLot: 612179) Nitrite (as N) 14797-65-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 94.9 90.0 110 Anions and Nutrients (QCLot: 612180) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, orthor, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total Nitrogen, total Anions and Nutrients (QCLot: 618204)	Anions and Nutrients (QCLot: 612178)									
Nitrite (as N)	Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.5	90.0	110	
Anions and Nutrients (QCLot: 612180) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Anions and Nutrients (QCLot: 612179)									
Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 97.2 90.0 110 Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	94.9	90.0	110	
Anions and Nutrients (QCLot: 612184) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Anions and Nutrients (QCLot: 612180)									
Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 105 80.0 120 Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	97.2	90.0	110	
Anions and Nutrients (QCLot: 615320) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115 Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Anions and Nutrients (QCLot: 612184)									
Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 98.5 85.0 115	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	
Anions and Nutrients (QCLot: 618201) Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Anions and Nutrients (QCLot: 615320)									
Kjeldahl nitrogen, total [TKN] E318 0.05 mg/L 4 mg/L 98.2 75.0 125 Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	98.5	85.0	115	
Anions and Nutrients (QCLot: 618204) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Anions and Nutrients (QCLot: 618201)									
Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 101 75.0 125	Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	98.2	75.0	125	
	Anions and Nutrients (QCLot: 618204)									
Anions and Nutrients (QCLot: 618205)	Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	101	75.0	125	
	Anions and Nutrients (QCLot: 618205)									

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Work Order: FJ2202201 Amendment 1
Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 618205) - con	tinued								
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.2	80.0	120	
Anions and Nutrients (QCLot: 618206)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.4	85.0	115	
Anions and Nutrients (QCLot: 618207)									
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	91.6	80.0	120	
Organic / Inorganic Carbon (QCLot: 618202)									
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	96.8	80.0	120	
Organic / Inorganic Carbon (QCLot: 618203)									
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	99.2	80.0	120	
Dissolved Metals (QCLot: 613090)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	

Page : 9 of 10

Work Order: FJ2202201 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report						
					Spi	ke	Recovery (%)	Recovery	Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
Anions and Nutri	ents (QCLot: 612176)										
FJ2202200-003	Anonymous	Fluoride	16984-48-8	E235.F	0.996 mg/L	1 mg/L	99.6	75.0	125		
Anions and Nutri	ents (QCLot: 612177)										
FJ2202200-003	Anonymous	Chloride	16887-00-6	E235.Cl	99.8 mg/L	100 mg/L	99.8	75.0	125		
Anions and Nutri	ents (QCLot: 612178)										
FJ2202200-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125		
Anions and Nutri	ents (QCLot: 612179)										
FJ2202200-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.489 mg/L	0.5 mg/L	97.9	75.0	125		
Anions and Nutri	ents (QCLot: 612180)										
FJ2202200-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125		
Anions and Nutri	ents (QCLot: 612184)										
FJ2202201-002	PR2-A	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0300 mg/L	0.03 mg/L	99.9	70.0	130		
Anions and Nutri	ents (QCLot: 615320)										
CG2211043-002	Anonymous	Silicate (as SiO2)	7631-86-9	E392	101 mg/L	100 mg/L	101	75.0	125		
Anions and Nutri	ents (QCLot: 618201)										
FJ2202201-002	PR2-A	Kjeldahl nitrogen, total [TKN]		E318	2.56 mg/L	2.5 mg/L	102	70.0	130		
Anions and Nutri	ents (QCLot: 618204)										
FJ2202201-002	PR2-A	Nitrogen, total	7727-37-9	E366	0.394 mg/L	0.4 mg/L	98.6	70.0	130		
Anions and Nutri	ents (QCLot: 618205)										
FJ2202201-002	PR2-A	Phosphorus, total	7723-14-0	E372-U	0.0457 mg/L	0.05 mg/L	91.4	70.0	130		
Anions and Nutri	ents (QCLot: 618206)										
FJ2202201-002	PR2-A	Ammonia, total (as N)	7664-41-7	E298	0.0937 mg/L	0.1 mg/L	93.7	75.0	125		
Anions and Nutri	ents (QCLot: 618207)										
FJ2202201-002	PR2-A	Phosphorus, total dissolved	7723-14-0	E375-T	0.0456 mg/L	0.05 mg/L	91.3	70.0	130		
Organic / Inorgar	nic Carbon (QCLot: 618	3202)									
FJ2202201-002	PR2-A	Carbon, dissolved organic [DOC]		E358-L	5.26 mg/L	5 mg/L	105	70.0	130		
Organic / Inorgar	nic Carbon (QCLot: 618	203)									
FJ2202201-002	PR2-A	Carbon, total organic [TOC]		E355-L	5.05 mg/L	5 mg/L	101	70.0	130		

Page : 10 of 10

Work Order: FJ2202201 Amendment 1
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	(QCLot: 613090)									
	(40-0.000)									
FJ2202200-001	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	

Chain of Custody (COC) / Analytical Request Form

COC Number: 2022-Aug-MON8/9- Day 2

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

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SUSPECTED HAZARD (see notes AFFIX ALS BARCODE LABEL HERE EXTENDED STORAGE REQUIRE COCLING INTIATED SAMPLES ON HOLD Submission Comments, identified on Sample Receipt Notification: Tyes The htrmm am/pm □ / TES □ N/A Sample Custody Seals Intact: \ \ \ \ \ For all tests with rush TATs requested, please contact your AM to confirm availability. FINAL SHIPMENT RECEPTION (ALS use only) Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below SAMPLE RECEIPT DETAILS (ALS use only Cooling Method: Thinks The Tice Packs Throzen j V # of Carboys # of Coolers 11 day [E] if received by 3pm M-F - 100% rush surcharge minimum Same day [E2] if received by 10am M-S - 200% rush surcharge. Addition flees may apply to rush requests on weekends, statutory holidays and non-roughne tests. Analysis Request 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum 2 day {P2} if received by 3pm M-F - 50% rush surcharge minimum 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum. Expedite Call Out FIAE Shipping & Receiving Date Routine [R] if received by 3pm M-F - no surcharges apply Turnaround Time (TAT) Requested Date and Time Required for all E&P TATS: α œ œ œ ONBALANCE-BC-CL Cooler Custody Seals Intact Received by ИНЗ, Total Kjeldahi, Nitrogen, Total V, TOC, Total Р œ œ œ œ œ œ œ œ E/P œ œ œ œ Total dissolved P Alk., Ec., pH, TDS, TSS, Anions, diss ortho P, colour, pH œ α œ œ NUMBER OF CONTAINER Sample Type Add. for report: csuzanne@ecofishresearch.com,kganshorn@ecofishresearch.com Pat Beaupre Compare Results to Criteria on Report - provide details below if box checked Water Water Viotes. Water Water Select Report Format: S PDF S EXCEL S EDD (DIGITAL) Merge QC/QCI Reports with COA 🖾 YES 🔲 NO 📋 N/A waterqualitylabdata@ecofishresearch.com INITIALSHIPMENT RECEPTION (ALS use Notes / Specify Limits for result evaluation by selecting from drop-down below WHITE - LABORATORY COPY Email 1 or Fax accountspayable@ecofishresearch.com <u>₹</u> Oil and Gas Required Fields (client use) □ § Please send Azimuth a copy of the data in their EDD format: tkasubuchi@ecofishresearch.com eS. Routing Code: 0,70 といった Select Invoice Distribution: 🖸 EMAIL 🔲 MAIL ンバナ (hh:mm) Time Sneha Sansare Sampler: MAIL Reports / Recipients Email 1 or Fax hull@ecofishresearch.com Invoice Recipients Date. imcivor@azimuthgroup.ca #Od かんがん るところ 8 AJG22 をたれな EMAIL (dd-mmm-yy) (Excel COC only) Date Select Distribution: Major/Minor Code: ntact: AFE/Cost Center Requisitioner: Received by: Email 2 Email 3 Email 2 gmann@azimuthgroup.ca Time: Contact and company name below will appear on the final repor 22028 Company address below will appear on the final report **№** ☐ YES ☑ NO EUSSOSSO1 Work Order Reference VA22-ECOF100-004 SHIPMENT RELEASE (client use) accountspayable@ecofishresearch.com □ YES REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMP Drinking Water (DW) Samples (client use) Project Information Surface water MON8/9- no metals (This descri Sample Ide Are samples taken from a Regulated DW System Date: PR32-51 Copy of Invoice with Report ALS Lab Work Order # (ALS use only): Are samples for human consumption/ use? Ecofish Research Ltd. Ecofish Research Ltd. Same as Report To 600 Comox Rd Courtenay, BC 1200-25.03.02 250-334-3042 ALS Account # / Quote #: Leah Hull V9N 3P6 <u>8</u> PR2-A PR2-8 皇 S) __ 33 ALS Sample # (ALS use only) City/Province: Postal Code: Released by nvoice To Report To Company: PO / AFE: Company Contact: Contact Phone: Street # gof

Failure & complete all portions of this from may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user advowledges and agrees with the Terms and Conditions as specified on the back page of the writter-report copy 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form

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CERTIFICATE OF ANALYSIS

Work Order : FJ2202203

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 600 Comox Road

Courtenay BC Canada V9N3P6

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day 2

Sampler : PB

Site

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 18-Aug-2022 07:50

Date Analysis Commenced : 20-Aug-2022

Issue Date : 14-Sep-2022 16:39

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Courtney Cox	Analsyt	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Inorganics, Burnaby, British Columbia

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Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PR1	PC1	 	
(Matrix: Water)								
			Client samp	ling date / time	17-Aug-2022 10:55	17-Aug-2022 09:55	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202203-001	FJ2202203-002	 	
					Result	Result	 	
Physical Tests								
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	82.5	82.1	 	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	82.5	82.1	 	
colour, true		E329	5.0	CU	6.9	6.6	 	
conductivity		E100	2.0	μS/cm	177	177	 	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	93.7	90.2	 	
pH		E108	0.10	pH units	8.10	8.10	 	
solids, total dissolved [TDS]		E162	10	mg/L	117	127	 	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	 	
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0146	0.0160	 	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	 	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.040	0.040	 	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.090	0.088	 	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0733	0.0697	 	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0030	0.0030	 	
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.174	0.182	 	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	 	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0039	0.0035	 	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	 	
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.51	4.51	 	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.1	13.1	 	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.58	2.90	 	
carbon, total organic [TOC]		E355-L	0.50	mg/L	2.72	3.01	 	
Ion Balance								
anion sum		EC101	0.10	meq/L	1.93	1.92	 	
cation sum		EC101	0.10	meq/L	1.93	1.86	 	

Page : 4 of 4
Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PR1	PC1	 	
(Matrix: Water)								
			Client samp	ling date / time	17-Aug-2022 10:55	17-Aug-2022 09:55	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202203-001	FJ2202203-002	 	
					Result	Result	 	
Ion Balance								
ion balance (APHA)		EC101	0.010	%	<0.010	1.59	 	
Dissolved Metals								
calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.3	25.9	 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.20	6.20	 	
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202203** Page : 1 of 14

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 600 Comox Road Address : 11007 Alaska Road

Courtenay BC Canada V9N3P6 Fort St. John, British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

Project : Surface Water MON8/9-No Metals Date Samples Received : 18-Aug-2022 07:50

Sampler : PB

Site : PB

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🕦	/ = Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pro	eparation			Analysis		
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PC1	E298	17-Aug-2022	24-Aug-2022				25-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PR1	E298	17-Aug-2022	24-Aug-2022				25-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
PC1	E235.Cl	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PR1	E235.CI	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lev	vel 0.001									
HDPE PC1	E378-U	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	* EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lev	vel 0.001									
HDPE PR1	E378-U	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	x EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE PC1	E235.F	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext							
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
PR1	E235.F	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PC1	E235.NO3-L	17-Aug-2022	22-Aug-2022	3 days	5 days	* EHT	22-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
PR1	E235.NO3-L	17-Aug-2022	22-Aug-2022	3 days	5 days	± EHT	22-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PC1	E235.NO2-L	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	* EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR1	E235.NO2-L	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	# EHT
Anions and Nutrients : Reactive Silica by Colourimetry										
PC1	E392	17-Aug-2022					23-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR1	E392	17-Aug-2022					23-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PC1	E235.SO4	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR1	E235.SO4	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ex	Analysis						
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PC1	E375-T	17-Aug-2022	24-Aug-2022				26-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR1	E375-T	17-Aug-2022	24-Aug-2022				26-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PC1	E318	17-Aug-2022	24-Aug-2022				27-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR1	E318	17-Aug-2022	24-Aug-2022				27-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PC1	E366	17-Aug-2022	24-Aug-2022				25-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PR1	E366	17-Aug-2022	24-Aug-2022				25-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PC1	E372-U	17-Aug-2022	24-Aug-2022				26-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR1	E372-U	17-Aug-2022	24-Aug-2022				26-Aug-2022	28 days	9 days	1
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PC1	E421	17-Aug-2022	20-Aug-2022				21-Aug-2022	180 days	4 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext		Analysis					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PR1	E421	17-Aug-2022	20-Aug-2022				21-Aug-2022	180 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid) PC1	E358-L	17-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid) PR1	E358-L	17-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid) PC1	E355-L	17-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)								1	
Amber glass total (sulfuric acid) PR1	E355-L	17-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
PC1	E290	17-Aug-2022	22-Aug-2022				22-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PR1	E290	17-Aug-2022	22-Aug-2022				22-Aug-2022	14 days	5 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PC1	E329	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	* EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PR1	E329	17-Aug-2022	22-Aug-2022				22-Aug-2022	3 days	5 days	# EHT

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

idula. Water					L\	raidation. • –	Holding time exce	cuarice,	- vvitilli	i i loluli ig i
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys		
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Date Holding		Eval
			Date	Rec	Actual		,	Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE										
PC1	E100	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
hysical Tests : Conductivity in Water										
HDPE										
PR1	E100	17-Aug-2022	22-Aug-2022				22-Aug-2022	28 days	5 days	✓
hysical Tests : pH by Meter							ı			
HDPE PC1	E108	17-Aug-2022	22 Aug 2022				22 Aug 2022	0.05	5.05	×
PCT	E108	17-Aug-2022	22-Aug-2022				22-Aug-2022	0.25 hrs	5.25 hrs	EHTR-
								1115	1115	LIIIIX
hysical Tests : pH by Meter HDPE					1		I		I	
PR1	E108	17-Aug-2022	22-Aug-2022				22-Aug-2022	0.25	5.25	s:
	2.100	17 7 tag 2022	22 / lag 2022					hrs	hrs	EHTR-
Physical Tests : TDS by Gravimetry										
HDPE										
PC1	E162	17-Aug-2022					22-Aug-2022	7 days	5 days	✓
hysical Tests : TDS by Gravimetry										
HDPE										
PR1	E162	17-Aug-2022					22-Aug-2022	7 days	5 days	✓
hysical Tests : TSS by Gravimetry										
HDPE										_
PC1	E160	17-Aug-2022					22-Aug-2022	7 days	5 days	✓
hysical Tests : TSS by Gravimetry										
HDPE PR1	E160	17-Aug-2022					22-Aug-2022	7 days	5 days	1
FINI	E 100	17-Aug-2022	_ 				22-Aug-2022	ruays	Juays	,

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type		·	C	ount		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Duplicates (DUP)									
Alkalinity Species by Titration	E290	612898	1	16	6.2	5.0	1		
Ammonia by Fluorescence	E298	616255	1	20	5.0	5.0	1		
Chloride in Water by IC	E235.CI	612907	1	14	7.1	5.0	<u> </u>		
Colour (True) by Spectrometer (5 CU)	E329	612914	1	7	14.2	5.0	1		
Conductivity in Water	E100	612900	1	14	7.1	5.0	1		
Dissolved Metals in Water by CRC ICPMS	E421	611357	1	14	7.1	5.0	1		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	616094	1	4	25.0	5.0	1		
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612902	1	16	6.2	5.0	1		
Fluoride in Water by IC	E235.F	612906	1	13	7.6	5.0	1		
Nitrate in Water by IC (Low Level)	E235.NO3-L	612904	1	14	7.1	5.0	1		
Nitrite in Water by IC (Low Level)	E235.NO2-L	612905	1	17	5.8	5.0	1		
pH by Meter	E108	612899	1	15	6.6	5.0	1		
Reactive Silica by Colourimetry	E392	615321	1	20	5.0	5.0	1		
Sulfate in Water by IC	E235.SO4	612903	1	13	7.6	5.0	1		
TDS by Gravimetry	E162	613629	1	9	11.1	5.0	_		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	616097	1	4	25.0	5.0	1		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616091	1	18	5.5	5.0	1		
Total Nitrogen by Colourimetry	E366	616253	1	20	5.0	5.0	<u> </u>		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	616095	1	4	25.0	5.0	1		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	616254	1	6	16.6	5.0	<u>√</u>		
TSS by Gravimetry	E160	613630	1	9	11.1	5.0	<u>√</u>		
Laboratory Control Samples (LCS)							-		
Alkalinity Species by Titration	E290	612898	1	16	6.2	5.0	✓		
Ammonia by Fluorescence	E298	616255	1	20	5.0	5.0	1		
Chloride in Water by IC	E235.CI	612907	1	14	7.1	5.0	√		
Colour (True) by Spectrometer (5 CU)	E329	612914	1	7	14.2	5.0	1		
Conductivity in Water	E100	612900	1	14	7.1	5.0	1		
Dissolved Metals in Water by CRC ICPMS	E421	611357	1	14	7.1	5.0	1		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	616094	1	4	25.0	5.0	<u>√</u>		
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612902	1	16	6.2	5.0	1		
Fluoride in Water by IC	E235.F	612906	1	13	7.6	5.0	<u> </u>		
Nitrate in Water by IC (Low Level)	E235.NO3-L	612904	1	14	7.1	5.0	√		
Nitrite in Water by IC (Low Level)	E235.NO2-L	612905	1	17	5.8	5.0	1		
pH by Meter	E108	612899	1	15	6.6	5.0	<u> </u>		
Reactive Silica by Colourimetry	E392	615321	1	20	5.0	5.0	1		
Sulfate in Water by IC	E235.SO4	612903	1	13	7.6	5.0	<u> </u>		
TDS by Gravimetry	E162	613629	1	9	11.1	5.0	√		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

 Quality Control Sample Type
 Count
 Frequency (%)

Quality Control Sample Type		Co	ount)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	616097	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616091	1	18	5.5	5.0	✓
Total Nitrogen by Colourimetry	E366	616253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	616095	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	616254	1	6	16.6	5.0	✓
TSS by Gravimetry	E160	613630	1	9	11.1	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	612898	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	616255	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	612907	1	14	7.1	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	612914	1	7	14.2	5.0	✓
Conductivity in Water	E100	612900	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	611357	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	616094	1	4	25.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612902	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	612906	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	612904	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	612905	1	17	5.8	5.0	✓
Reactive Silica by Colourimetry	E392	615321	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	612903	1	13	7.6	5.0	✓
TDS by Gravimetry	E162	613629	1	9	11.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	616097	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616091	1	18	5.5	5.0	✓
Total Nitrogen by Colourimetry	E366	616253	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	616095	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	616254	1	6	16.6	5.0	✓
TSS by Gravimetry	E160	613630	1	9	11.1	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	616255	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	612907	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	611357	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	616094	1	4	25.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	612902	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	612906	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	612904	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	612905	1	17	5.8	5.0	✓
Reactive Silica by Colourimetry	E392	615321	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	612903	1	13	7.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	616097	1	4	25.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	616091	1	18	5.5	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: × = QC frequency outside specification, ✓ = QC frequency within specification.

Quality Control Sample Type	·	Col	unt	Frequency (%)						
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Matrix Spikes (MS) - Continued										
Total Nitrogen by Colourimetry	E366	616253	1	20	5.0	5.0	✓			
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	616095	1	4	25.0	5.0	✓			
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	616254	1	6	16.6	5.0	✓			

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver -	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
all by Makes	Environmental	10/.4	ADUA 4500 H (I)	
pH by Meter	E108 Vancouver -	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			pri snould be measured in the held within the recommended 13 militate hold time.
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
				filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	Vancouver -			with gravimetric measurement of the residue.
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	Vancouver - Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	property of water due to dissolved divalent cations. Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver -	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	Environmental EP366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	Environmental EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202203

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 600 Comox Road

Courtenay BC Canada V9N3P6

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day 2

Sampler : PB

Site

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 10

Laboratani Danartmant

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :+1 250 261 5517

Date Samples Received : 18-Aug-2022 07:50

Date Analysis Commenced : 20-Aug-2022

Issue Date : 14-Sep-2022 16:39

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

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- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Anshim Anshim	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Courtney Cox	Analsyt	Vancouver Inorganics, Burnaby, British Columbia
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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water									Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier				
Physical Tests (QC	Lot: 612898)														
FJ2202203-001	PR1	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	82.5	81.8	0.852%	20%					
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR					
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR					
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR					
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	82.5	81.8	0.852%	20%					
Physical Tests (QC	Lot: 612899)														
-J2202203-001	PR1	рН		E108	0.10	pH units	8.10	8.04	0.743%	4%					
Physical Tests (QC	Lot: 612900)														
FJ2202203-001	PR1	conductivity		E100	2.0	μS/cm	177	178	0.788%	10%					
Physical Tests (QC	Lot: 612914)														
FJ2202188-001	Anonymous	colour, true		E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR					
Physical Tasta (OC	·														
Physical Tests (QC FJ2202203-001	PR1	solids, total dissolved [TDS]		E162	13	mg/L	117	120	2	Diff <2x LOR					
		Solids, total dissolved [1D3]		L 102	10	mg/L	117	120		DIII 12X LOIK					
Physical Tests (QC				E400			.0.0	-0.0		D:# .0 1.0D					
FJ2202203-001	PR1	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR					
	ts (QC Lot: 612902)														
FJ2202184-006	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR					
Anions and Nutrien	ts (QC Lot: 612903)														
FJ2202184-006	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	82.6	82.7	0.0580%	20%					
Anions and Nutrien	ts (QC Lot: 612904)														
FJ2202184-006	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.144	0.144	0.290%	20%					
Anions and Nutrien	ts (QC Lot: 612905)														
FJ2202184-006	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR					
Anions and Nutrien	ts (QC Lot: 612906)														
FJ2202184-006	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.084	0.082	0.002	Diff <2x LOR					
Anions and Nutrien	ts (QC Lot: 612907)														
-J2202184-006	Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	0.72	0.72	0.006	Diff <2x LOR					
Anions and Nutrien	ts (QC Lot: 615321)														
-J2202203-001	PR1	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.51	4.47	0.04	Diff <2x LOR					
Anions and Nutrien	ts (QC Lot: 616091)								<u> </u>						
-J2202203-001	PR1	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.090	0.090	0.0006	Diff <2x LOR					

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Client : Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Anions and Nutrient	s (QC Lot: 616097)											
FJ2202203-001	PR1	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 616253)											
FJ2202203-001	PR1	nitrogen, total	7727-37-9	E366	0.030	mg/L	0.174	0.183	0.009	Diff <2x LOR		
Anions and Nutrient	s (QC Lot: 616254)											
FJ2202203-001	PR1	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0039	0.0037	0.0002	Diff <2x LOR		
Anions and Nutrient	ts (QC Lot: 616255)											
FJ2202203-001	PR1	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0146	0.0126	0.0020	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 616094)										
FJ2202203-001	PR1	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.58	2.87	0.29	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 616095)										
FJ2202203-001	PR1	carbon, total organic [TOC]		E355-L	0.50	mg/L	2.72	2.75	0.04	Diff <2x LOR		
Dissolved Metals (C	QC Lot: 611357)											
VA22B9406-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.250	mg/L	99.7	100	0.670%	20%		
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	40.8	40.2	1.35%	20%		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 612898)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	1.2	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	1.2	
Physical Tests (QCLot: 612900)					
conductivity	E100	1	μS/cm	1.5	
Physical Tests (QCLot: 612914)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 613629)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 613630)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 612902)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 612903)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 612904)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 612905)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 612906)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 612907)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 615321)					
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 616091)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 616097)					
phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 616253)					
nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier				
Anions and Nutrients (QCLot: 616254)										
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020					
Anions and Nutrients (QCLot: 616255)										
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050					
Organic / Inorganic Carbon (QCLot: 6160	Organic / Inorganic Carbon (QCLot: 616094)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50					
Organic / Inorganic Carbon (QCLot: 6160	95)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50					
Dissolved Metals (QCLot: 611357)										
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050					
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050					

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Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water	b-Matrix: Water						Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)				
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Physical Tests (QCLot: 612898)												
alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	100	75.0	125				
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	108	85.0	115				
Physical Tests (QCLot: 612899)												
pH		E108		pH units	7 pH units	100	98.0	102				
Physical Tests (QCLot: 612900)												
conductivity		E100	1	μS/cm	146.9 μS/cm	99.6	90.0	110				
Physical Tests (QCLot: 612914)												
colour, true		E329	5	CU	100 CU	104	85.0	115				
Physical Tests (QCLot: 613629)												
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	105	85.0	115				
Physical Tests (QCLot: 613630)												
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	96.0	85.0	115				
Anions and Nutrients (QCLot: 612902)												
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	103	80.0	120				
Anions and Nutrients (QCLot: 612903)												
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	97.2	90.0	110				
Anions and Nutrients (QCLot: 612904)												
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	96.6	90.0	110				
Anions and Nutrients (QCLot: 612905)												
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	95.2	90.0	110				
Anions and Nutrients (QCLot: 612906)												
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	95.9	90.0	110				
Anions and Nutrients (QCLot: 612907)												
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	96.1	90.0	110				
Anions and Nutrients (QCLot: 615321)												
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	99.0	85.0	115				
Anions and Nutrients (QCLot: 616091)												
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	88.5	75.0	125				
Anions and Nutrients (QCLot: 616097)												
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	90.7	80.0	120				
Anions and Nutrients (QCLot: 616253)												
nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	104	75.0	125				

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Client : Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 616254)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	87.1	80.0	120	
Anions and Nutrients (QCLot: 616255)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	
Organic / Inorganic Carbon (QCLot: 616094)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	
Organic / Inorganic Carbon (QCLot: 616095)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	
Dissolved Metals (QCLot: 611357)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	

Page : 9 of 10 Work Order : FJ2202203

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik	e (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
∟aboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
	ients (QCLot: 612902)									
FJ2202184-007	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0293 mg/L	0.03 mg/L	97.8	70.0	130	
Anions and Nutri	ients (QCLot: 612903)									'
FJ2202184-007	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	99.5 mg/L	100 mg/L	99.5	75.0	125	
Anions and Nutri	ients (QCLot: 612904)									'
FJ2202184-007	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.42 mg/L	2.5 mg/L	96.7	75.0	125	
Anions and Nutri	ients (QCLot: 612905)									
FJ2202184-007	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.460 mg/L	0.5 mg/L	92.0	75.0	125	
Anions and Nutri	ients (QCLot: 612906)									
FJ2202184-007	Anonymous	fluoride	16984-48-8	E235.F	0.916 mg/L	1 mg/L	91.6	75.0	125	
Anions and Nutri	ients (QCLot: 612907)									
FJ2202184-007	Anonymous	chloride	16887-00-6	E235.CI	95.6 mg/L	100 mg/L	95.6	75.0	125	
Anions and Nutri	ients (QCLot: 615321)									'
FJ2202203-002	PC1	silicate (as SiO2)	7631-86-9	E392	9.98 mg/L	10 mg/L	99.8	75.0	125	
Anions and Nutri	ients (QCLot: 616091)									'
FJ2202203-002	PC1	Kjeldahl nitrogen, total [TKN]		E318	2.31 mg/L	2.5 mg/L	92.3	70.0	130	
Anions and Nutri	ients (QCLot: 616097)									
FJ2202203-002	PC1	phosphorus, total dissolved	7723-14-0	E375-T	0.0466 mg/L	0.05 mg/L	93.2	70.0	130	
Anions and Nutri	ients (QCLot: 616253)									
FJ2202203-002	PC1	nitrogen, total	7727-37-9	E366	0.410 mg/L	0.4 mg/L	103	70.0	130	
Anions and Nutri	ients (QCLot: 616254)									
FJ2202203-002	PC1	phosphorus, total	7723-14-0	E372-U	0.0469 mg/L	0.05 mg/L	93.9	70.0	130	
Anions and Nutri	ients (QCLot: 616255)									
FJ2202203-002	PC1	ammonia, total (as N)	7664-41-7	E298	0.112 mg/L	0.1 mg/L	112	75.0	125	
Organic / Inorga	nic Carbon (QCLot: 61	16094)								
FJ2202203-002	PC1	carbon, dissolved organic [DOC]		E358-L	5.12 mg/L	5 mg/L	102	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 61	16095)								
FJ2202203-002	PC1	carbon, total organic [TOC]		E355-L	4.82 mg/L	5 mg/L	96.3	70.0	130	

Page : 10 of 10 Work Order : FJ2202203

Client : Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 611357) - cont	inued								
FJ2202203-002	PC1	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	

Chain of Custody (COC) / Analytical Request Form

coc number: 2022-Aug-MON8/9- Day 2

Canada Toll Free: 1 800 668 9878

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CERTIFICATE OF ANALYSIS

Work Order : FJ2202227

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day3

Sampler : PD

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 19-Aug-2022 15:54

Date Analysis Commenced : 24-Aug-2022

Issue Date : 14-Sep-2022 16:42

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories Position Laboratory Department

Angelo Salandanan Lab Assistant Metals, Burnaby, British Columbia
Kim Jensen Department Manager - Metals Metals, Burnaby, British Columbia
Lindsay Gung Supervisor - Water Chemistry Inorganics, Burnaby, British Columbia

Page : 2 of 4
Work Order : FJ2202227

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202227

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water		C	lient sample ID	BEA	PD2	PINE	PD1-A	PD1-B
(Matrix: Water)								
		Client samp	oling date / time	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]
Analyte CAS Numi	er Method	LOR	Unit	FJ2202227-001	FJ2202227-002	FJ2202227-003	FJ2202227-004	FJ2202227-005
				Result	Result	Result	Result	Result
Physical Tests								
alkalinity, bicarbonate (as CaCO3)	E290	1.0	mg/L	62.0	85.3	123	83.4	83.9
alkalinity, carbonate (as CaCO3)	E290	1.0	mg/L	<1.0	<1.0	6.8	<1.0	<1.0
alkalinity, hydroxide (as CaCO3)	E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, phenolphthalein (as CaCO3)	E290	1.0	mg/L	<1.0	<1.0	3.4	<1.0	<1.0
alkalinity, total (as CaCO3)	E290	1.0	mg/L	62.0	85.3	130	83.4	83.9
colour, true	E329	5.0	CU	226	5.8	<5.0	5.3	5.5
conductivity	E100	2.0	μS/cm	192	194	270	190	189
hardness (as CaCO3), dissolved	EC100	0.60	mg/L	83.8	95.1	143	93.8	93.3
pH .	E108	0.10	pH units	7.90	8.15	8.40	8.14	8.12
solids, total dissolved [TDS]	E162	10	mg/L	233	128	173	134	129
solids, total suspended [TSS]	E160	3.0	mg/L	18.6	33.0	<3.0	31.2	31.6
Anions and Nutrients								
ammonia, total (as N) 7664-4	-7 E298	0.0050	mg/L	0.0110	<0.0050	<0.0050	0.0112	0.0064
chloride 16887-00	-6 E235.Cl	0.50	mg/L	0.56	<0.50	0.85	<0.50	<0.50
fluoride 16984-48	-8 E235.F	0.020	mg/L	0.088	0.036	0.055	0.034	0.034
Kjeldahl nitrogen, total [TKN]	E318	0.050	mg/L	1.05	0.124	0.057	0.134	0.113
nitrate (as N) 14797-58	-8 E235.NO3-L	0.0050	mg/L	<0.0050	0.0640	<0.0050	0.0674	0.0683
nitrite (as N) 14797-68	-0 E235.NO2-L	0.0010	mg/L	<0.0010	0.0026	<0.0010	0.0029	0.0024
nitrogen, total 7727-37	-9 E366	0.030	mg/L	0.815	0.156	0.063	0.163	0.158
phosphate, ortho-, dissolved (as P) 14265-44	-2 E378-U	0.0010	mg/L	0.0120	<0.0010	<0.0010	<0.0010	<0.0010
phosphorus, total 7723-14	-0 E372-U	0.0020	mg/L	0.0735	0.0335	0.0079	0.0412	0.0401
phosphorus, total dissolved 7723-14	-0 E375-T	0.0020	mg/L	0.0230	0.0023	<0.0020	0.0021	<0.0020
silicate (as SiO2) 7631-86	-9 E392	0.50	mg/L	6.39	4.26	1.97	4.37	4.36
sulfate (as SO4) 14808-79	-8 E235.SO4	0.30	mg/L	30.8	15.0	18.0	14.8	14.9
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]	E358-L	0.50	mg/L	37.6	2.89	1.41	2.53	2.74
carbon, total organic [TOC]	E355-L	0.50	mg/L	37.3	2.86	1.31	2.48	2.66
Ion Balance								
anion sum	EC101	0.10	meq/L	1.90	2.02	3.00	1.98	1.99
cation sum	EC101	0.10	meq/L	2.21	1.97	2.99	1.94	1.93
ion balance (APHA)	EC101	0.010	%	7.54	1.25	0.167	1.02	1.53

Page : 4 of 4
Work Order : FJ2202227

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	BEA	PD2	PINE	PD1-A	PD1-B
(Matrix: Water)									
			Client samp	ling date / time	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]	[19-Aug-2022]
Analyte	CAS Number	Method	LOR	Unit	FJ2202227-001	FJ2202227-002	FJ2202227-003	FJ2202227-004	FJ2202227-005
					Result	Result	Result	Result	Result
Dissolved Metals									
calcium, dissolved	7440-70-2	E421	0.050	mg/L	23.0	27.5	40.5	27.1	27.0
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.40	6.43	10.1	6.35	6.28
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202227** Page : 1 of 22

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

Project : Surface Water MON8/9-No Metals Date Samples Received : 19-Aug-2022 15:54

Sampler : PD

Site

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



Page : 3 of 22 Work Order : FJ2202227

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Εν	/aluation: × =	Holding time exce	edance ; 🔻	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
BEA	E298	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD1-A	E298	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD1-B	E298	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD2	E298	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PINE	E298	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
BEA	E235.CI	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD1-A	E235.CI	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓

Page : 4 of 22 Work Order : FJ2202227

Client : Ecofish Research Ltd



Matrix: Water					Εν	/aluation: ≭ =	Holding time exce	edance ; •	✓ = Within	Holding Tin
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD1-B	E235.CI	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD2	E235.CI	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC									1	
HDPE										
PINE	E235.Cl	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ult	tra Trace Level 0.001									
HDPE										
BEA	E378-U	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	¥ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ult	tra Trace Level 0.001									
HDPE										
PD1-A	E378-U	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	≭ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ulf	tra Trace Level 0.001									
HDPE										
PD1-B	E378-U	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	× EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ult	tra Trace Level 0.001									
HDPE										
PD2	E378-U	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	* EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ulf	tra Trace Level 0.001									
HDPE										
PINE	E378-U	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	≭ EHT
										Eni

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE BEA	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD1-A	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	√
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD1-B	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD2	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC									1	
HDPE PINE	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE BEA	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	* EHT	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD1-A	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	* EHT	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)									,	
HDPE PD1-B	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	# EHT	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD2	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	* EHT	25-Aug-2022	3 days	0 days	✓

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Client : Ecofish Research Ltd



nalyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)	111001100	Camping Date	Preparation		g Times	Eval	Analysis Date		Times	Eval
, , , , , , , , , , , , , , , , , , ,			Date	Rec	Actual	Lvai	7 maryolo Bato	Rec	Actual	Lvai
nions and Nutrients : Nitrate in Water by IC (Low Level)										
IDPE PINE	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	*	25-Aug-2022	3 days	0 days	✓
						EHT				
nions and Nutrients : Nitrite in Water by IC (Low Level)										
BEA	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	# EH1
nions and Nutrients : Nitrite in Water by IC (Low Level)										
IDPE										
PD1-A	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	EH1
nions and Nutrients : Nitrite in Water by IC (Low Level)										
IDPE PD1-B	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	≭ EH⁻
nions and Nutrients : Nitrite in Water by IC (Low Level)										ЕПІ
IDPE										
PD2	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	EH1
nions and Nutrients : Nitrite in Water by IC (Low Level)										
IDPE PINE	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	×
		10 7 10 2 2022	_0 / tag _0				207109 2022	o aayo	o aayo	EHT
nions and Nutrients : Reactive Silica by Colourimetry										
IDPE BEA	E392	19-Aug-2022					25-Aug-2022	28 days	7 dovo	1
DEA	L392	19-Aug-2022					25-Aug-2022	20 days	r uays	•
nions and Nutrients : Reactive Silica by Colourimetry										
IDPE PD1-A	E392	19-Aug-2022					25-Aug-2022	28 days	7 days	✓
1017	L392	10-7 tag-2022					20-7 lug-2022	20 days	ruays	•
nions and Nutrients : Reactive Silica by Colourimetry										
HDPE	E392	10 Aug 2022					25-Aug-2022	28 days	7 days	✓
PD1-B	E392	19-Aug-2022					25-Aug-2022	28 days	r days	•

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group Container / Client Sample ID(s) Anions and Nutrients : Reactive Silica by Colourimetry HDPE PD2 Anions and Nutrients : Reactive Silica by Colourimetry	Method E392	Sampling Date	Ext Preparation Date	raction / Pr Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec		Eval
Anions and Nutrients : Reactive Silica by Colourimetry HDPE PD2 Anions and Nutrients : Reactive Silica by Colourimetry	E392	10 Aug 2000				Eval	Analysis Date			Eval
HDPE PD2 Anions and Nutrients : Reactive Silica by Colourimetry	E392	40 Aug 2000		Rec	Actual		-	Rec	Actual	
HDPE PD2 Anions and Nutrients : Reactive Silica by Colourimetry	E392	10 Aug 2000						7 100	Actual	
PD2 Anions and Nutrients : Reactive Silica by Colourimetry	E392	10 Aug 2022								
Anions and Nutrients : Reactive Silica by Colourimetry	E392	10 41.2 2022								
		19-Aug-2022					25-Aug-2022	28 days	7 days	✓
HDPE										
PINE	E392	19-Aug-2022					25-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
BEA	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
			· ·				· ·		•	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD1-A	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 davs	✓
			3 3				3 3		. ,	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD1-B	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 davs	✓
								,-	,-	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD2	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 davs	✓
		l	Ü				Ü		,	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PINE	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
T INC			20 / kg 2022				20 / tag 2022	20 44,0	o dayo	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
BEA	E375-T	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
DEA.	2070-1	10-7 tag-2022	207 kag 2022				207 lug 2022	auys	. uuys	•
Anima and Nicking at a Takal Biosphared Bloombarra by Calamin (1988)										
Ambox along discound (outfine acid)										
Amber glass dissolved (sulfuric acid) PD1-A	E375-T	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
ו טויס	2070-1	13-Aug-2022	20-Aug-2022				20-Aug-2022	20 days	, uays	•

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation		Analysis			
Container / Client Sample ID(s)			Preparation Holding Times			Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD1-B	E375-T	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD2	E375-T	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	*
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PINE	E375-T	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) BEA	E318	19-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	10 days	4
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PD1-A	E318	19-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PD1-B	E318	19-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PD2	E318	19-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PINE	E318	19-Aug-2022	25-Aug-2022				29-Aug-2022	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) BEA	E366	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Holding Times		Eval Analysis Date				Eval	
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)	E366	40 4 2002	25 4 2022				20. 4 2022	28 days	7	✓
PD1-A	E300	19-Aug-2022	25-Aug-2022				26-Aug-2022	20 days	7 days	•
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
PD1-B	E366	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PD2	E366	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
FU2	L300	19-Aug-2022	25-Aug-2022				20-Aug-2022	20 days	1 days	•
Anions and Nutrients : Total Nitrogen by Colourimetry							<u> </u>			
Amber glass total (sulfuric acid)										
PINE	E366	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) BEA	E372-U	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
BLA	2072-0	107 tug-2022	25-Aug-2022				20-Aug-2022	20 days	1 days	•
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
PD1-A	E372-U	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD1-B	E372-U	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
1 - 1 - 1			- J					'	,	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
PD2	E372-U	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PINE	E372-U	19-Aug-2022	25-Aug-2022				26-Aug-2022	28 days	7 days	✓
		. 5	- J				3 1	- ,-	,-	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

wattrx: water						aldation. • -	nolding time excee	cuarioc , .	- vvicinii	riolaling rill
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			sis		
Container / Client Sample ID(s)			Preparation	Preparation Holding Times			Analysis Date	Holding T	Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
BEA	E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180	7 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD1-A	E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180	7 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD1-B	E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180	7 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD2	E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180	7 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PINE	E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180	7 days	✓
								days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	rel)									
Amber glass dissolved (sulfuric acid)										
BEA	E358-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	rel)									
Amber glass dissolved (sulfuric acid)										
PD1-A	E358-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	vel)									
Amber glass dissolved (sulfuric acid)										
PD1-B	E358-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
			-							
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	vel)									
Amber glass dissolved (sulfuric acid)										
PD2	E358-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
	The second secon	_	-	T. Control of the Con	1			1		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext		Analysis						
Container / Client Sample ID(s)			Preparation Holding Times					Analysis Date	ate Holding Times		Eval
			Date	Rec	Actual			Rec	Actual		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)										
Amber glass dissolved (sulfuric acid) PINE	E358-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)										
Amber glass total (sulfuric acid) BEA	E355-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	√	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)										
Amber glass total (sulfuric acid) PD1-A	E355-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)								1		
Amber glass total (sulfuric acid) PD1-B	E355-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	on (Low Level)										
Amber glass total (sulfuric acid) PD2	E355-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)										
Amber glass total (sulfuric acid) PINE	E355-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE BEA	E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓	
Physical Tests : Alkalinity Species by Titration								1			
HDPE PD1-A	E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE PD1-B	E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓	

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Client : Ecofish Research Ltd

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Matrix: Water

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

Analyte Group

Method Sampling Date Extraction / Preparation

Analysis

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE PD2	E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓
Physical Tests : Alkalinity Species by Titration					l					
HDPE PINE	E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE BEA	E329	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	* EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD1-A	E329	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	x EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD1-B	E329	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	* EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD2	E329	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	* EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PINE	E329	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	* EHT
Physical Tests : Conductivity in Water										
HDPE BEA	E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE PD1-A	E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Eval Analysis Date		Holding Times	
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE PD1-B	E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE PD2	E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE PINE	E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE BEA	E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE PD1-A	E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	# EHTR-FM
Physical Tests : pH by Meter										
HDPE PD1-B	E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE PD2	E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE PINE	E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE BEA	E162	19-Aug-2022					25-Aug-2022	7 days	7 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Matrix: water						aldation. • -	nolding time excee	Judinoo ,	***************************************	riolaling rilli
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation					
Container / Client Sample ID(s)		' -	Preparation Holding Times Eva				Analysis Date	Holding	Holding Times	
			Date	Rec	Actual		, =	Rec	Actual	Eval
Physical Tests : TDS by Gravimetry										
HDPE										
PD1-A	E162	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE	E400	40.4 0000								,
PD1-B	E162	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
PD2	E162	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
							-			
Physical Tests : TDS by Gravimetry										
HDPE										
PINE	E162	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry								I		
HDPE BEA	E160	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
DLA	2100	10-7 tug-2022					20-Aug-2022	7 days	1 days	•
Physical Tests : TSS by Gravimetry										
HDPE										
PD1-A	E160	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE	F400	40.4 0000								,
PD1-B	E160	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry HDPE										
PD2	E160	19-Aug-2022					25-Aug-2022	7 days	7 days	✓
								,-	,	
Physical Tests : TSS by Gravimetry										
HDPE										
PINE	E160	19-Aug-2022					25-Aug-2022	7 days	7 days	✓

Legend & Qualifier Definitions

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			Co	ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)					•		
Alkalinity Species by Titration	E290	618211	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	618244	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	618216	1	8	12.5	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	618213	1	11	9.0	5.0	1
Conductivity in Water	E100	618212	1	12	8.3	5.0	<u>-</u> ✓
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	7	14.2	5.0	<u>√</u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618245	1	16	6.2	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	618214	1	8	12.5	5.0	<u> </u>
Fluoride in Water by IC	E235.F	618215	1	8	12.5	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	8	12.5	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	8	12.5	5.0	1
pH by Meter	E108	618210	1	13	7.6	5.0	1
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	1
Sulfate in Water by IC	E235.SO4	618219	1	8	12.5	5.0	1
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	1
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618243	1	9	11.1	5.0	1
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618239	1	20	5.0	5.0	1
Total Nitrogen by Colourimetry	E366	618241	1	9	11.1	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618240	1	20	5.0	5.0	1
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618242	1	20	5.0	5.0	-
TSS by Gravimetry	E160	619261	1	20	5.0	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	618211	1	6	16.6	5.0	1
Ammonia by Fluorescence	E298	618244	1	20	5.0	5.0	√
Chloride in Water by IC	E235.CI	618216	1	8	12.5	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	618213	1	11	9.0	5.0	
Conductivity in Water	E100	618212	1	12	8.3	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	7	14.2	5.0	<u> </u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	618245	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	618214	1	8	12.5	5.0	1
Fluoride in Water by IC	E235.F	618215	1	8	12.5	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	8	12.5	5.0	√
pH by Meter	E108	618210	1	13	7.6	5.0	√
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	618219	1	8	12.5	5.0	√
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	✓

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Client : Ecofish Research Ltd



Quality Control Sample Type Analytical Methods Laboratory Control Samples (LCS) - Continued Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Total Kjeldahl Nitrogen by Fluorescence (Low Level) Total Nitrogen by Colourimetry Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E375-T E318 E366 E355-L E372-U E160 E290 E298 E235.CI E329	618243 618239 618241 618240 618242 619261 618211 618244	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	9 20 9 20 20 20 20	11.1 5.0 11.1 5.0 5.0 5.0	5.0 5.0 5.0 5.0 5.0 5.0 5.0	Evaluation
Laboratory Control Samples (LCS) - Continued Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Total Kjeldahl Nitrogen by Fluorescence (Low Level) Total Nitrogen by Colourimetry Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E375-T E318 E366 E355-L E372-U E160 E290 E298 E235.Cl E329	618243 618239 618241 618240 618242 619261 618211 618244	1 1 1 1 1 1	9 20 9 20 20	11.1 5.0 11.1 5.0 5.0	5.0 5.0 5.0 5.0 5.0	√ √ √
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Total Kjeldahl Nitrogen by Fluorescence (Low Level) Total Nitrogen by Colourimetry Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E318 E366 E355-L E372-U E160 E290 E298 E235.Cl E329	618239 618241 618240 618242 619261 618211 618244	1 1 1 1 1	20 9 20 20	5.0 11.1 5.0 5.0	5.0 5.0 5.0 5.0	√ √ √
Total Kjeldahl Nitrogen by Fluorescence (Low Level) Total Nitrogen by Colourimetry Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E318 E366 E355-L E372-U E160 E290 E298 E235.Cl E329	618239 618241 618240 618242 619261 618211 618244	1 1 1 1 1	20 9 20 20	5.0 11.1 5.0 5.0	5.0 5.0 5.0 5.0	√ √ √
Total Nitrogen by Colourimetry Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E366 E355-L E372-U E160 E290 E298 E235.Cl E329	618241 618240 618242 619261 618211 618244	1 1 1 1	9 20 20	11.1 5.0 5.0	5.0 5.0 5.0	√ √
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E355-L E372-U E160 E290 E298 E235.Cl E329	618240 618242 619261 618211 618244	1 1 1	20	5.0 5.0	5.0 5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L) TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E372-U E160 E290 E298 E235.Cl E329	618242 619261 618211 618244	1 1	20	5.0	5.0	<u>-</u>
TSS by Gravimetry Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E290 E298 E235.Cl E329	619261 618211 618244	1		1 1		✓
Method Blanks (MB) Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E290 E298 E235.Cl E329	618211 618244		20	5.0	5.0	
Alkalinity Species by Titration Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E298 E235.Cl E329	618244	1			0.0	✓
Ammonia by Fluorescence Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E298 E235.Cl E329	618244	1				
Chloride in Water by IC Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E235.Cl E329			6	16.6	5.0	✓
Colour (True) by Spectrometer (5 CU) Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	E329		1	20	5.0	5.0	✓
Conductivity in Water Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)		618216	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS Dissolved Organic Carbon by Combustion (Low Level)	=	618213	1	11	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E100	618212	1	12	8.3	5.0	✓
, ,	E421	616443	1	7	14.2	5.0	✓
District College Colle	E358-L	618245	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	618214	1	8	12.5	5.0	√
Fluoride in Water by IC	E235.F	618215	1	8	12.5	5.0	
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	8	12.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	8	12.5	5.0	<u>√</u>
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	
Sulfate in Water by IC	E235.SO4	618219	1	8	12.5	5.0	
TDS by Gravimetry	E162	619264	1	20	5.0	5.0	<u>√</u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	618243	1	9	11.1	5.0	<u> </u>
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	618239	1	20	5.0	5.0	<u> </u>
Total Nitrogen by Colourimetry	E366	618241	1	9	11.1	5.0	<u> </u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618240	1	20	5.0	5.0	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618242	1	20	5.0	5.0	
TSS by Gravimetry	E160	619261	1	20	5.0	5.0	
Matrix Spikes (MS)	£100	0.020					
Ammonia by Fluorescence	E298	618244	1	20	5.0	5.0	
Chloride in Water by IC	E235.Cl	618216	1	8	12.5	5.0	<u>√</u>
Dissolved Metals in Water by CRC ICPMS	E235.CI E421	616443	1	7	14.2	5.0	✓
Dissolved Metals III Water by Crot ICP MS Dissolved Organic Carbon by Combustion (Low Level)		618245	1	16	6.2	5.0	
, ,	E358-L	618214	1	8	12.5	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L) Fluoride in Water by IC	E378-U	618214	1	8	12.5	5.0	√
Nitrate in Water by IC (Low Level)	E235.F	618217	1	8	12.5	5.0	√
, ,	E235.NO3-L		1	8	12.5	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218		-			√
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	618219	1	8	12.5	5.0	<u>√</u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E375-T E318	618243 618239	1	9	11.1	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: × = QC frequency outside specification, ✓ = QC frequency within specification.

Quality Control Sample Type			Col	unt		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Matrix Spikes (MS) - Continued									
Total Nitrogen by Colourimetry	E366	618241	1	9	11.1	5.0	✓		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	618240	1	20	5.0	5.0	✓		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	618242	1	20	5.0	5.0	✓		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	Vancouver -			with gravimetric measurement of the residue.
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			
	2	1		

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	by this method. "Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
lon Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202227

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-MON8/9-Day3

Sampler : PD

Site

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 19-Aug-2022 15:54

Date Analysis Commenced : 24-Aug-2022

Issue Date : 14-Sep-2022 16:42

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories Position Laboratory Department

Angelo SalandananLab AssistantVancouver Metals, Burnaby, British ColumbiaKim JensenDepartment Manager - MetalsVancouver Metals, Burnaby, British ColumbiaLindsay GungSupervisor - Water ChemistryVancouver Inorganics, Burnaby, British Columbia

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Work Order : FJ2202227

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC													
FJ2202227-001	BEA	рН		E108	0.10	pH units	7.90	7.88	0.253%	4%			
Physical Tests (QC	C Lot: 618211)												
FJ2202227-001	BEA	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	62.0	61.6	0.647%	20%			
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	62.0	61.6	0.647%	20%			
Physical Tests (QC	Lot: 618212)												
FJ2202227-001	BEA	conductivity		E100	2.0	μS/cm	192	191	0.887%	10%			
Physical Tests (QC	Lot: 6182 <u>13)</u>												
FJ2202227-001	BEA	colour, true		E329	50.0	CU	226	236	9.8	Diff <2x LOR			
Physical Tests (QC	C Lot: 619261)												
FJ2202201-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	12.4	12.8	0.4	Diff <2x LOR			
Physical Tests (QC	: Lot: 619264)												
FJ2202201-001	Anonymous	solids, total dissolved [TDS]		E162	13	mg/L	131	124	6	Diff <2x LOR			
Anions and Nutrion	its (QC Lot: 618214)												
FJ2202227-001	BEA	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0120	0.0128	6.57%	20%			
Andreas and Newton	(OC at: 040045)	p											
Anions and Nutrien FJ2202226-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.065	0.068	0.003	Diff <2x LOR			
	,	iluonae	10004 40 0	L200.1	0.020	1119/2	0.000	0.000	0.000	DIII -EX COIX			
Anions and Nutrien FJ2202226-001	Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR			
	·	Chloride	10007-00-0	L255.Ci	0.50	mg/L	~ 0.30	40.30	0	DIII VZX LOIX			
	its (QC Lot: 618217)	# 4 4 AV	11707.55.0	Eggs NGO I	0.0050		0.0400	0.0404	0.0044	D:# .0 1.0D			
FJ2202226-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0196	0.0184	0.0011	Diff <2x LOR			
	ts (QC Lot: 618218)												
FJ2202226-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR			
Anions and Nutrien	its (QC Lot: 618219)												
FJ2202226-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	51.4	51.4	0.0366%	20%			
Anions and Nutrien	its (QC Lot: 618239)												
FJ2202227-001	BEA	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	1.05	0.952	9.95%	20%			
Anions and Nu <u>trien</u>	its (QC Lot: 618241)												
FJ2202227-001	BEA	nitrogen, total	7727-37-9	E366	0.030	mg/L	0.815	0.826	1.38%	20%			

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Client : Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	s (QC Lot: 618242)										
FJ2202227-001	BEA	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0735	0.0797	8.12%	20%	
Anions and Nutrient	ts (QC Lot: 618243)										
FJ2202227-001	BEA	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0230	0.0224	2.64%	20%	
Anions and Nutrient	s (QC Lot: 618244)										
FJ2202227-001	BEA	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0110	0.0100	0.0009	Diff <2x LOR	
Anions and Nutrient	ts (QC Lot: 619371)										
FJ2202227-001	BEA	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	6.39	6.38	0.142%	20%	
Organic / Inorganic	Carbon (QC Lot: 618240)									
FJ2202227-001	BEA	carbon, total organic [TOC]		E355-L	0.50	mg/L	37.3	40.4	7.98%	20%	
Organic / Inorganic	Carbon (QC Lot: 618245)									
FJ2202227-001	BEA	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	37.6	39.7	5.31%	20%	
Dissolved Metals (C	QC Lot: 616443)										
FJ2202227-002	PD2	calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.5	29.1	5.69%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.43	6.68	3.84%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 618211)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 618212)					
conductivity	E100	1	μS/cm	1.0	
Physical Tests (QCLot: 618213)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 619261)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 619264)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 618214)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 618215)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 618216)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 618217)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 618218)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 618219)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 618239)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 618241)					
nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 618242)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 618243)					
phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier			
Anions and Nutrients (QCLot: 618244)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050				
Anions and Nutrients (QCLot: 619371)									
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	<0.50				
Organic / Inorganic Carbon (QCLot: 618240)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50				
Organic / Inorganic Carbon (QCLot: 61824	15)								
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50				
Dissolved Metals (QCLot: 616443)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050				
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050				

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water				Laboratory Control Sample (LCS) Report					
				Spike	Recovery (%)	Recovery	Limits (%)		
Analyte CAS Nur	ber Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 618210)									
pH	E108		pH units	7 pH units	100	98.0	102		
Physical Tests (QCLot: 618211)									
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	229 mg/L	109	75.0	125		
alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	110	85.0	115		
Physical Tests (QCLot: 618212)									
conductivity	E100	1	μS/cm	146.9 μS/cm	98.8	90.0	110		
Physical Tests (QCLot: 618213)									
colour, true	E329	5	CU	100 CU	104	85.0	115		
Physical Tests (QCLot: 619261)									
solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	98.0	85.0	115		
Physical Tests (QCLot: 619264)									
solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	113	85.0	115		
Anions and Nutrients (QCLot: 618214)									
phosphate, ortho-, dissolved (as P) 14265-	4-2 E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120		
Anions and Nutrients (QCLot: 618215)									
fluoride 16984-	8-8 E235.F	0.02	mg/L	1 mg/L	99.0	90.0	110		
Anions and Nutrients (QCLot: 618216)									
chloride 16887-	0-6 E235.CI	0.5	mg/L	100 mg/L	102	90.0	110		
Anions and Nutrients (QCLot: 618217)									
nitrate (as N) 14797-	5-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110		
Anions and Nutrients (QCLot: 618218)									
nitrite (as N) 14797-	5-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	99.5	90.0	110		
Anions and Nutrients (QCLot: 618219)									
sulfate (as SO4) 14808-	9-8 E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110		
Anions and Nutrients (QCLot: 618239)									
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	4 mg/L	98.4	75.0	125		
Anions and Nutrients (QCLot: 618241)									
nitrogen, total 7727-	7-9 E366	0.03	mg/L	0.5 mg/L	100	75.0	125		
Anions and Nutrients (QCLot: 618242)									
phosphorus, total 7723-	4-0 E372-U	0.002	mg/L	0.05 mg/L	92.6	80.0	120		
Anions and Nutrients (QCLot: 618243)									
phosphorus, total dissolved 7723-	4-0 E375-T	0.002	mg/L	0.05 mg/L	87.3	80.0	120		

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 : FJ2202227

Client : Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 618244)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.4	85.0	115	
Anions and Nutrients (QCLot: 619371)									
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	101	85.0	115	
Organic / Inorganic Carbon (QCLot: 618240)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120	
Organic / Inorganic Carbon (QCLot: 618245)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	
Dissolved Metals (QCLot: 616443)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.2	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	95.9	80.0	120	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik	e (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
	ents (QCLot: 618214)									
FJ2202227-002	PD2	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0277 mg/L	0.03 mg/L	92.5	70.0	130	
Anions and Nutri	ents (QCLot: 618215)									'
VA22B9818-001	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 618216)									'
VA22B9818-001	Anonymous	chloride	16887-00-6	E235.Cl	105 mg/L	100 mg/L	105	75.0	125	
Anions and Nutri	ents (QCLot: 618217)									
VA22B9818-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	
Anions and Nutri	ents (QCLot: 618218)									
VA22B9818-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.512 mg/L	0.5 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 618219)									
VA22B9818-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	
Anions and Nutri	ents (QCLot: 618239)									
FJ2202227-002	PD2	Kjeldahl nitrogen, total [TKN]		E318	2.65 mg/L	2.5 mg/L	106	70.0	130	
Anions and Nutri	ents (QCLot: 618241)									
FJ2202227-002	PD2	nitrogen, total	7727-37-9	E366	0.404 mg/L	0.4 mg/L	101	70.0	130	
Anions and Nutri	ents (QCLot: 618242)									
FJ2202227-002	PD2	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	93.0	70.0	130	
Anions and Nutri	ents (QCLot: 618243)									
FJ2202227-002	PD2	phosphorus, total dissolved	7723-14-0	E375-T	0.0456 mg/L	0.05 mg/L	91.3	70.0	130	
Anions and Nutri	ents (QCLot: 618244)									
FJ2202227-002	PD2	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 619371)									
FJ2202227-002	PD2	silicate (as SiO2)	7631-86-9	E392	9.46 mg/L	10 mg/L	94.6	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 61	18240)								
FJ2202227-002	PD2	carbon, total organic [TOC]		E355-L	4.91 mg/L	5 mg/L	98.3	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 61	18245)								
FJ2202227-002	PD2	carbon, dissolved organic [DOC]		E358-L	5.41 mg/L	5 mg/L	108	70.0	130	

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Client : Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 616443) - cont	inued								
FJ2202227-003	PINE	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	

Chain of Custody (COC) / Analytical Request Form



www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 2022-Aug-MON8/9- Day 3

Page

Report To	Contact and company name below will app	ear on the final report		Reports / R	ecipients				Tu	maro	und Ti	me (TA	T) Requ	ested								
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Contact:	Leah Huli		Merge QC/QCI	Reports with COA	☑ YES □ NO	□ N/A	□ 4 da	y [P4]	f receiv	ed by :	3pm M	F - 20°	4 rush sur	charge n	ninimum							
Phone:	250-334-3042		Compare Result	s to Criteria on Report -	provide details belo	w if box checked							% rush su				AFFIX	ALS B.	ARCOD LS use	Serpessione re	EL HE	RE
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Street:	600 Comox Rd.		Email 1 or Fax	lhull@ecofishresea	rch.com		Sam	e day [f	2] if re	ceived	d by 10a	m M-S	- 200% n	ush sürci	narge. Ar	dditiona						
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	Project Information		Oil	and Gas Required	Fields (client	use)	₹	Si,			Total						.				G.	9
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Job#:	Surface water MON8/9- no metals		Major/Minor Code:		Routing Code:		Ŋ	Ani			eBou			1							AG	AR!
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	PD1-A					Water	4	R	R	R	R	R						-	1			П
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Drinking	Water (DW) Samples ¹ (client use)	Notes / Specify I		valuation by selectin	g from drop-dov	wn below					NOOP - 1/10-1-1-1		LE REC									
Are samples tak	en from a Regulated DW System?		(E)	cter coc only)			220000000				Pick Contact in	and the free of	ICE [and the second		1 0 4 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		angene and a second	COOLING	v	TED	
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REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLIN		1	WHI	TE - LABORATOI	RY COPY YELI		CLIEN	T COF	Υ	1 p. 1 (2 mg					المسيسة	or to be believed			4 *************************************	AUG 202	20 FRONT

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

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



CERTIFICATE OF ANALYSIS

Work Order : FJ2202273

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : --Sampler : --

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 22-Aug-2022 16:49

Date Analysis Commenced : 24-Aug-2022

Issue Date : 09-Sep-2022 17:45

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories Position Laboratory Department

Erin Sanchez

Kevin Duarte

Kupervisor - Metals ICP Instrumentation

Supervisor - Metals ICP Instrumentation

Department Manager - Metals

Metals, Burnaby, British Columbia

Metals, Burnaby, British Columbia

Metals, Burnaby, British Columbia

Page : 2 of 4

Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	lient sample ID	MD	 		
(Matrix: Water)								
			Client samp	oling date / time	22-Aug-2022 16:00	 		
Analyte	CAS Number	Method	LOR	Unit	FJ2202273-001	 		
					Result	 		
Physical Tests								
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	128	 		
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	5.4	 		
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	 		
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	2.7	 		
alkalinity, total (as CaCO3)		E290	1.0	mg/L	134	 		
colour, true		E329	5.0	CU	13.5	 		
conductivity		E100	2.0	μS/cm	260	 		
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	143	 		
рН		E108	0.10	pH units	8.34	 		
solids, total dissolved [TDS]		E162	10	mg/L	174	 		
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	 		
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0050	 		
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	 		
fluoride	16984-48-8	E235.F	0.020	mg/L	0.085	 		
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.157	 		
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	 		
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	 		
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.158	 		
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	 		
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0150	 		
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0023	 		
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	3.08	 		
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.2	 		
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	5.40	 		
carbon, total organic [TOC]		E355-L	0.50	mg/L	5.51	 		
Ion Balance								
anion sum		EC101	0.10	meq/L	2.94	 		
cation sum		EC101	0.10	meq/L	3.03	 		
I control of the cont	1		1	1 1			ı	ı

Page : 4 of 4
Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	lient sample ID	MD	 	
(Matrix: Water)							
			Client samp	oling date / time	22-Aug-2022 16:00	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202273-001	 	
					Result	 	
Ion Balance							
ion balance (APHA)		EC101	0.010	%	1.51	 	
Dissolved Metals							
calcium, dissolved	7440-70-2	E421	0.050	mg/L	40.2	 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	10.4	 	
dissolved metals filtration location		EP421	-	-	Laboratory	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202273** Page : 1 of 12

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 22-Aug-2022 16:49

 PO
 : 1200-25.03.02
 Issue Date
 : 09-Sep-2022 17:45

C-O-C number : ---Sampler : ----

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 1
No. of samples analysed : 1

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



Page : 3 of 12 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: × =	Holding time exce	edance ; 🕥	/ = Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MD	E298	22-Aug-2022	26-Aug-2022				26-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
MD	E235.CI	22-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE MD	E378-U	22-Aug-2022	24-Aug-2022				25-Aug-2022	3 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE MD	E235.F	22-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)									1	
HDPE MD	E235.NO3-L	22-Aug-2022	24-Aug-2022	3 days	2 days	✓	24-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MD	E235.NO2-L	22-Aug-2022	24-Aug-2022				24-Aug-2022	3 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
MD	E392	22-Aug-2022					25-Aug-2022	28 days	3 days	✓

Page : 4 of 12 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water
Evaluation: x = Holding time exceedance; √ = Within Holding Time

Analyte Group
Method
Sampling Date
Extraction / Preparation
Analysis

| Container / Client Sample ID(s) | Preparation |

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		_	Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MD	E235.SO4	22-Aug-2022	24-Aug-2022				24-Aug-2022	28 days	2 days	√
MD	E233.304	22-Aug-2022	24-Aug-2022				24-Aug-2022	20 uays	2 uays	•
Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
MD	E375-T	22-Aug-2022	26-Aug-2022				27-Aug-2022	28 days	5 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid)										
MD	E318	22-Aug-2022	26-Aug-2022				29-Aug-2022	28 days	7 days	✓
WID	2010	22-7 tug-2022	20-7 tug-2022				25 7 lug 2022	20 days	' days	•
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
MD	E366	22-Aug-2022	26-Aug-2022				29-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
MD	E372-U	22-Aug-2022	26-Aug-2022				27-Aug-2022	28 days	5 davs	✓
···			3				3 -	,		
Start of Marchael Provider In Alberta Marchael Company										
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)	E404	00 4 0000	OF A 2022				05 4 0000		0 4	✓
MD	E421	22-Aug-2022	25-Aug-2022				25-Aug-2022	180	3 days	•
								days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	rel)									
Amber glass dissolved (sulfuric acid)										
MD	E358-L	22-Aug-2022	26-Aug-2022				26-Aug-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)	UII (EUW EUVEI)									
MD	E355-L	22-Aug-2022	26-Aug-2022				26-Aug-2022	28 days	4 days	√
IVID	L000-L	22-Aug-2022	20-Aug-2022				20-Aug-2022	20 days	- uays	•
Physical Tests : Alkalinity Species by Titration										
HDPE										
							05 4 0000	1441		
MD	E290	22-Aug-2022	24-Aug-2022				25-Aug-2022	14 days	2 days	✓

Page : 5 of 12 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Watti A. Water				Accedance, within Holding						
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation		Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
MD	E329	22-Aug-2022	24-Aug-2022				25-Aug-2022	3 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
MD	E100	22-Aug-2022	24-Aug-2022				25-Aug-2022	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
MD	E108	22-Aug-2022	24-Aug-2022				25-Aug-2022	0.25	8.25	*
								hrs	hrs	EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE										
MD	E162	22-Aug-2022					26-Aug-2022	7 days	4 days	✓
Physical Tests : TSS by Gravimetry							<u> </u>			
HDPE										
MD	E160	22-Aug-2022					26-Aug-2022	7 days	4 days	✓

Legend & Qualifier Definitions

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

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

Page : 6 of 12 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Matrix: Water	·	Evaluat	ion: × = QC frequ		Totalion, V =		<u> </u>
Quality Control Sample Type	A 4 - 45	001-44	QC	Dunt	A - 4 1	Frequency (%	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	617303	1	20	5.0	5.0	✓
Ammonia by Fluorescence	E298	620019	1	19	5.2	5.0	✓
Chloride in Water by IC	E235.CI	617306	1	20	5.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	617312	1	1	100.0	5.0	✓
Conductivity in Water	E100	617304	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	618257	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	620015	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617311	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	617305	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	617308	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	617309	1	16	6.2	5.0	✓
pH by Meter	E108	617302	1	20	5.0	5.0	1
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	1
Sulfate in Water by IC	E235.SO4	617310	1	20	5.0	5.0	1
TDS by Gravimetry	E162	620318	1	20	5.0	5.0	1
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	620018	1	7	14.2	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	620013	1	6	16.6	5.0	1
Total Nitrogen by Colourimetry	E366	620017	1	7	14.2	5.0	<u> </u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	620016	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	620014	1	19	5.2	5.0	<u> </u>
TSS by Gravimetry	E160	620308	1	20	5.0	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	617303	1	20	5.0	5.0	1
Ammonia by Fluorescence	E298	620019	1	19	5.2	5.0	√
Chloride in Water by IC	E235.Cl	617306	1	20	5.0	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	617312	1	1	100.0	5.0	√
Conductivity in Water	E100	617304	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	618257	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	620015	1	19	5.2	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617311	1	15	6.6	5.0	✓
Fluoride in Water by IC	E376-0	617305	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.F E235.NO3-L	617308	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)		617309	1	16	6.2	5.0	√
pH by Meter	E235.NO2-L	617309	1	20	5.0	5.0	_
Reactive Silica by Colourimetry	E108			20	5.0	5.0	√
·	E392	619371	1	20			√
Sulfate in Water by IC	E235.SO4	617310	1		5.0	5.0	√
TDS by Gravimetry	E162	620318	1	20	5.0	5.0	✓

Page : 7 of 12 : FJ2202273 Work Order

Client : Ecofish Research Ltd

Total Kjeldahl Nitrogen by Fluorescence (Low Level)

Project : Surface Water MON8/9-No Metals



Quality Control Sample Type			Co	ount		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
_aboratory Control Samples (LCS) - Continued							
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	620018	1	7	14.2	5.0	1
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	620013	1	6	16.6	5.0	1
Total Nitrogen by Colourimetry	E366	620017	1	7	14.2	5.0	√
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	620016	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	620014	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	620308	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	617303	1	20	5.0	5.0	1
Ammonia by Fluorescence	E298	620019	1	19	5.2	5.0	1
Chloride in Water by IC	E235.CI	617306	1	20	5.0	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	617312	1	1	100.0	5.0	1
Conductivity in Water	E100	617304	1	20	5.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	618257	1	18	5.5	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	620015	1	19	5.2	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617311	1	15	6.6	5.0	1
Fluoride in Water by IC	E235.F	617305	1	16	6.2	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	617308	1	20	5.0	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	617309	1	16	6.2	5.0	√
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	617310	1	20	5.0	5.0	√
TDS by Gravimetry	E162	620318	1	20	5.0	5.0	1
Fotal Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	620018	1	7	14.2	5.0	<u>√</u>
Fotal Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	620013	1	6	16.6	5.0	√
Fotal Nitrogen by Colourimetry	E366	620017	1	7	14.2	5.0	
Fotal Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	620016	1	19	5.2	5.0	1
Fotal Phosphorus by Colourimetry (0.002 mg/L)	E372-U	620014	1	19	5.2	5.0	√
TSS by Gravimetry	E160	620308	1	20	5.0	5.0	<u>√</u>
Matrix Spikes (MS)	2.00						-
Ammonia by Fluorescence	E298	620019	1	19	5.2	5.0	1
Chloride in Water by IC	E235.CI	617306	1	20	5.0	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	618257	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	620015	1	19	5.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617311	1	15	6.6	5.0	√
luoride in Water by IC	E235.F	617305	1	16	6.2	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	617308	1	20	5.0	5.0	√
Vitrite in Water by IC (Low Level)	E235.NO3-L	617309	1	16	6.2	5.0	√
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	617310	1	20	5.0	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E235.504 E375-T	620018	1	7	14.2	5.0	√
Cital Diocontal 1 hospitolia by Colourniton y (0.002 hig/L)	E3/3-1	020010	 	,	17.2	0.0	Y

E318

620013

6

16.6

5.0

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: × = QC frequency outside specification, ✓ = QC frequency within specification.

Quality Control Sample Type	Count		Frequency (%)				
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
Total Nitrogen by Colourimetry	E366	620017	1	7	14.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	620016	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	620014	1	19	5.2	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	Vancouver -			with gravimetric measurement of the residue.
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			
	2	1		

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver -	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	Vancouver - Environmental			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
lon Balance using Dissolved Metals	EC101 Vancouver -	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
	Environmental			Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver -	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
	Environmental			
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver -	Water		Preparation for Total Organic Carbon by Combustion
	Environmental			
Preparation for Dissolved Organic Carbon for Combustion	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
	Vancouver - Environmental			
Digestion for Total Nitrogen in water	EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	Vancouver -			
Digestion for Total Phosphorus in water	Environmental EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			

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Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202273

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : --Sampler : ---

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :+1 250 261 5517

Date Samples Received : 22-Aug-2022 16:49

Date Analysis Commenced : 24-Aug-2022

Issue Date : 09-Sep-2022 17:45

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories Position Laboratory Department

Erin Sanchez

Kevin Duarte

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Vancouver Metals, Burnaby, British Columbia

Vancouver Inorganics, Burnaby, British Columbia

Kim Jensen

Department Manager - Metals

Vancouver Metals, Burnaby, British Columbia

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 617302)										
FJ2202261-019	Anonymous	pH		E108	0.10	pH units	8.30	8.31	0.120%	4%	
Physical Tests (QC	Lot: 617303)										
FJ2202261-019	Anonymous	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	171	171	0.409%	20%	
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	5.0	5.0	0	Diff <2x LOR	
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	2.5	2.5	0	Diff <2x LOR	
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	176	176	0.398%	20%	
Physical Tests (QC	Lot: 617304)										
FJ2202261-019	Anonymous	conductivity		E100	2.0	μS/cm	1010	1010	0.297%	10%	
Physical Tests (QC	C Lot: 617312)							<u> </u>			
FJ2202273-001	MD	colour, true		E329	5.0	CU	13.5	14.0	0.5	Diff <2x LOR	
Physical Tests (QC	Lot: 620308)										
FJ2202240-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Physical Tests (QC	L of: 620318)										
FJ2202240-001	Anonymous	solids, total dissolved [TDS]		E162	20	mg/L	222	217	2.50%	20%	
Aniono and Nutrion	its (QC Lot: 617305)										
FJ2202261-017	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.133	0.129	0.005	Diff <2x LOR	
	·	indonate			0.100						
FJ2202261-017	Anonymous	chloride	16887-00-6	E235.CI	2.50	mg/L	<2.50	<2.50	0	Diff <2x LOR	
	,	chloride	10007-00-0	E235.CI	2.50	IIIg/L	\2.50	~2.50	0	DIII \ZX LOR	
	its (QC Lot: 617308)		44707.55.0	Eggs NOO I	0.0050		4.05	1.00	4.000/	000/	
FJ2202261-017	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	1.85	1.83	1.03%	20%	
	its (QC Lot: 617309)							_			
FJ2202261-017	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0078	0.0066	0.0013	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 617310)										
FJ2202261-017	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	218	215	1.09%	20%	
Anions and Nutrien	its (QC Lot: 617311)										
FJ2202261-017	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 619371)										
FJ2202227-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	6.39	6.38	0.142%	20%	
Anions and Nutrien	its (QC Lot: 620013)									I	<u> </u>
VA22B9516-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.159	0.158	0.002	Diff <2x LOR	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water							Labora	tory Duplicate (Dl	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	ts (QC Lot: 620014)										
FJ2202261-017	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0233	0.0228	2.30%	20%	
Anions and Nutrient	ts (QC Lot: 620017)										
FJ2202259-004	Anonymous	nitrogen, total	7727-37-9	E366	0.030	mg/L	1.47	1.45	1.59%	20%	
Anions and Nutrient	ts (QC Lot: 620018)										
FJ2202259-004	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0340	0.0335	1.42%	20%	
Anions and Nutrient	ts (QC Lot: 620019)										
FJ2202259-004	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.165	0.164	0.621%	20%	
Organic / Inorganic	Carbon (QC Lot: 620015	()									
FJ2202259-004	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.31	2.29	0.02	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 620016	<u>, </u>									
FJ2202259-004	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	1.84	2.00	0.16	Diff <2x LOR	
Dissolved Metals (C	QC Lot: 618257)										
VA22B9691-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.250	mg/L	277	276	0.627%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	46.0	46.5	1.12%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 617303)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 617304)					
conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 617312)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 620308)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 620318)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 617305)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 617306)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 617308)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 617309)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 617310)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 617311)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 619371)					
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 620013)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 620014)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 620017)					
nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 620018)						
phosphorus, total dissolved	7723-14-0 E	E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 620019)						
ammonia, total (as N)	7664-41-7 E	E298	0.005	mg/L	<0.0050	
Organic / Inorganic Carbon (QCLot: 6200	015)					
carbon, dissolved organic [DOC]	[E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 6200	016)					
carbon, total organic [TOC]	[E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 618257)						
calcium, dissolved	7440-70-2 l	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 I	E421	0.005	mg/L	<0.0050	

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Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water				Laboratory Co.	ntrol Sample (LCS)	Report		
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 617302)								
рН	E108		pH units	7 pH units	99.7	98.0	102	
Physical Tests (QCLot: 617303)								
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	229 mg/L	113	75.0	125	
alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	108	85.0	115	
Physical Tests (QCLot: 617304)								
conductivity	E100	1	μS/cm	146.9 μS/cm	99.4	90.0	110	
Physical Tests (QCLot: 617312)								
colour, true	E329	5	CU	100 CU	103	85.0	115	
Physical Tests (QCLot: 620308)								
solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	95.0	85.0	115	
Physical Tests (QCLot: 620318)								
solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	102	85.0	115	
Anions and Nutrients (QCLot: 617305)								
fluoride	16984-48-8 E235.F	0.02	mg/L	1 mg/L	94.6	90.0	110	
Anions and Nutrients (QCLot: 617306)								
chloride	16887-00-6 E235.CI	0.5	mg/L	100 mg/L	97.4	90.0	110	
Anions and Nutrients (QCLot: 617308)								
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	98.1	90.0	110	
Anions and Nutrients (QCLot: 617309)								
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	95.0	90.0	110	
Anions and Nutrients (QCLot: 617310)								
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	99.0	90.0	110	
Anions and Nutrients (QCLot: 617311)								
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	0.03 mg/L	92.3	80.0	120	
Anions and Nutrients (QCLot: 619371)								
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	10 mg/L	101	85.0	115	
Anions and Nutrients (QCLot: 620013)								
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	4 mg/L	93.4	75.0	125	
Anions and Nutrients (QCLot: 620014)								
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	0.05 mg/L	90.5	80.0	120	
Anions and Nutrients (QCLot: 620017)								
nitrogen, total	7727-37-9 E366	0.03	mg/L	0.5 mg/L	104	75.0	125	

Page : 8 of 10 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report		
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 620018)									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	93.0	80.0	120	
Anions and Nutrients (QCLot: 620019)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115	
Organic / Inorganic Carbon (QCLot: 620015)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	100	80.0	120	
Organic / Inorganic Carbon (QCLot: 620016)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	106	80.0	120	
Dissolved Metals (QCLot: 618257)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	102	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	

Page : 9 of 10 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik	e (MS) Report		
					Spil	ke	Recovery (%)	Recovery	Limits (%)	
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	ents (QCLot: 617305)									
FJ2202261-018	Anonymous	fluoride	16984-48-8	E235.F	0.987 mg/L	1 mg/L	98.7	75.0	125	
Anions and Nutri	ents (QCLot: 617306)									
FJ2202261-018	Anonymous	chloride	16887-00-6	E235.CI	102 mg/L	100 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 617308)									
FJ2202261-018	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 617309)									
FJ2202261-018	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.500 mg/L	0.5 mg/L	100	75.0	125	
Anions and Nutri	ents (QCLot: 617310)									
FJ2202261-018	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125	
Anions and Nutri	ents (QCLot: 617311)									
FJ2202261-018	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0336 mg/L	0.03 mg/L	112	70.0	130	
Anions and Nutri	ents (QCLot: 619371)									
FJ2202227-002	Anonymous	silicate (as SiO2)	7631-86-9	E392	9.46 mg/L	10 mg/L	94.6	75.0	125	
Anions and Nutri	ents (QCLot: 620013)									
FJ2202273-001	MD	Kjeldahl nitrogen, total [TKN]		E318	2.46 mg/L	2.5 mg/L	98.6	70.0	130	
Anions and Nutri	ents (QCLot: 620014)									
FJ2202259-004	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0482 mg/L	0.05 mg/L	96.4	70.0	130	
Anions and Nutri	ents (QCLot: 620017)									
FJ2202261-017	Anonymous	nitrogen, total	7727-37-9	E366	ND mg/L	0.4 mg/L	ND	70.0	130	
Anions and Nutri	ents (QCLot: 620018)									
FJ2202261-017	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0476 mg/L	0.05 mg/L	95.3	70.0	130	
Anions and Nutri	ents (QCLot: 620019)									
FJ2202261-017	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0950 mg/L	0.1 mg/L	95.0	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 620	015)								
FJ2202261-017	Anonymous	carbon, dissolved organic [DOC]		E358-L	4.87 mg/L	5 mg/L	97.3	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 620	016)								
FJ2202261-017	Anonymous	carbon, total organic [TOC]		E355-L	5.45 mg/L	5 mg/L	109	70.0	130	

Page : 10 of 10 Work Order : FJ2202273

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water						Matrix Spil	ke (MS) Report			
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 618257) - cont	tinued								
VA22B9691-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	

Chain of Custody (COC) / Analytical Request Form



Canada Toll Free: 1 800 668 9878

COC Number: 2022-Aug-MON8/9- Day 3

Page

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Report To	Contact and company name below will appear on the final report		Danast / E			-													200000000000000000000000000000000000000		
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Contact:	Leah Hull	7	ormat:									surcharges									
Phone:	250-334-3042	4	ts to Criteria on Report -		,							% rush surc % rush sum				AFFI	X ALS I	BARGOD	E LAE	BEL HE	RE
. ,,,,,,,,,	Company address below will appear on the final report	Select Distributi		MAIL F								% rush sur					(#	ALS use	only)		
Street:	600 Comox Rd.		hull@ecofishresea			10	lay (E) i	f receiv	ed by 3	ipm M-	- 100'	% rush surd - 200% rus	tharge min	nimum	litiona						
City/Province:	Courtenay, BC	Email 1 or Fax	tkasubuchi@ecofi			🗌 fee	s may a	aply to	rush re	quests (n week	ends, statut	cory holida	ays and r	non-						
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ALS Account #	# / Quote #: VA22-ECOF100-004	AFE/Cost Center:	4453544446044600000000000000000000000000	PO#		CONTAINE	S. S.			Total					ļ						(se
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Are samples for	human consumption/ use? gmann@azimuthgroup.	ca	imcivor@azimutho	roup.ca			00.03,003,00.00	SOURCE ALTONOMY			CONTRACTOR CO.	URES *C			****	***************************************	N-2-1000 ROSSON	EMPERA	May report	the season of the	
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Failure to complete all portions of this form may delay analysis. Please filt include complete all portions of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Chain of Custody (COC) / Analytical Request Form

coc number: 2022-Aug-MON8/9- Day 3



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Released by:		☐ YES	Are samples for t	Are samples taken	Am camples take	Drinking												١	ALS Sample # (ALS use only)	ALS Lab Work Order#	LSD:	PO / AFE:	Job #:	ALS Account # / Quote #			Company:		Invoice To	Postal Code:	City/Province:	Street		Phone:	Contact:	Company:	Report To
BKM Date 22- Aug-1820	SHIPMENT RELEASE (client use)	☑ NO	Are samples for human consumption/ use?	Are samples laken from a Regulated DW System r ☐ YES ☑ NO		Drinking Water (DW) Samples (client use)		Telephone: + 1 250 261 5517			MD-FB-	MD	PR-2.81	PDT-B- FJCCUCCIO	Mark Order Heleign	Fort St. John		HEA-	Sample Identification and/or Coordinates (This description will appear on the report)	Order # (ALS use only):		1200-25.03.02	Surface water MON8/9- no metals	/ Quote #: VA22-ECOF100-004	Project Information	accountspayable@ecofishresearch.com	Ecofish Research Ltd.	Copy of Invoice with Report 🔲 YES 🗵 NO	Same as Report To ☐ YES ☑ NO	V9N 3P6	Courtenay, BC	600 Comox Rd.	Company address below will appear on the final report	250-334-3042	Leah Hull	E∞fish Research Ltd.	Contact and company name below will appear on the final report
2021 Time Received by		. for report: csuzanne@e	mann@azimuthgroup.ca	Please send Azin		Notes / Specify Limits for				<u>ار</u> ر				Ò	3 8				or Coordinates on the report)	ALS Contact:	Location:	Requisitioner	Major/Minor Code	AFE/Cost Center		Email 2	Email 1	Select I		Email 3	Email 2	Email 1 or Fax		☑ Comp	Merge	Select I	he final report
ed by:	INITIAL SHIPMEN	Add. for report: csuzanne@ecofishresearch.com,kganshorn@ecofishresearch.com	imcivor@azimuthgroup.ca	Please send Azimuth a copy of the data in their EDD format:	(Excel CUC only)	Notes / Specify Limits for result evaluation by selecting from drop-down below				ir C	0	22-140-2							Date (dd-mmm-yy)	untact: Sneha Sansare	n: ·	tioner	or Code:	Center	Oil and Gas Required Fields (client use)		Email 1 or Fax accountspayable(Select Invoice Distribution: 🗵 🖭	Invoice Recipients	,	tkasubuchi@ecofishresearch.com	or Fax Ihull@ecofishresearch.com	Select Distribution: 🖸 EMAIL	 Compare Results to Criteria on Report - provide details below if box checked 	Merge QC/QC! Reports with COA ☑ YES	Select Report Format:	Reports / Recipients
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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

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

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

4



CERTIFICATE OF ANALYSIS

Work Order : FJ2202286

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 23-Aug-2022 18:36

Date Analysis Commenced : 29-Aug-2022

Issue Date : 16-Sep-2022 17:05

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia

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Work Order : FJ2202286

Client : Ecofish Research Ltd Project

: Site C MMP - Surface Water



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Sub-Matrix: Water			C	ient sample ID	PD3-A	PD3-B	 	
(Matrix: Water)								
			Client samp	oling date / time	23-Aug-2022 13:20	23-Aug-2022 13:20	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202286-001	FJ2202286-002	 	
					Result	Result	 	
Physical Tests								
alkalinity, total (as CaCO3)		E290	1.0	mg/L	88.3		 	
conductivity		E100	2.0	μS/cm	201		 	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	100		 	
pH		E108	0.10	pH units	8.17		 	
solids, total suspended [TSS]		E160	3.0	mg/L	9.3		 	
Anions and Nutrients								
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50		 	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.044		 	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0576		 	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0018		 	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	15.3		 	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.24		 	
carbon, total organic [TOC]		E355-L	0.50	mg/L	2.92		 	
Ion Balance								
anion sum		EC101	0.10	meq/L	2.09		 	
cation sum		EC101	0.10	meq/L	2.07		 	
ion balance (APHA)		EC101	0.010	%	0.481		 	
Total Metals								
mercury, total	7439-97-6	E508-L	0.50	ng/L	0.83	1.07	 	
Dissolved Metals								
mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	 	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.8		 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.88		 	
dissolved MeHg filtration location		EP537	-	-	Field	Field	 	
dissolved mercury filtration location		EP509-L	-	-	Field	Field	 	
dissolved metals filtration location		EP421	-	-	Laboratory		 	
Speciated Metals								
methylmercury (as MeHg), total	22967-92-6	E536	0.020	ng/L	<0.020	0.022	 	
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.020	ng/L	<0.020	<0.020	 	

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Client : Ecofish Research Ltd

Project : Site C MMP - Surface Water



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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202286 Page : 1 of 10

Client Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact · Leah Hull Account Manager · Sneha Sansare Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

> Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone 250 334 3042 Telephone : +1 250 261 5517

Project Site C MMP - Surface Water **Date Samples Received** : 23-Aug-2022 18:36 PO Issue Date : 1200-25.03.05 : 16-Sep-2022 17:05

C-O-C number : 2022Aug Water MMP Sampler

: KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 2 No. of samples analysed : 2

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: 🗴 =	Holding time excee	edance ; 🔻	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD3-A	E235.CI	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PD3-A	E235.F	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD3-A	E235.NO3-L	23-Aug-2022	30-Aug-2022	3 days	7 days	36	30-Aug-2022	3 days	0 days	✓
						EHT				
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	5005 NOO 1									
PD3-A	E235.NO2-L	23-Aug-2022	30-Aug-2022				30-Aug-2022	3 days	7 days	*
										EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE	E235.SO4	00 4 0000	20 4 2022				20 4 2022	00 4	7 -1	✓
PD3-A	E235.SU4	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	•
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ot)									
Pre-cleaned amber glass - dissolved (lab preserved) PD3-A	E509-L	23-Aug-2022	24 Aug 2022				24 Aug 2022	20 days	O days	✓
PD3-A	E309-L	23-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	8 days	•
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ot)									
Pre-cleaned amber glass - dissolved (lab preserved) PD3-B	E509-L	23-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	8 days	√
FD3-0	E309-L	23-Aug-2022	51-Aug-2022				51-Aug-2022	20 uays	o uays	▼

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



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

Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD3-A	E421	23-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	·I)									
Amber glass dissolved (sulfuric acid) PD3-A	E358-L	23-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	9 days	√
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PD3-A	E355-L	23-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	9 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PD3-A	E290	23-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	7 days	√
Physical Tests : Conductivity in Water										
HDPE PD3-A	E100	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Physical Tests : pH by Meter										
HDPE PD3-A	E108	23-Aug-2022	30-Aug-2022				30-Aug-2022	0.25 hrs	3.25 hrs	* EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE PD3-A	E160	23-Aug-2022					29-Aug-2022	7 days	6 days	√
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) PD3-A	E537	23-Aug-2022	02-Sep-2022	180 days	10 days	✓	07-Sep-2022	180 days	5 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) PD3-B	E537	23-Aug-2022	02-Sep-2022	180 days	10 days	✓	07-Sep-2022	180 days	5 days	✓

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: Water

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

iddix Tutoi							Tiolaing time exec		******	riolaling in
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation					
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
PD3-A	E536	23-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	15 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
PD3-B	E536	23-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	15 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)							•			
Pre-cleaned amber glass - total (lab preserved)										
PD3-A	E508-L	23-Aug-2022	30-Aug-2022	28	7 days	✓	30-Aug-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD3-B	E508-L	23-Aug-2022	30-Aug-2022	28 days	7 days	✓	30-Aug-2022	28 days	0 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Quality Control Parameter Frequency Compliance

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

Matrix: Water Quality Control Sample Type			ion: × = QC frequ	ount	,	Frequency (%)	<u> </u>
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)		40 200					
Alkalinity Species by Titration	E290	624669	1	15	6.6	5.0	1
Chloride in Water by IC	E235.CI	624672	1	12	8.3	5.0	
Conductivity in Water	E100	624670	1	14	7.1	5.0	<u> </u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	<u> </u>
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	
Fluoride in Water by IC	E235.F	624671	1	7	14.2	5.0	
Nitrate in Water by IC (Low Level)	E235.NO3-L	624673	1	11	9.0	5.0	
Nitrite in Water by IC (Low Level)	E235.NO2-L	624674	1	12	8.3	5.0	<u> </u>
pH by Meter	E108	624668	1	18	5.5	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	624675	1	15	6.6	5.0	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	625824	1	14	7.1	5.0	
Total Methylmercury in Water by GCAFS	E536	630059	1	20	5.0	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	√
TSS by Gravimetry	E160	624063	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	624669	1	15	6.6	5.0	1
Chloride in Water by IC	E235.CI	624672	1	12	8.3	5.0	✓
Conductivity in Water	E100	624670	1	14	7.1	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	624671	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624673	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624674	1	12	8.3	5.0	✓
pH by Meter	E108	624668	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	624675	1	15	6.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	625824	1	14	7.1	5.0	✓
Total Methylmercury in Water by GCAFS	E536	630059	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	624063	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	624669	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.CI	624672	1	12	8.3	5.0	✓
Conductivity in Water	E100	624670	1	14	7.1	5.0	✓

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: Water

Evaluation: * = QC frequency outside specification: \checkmark = QC frequency within specification.

Matrix: Water		Evaluation	on: × = QC trequ	ency outside sp	ecification; ✓ = 0	QC frequency wi	tnın specificatio
Quality Control Sample Type				ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	624671	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624673	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624674	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	624675	1	15	6.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	625824	1	14	7.1	5.0	✓
Total Methylmercury in Water by GCAFS	E536	630059	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	624063	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.CI	624672	1	12	8.3	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	✓
Fluoride in Water by IC	E235.F	624671	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624673	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624674	1	12	8.3	5.0	✓
Sulfate in Water by IC	E235.SO4	624675	1	15	6.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	625824	1	14	7.1	5.0	✓
Total Methylmercury in Water by GCAFS	E536	630059	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.CI Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Vancouver - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Client : Ecofish Research Ltd
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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355	Water		Preparation for Total Organic Carbon by Combustion
	Vancouver - Environmental			
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Total Methylmercury Water Preparation	EP536 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202286

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

PO : 1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 10

Laboratory Department

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 23-Aug-2022 18:36

Date Analysis Commenced : 29-Aug-2022

Issue Date : 16-Sep-2022 17:05

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Position

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Signatories

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

3		, ,
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Laboratory Duplicate (DUP) Report

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

ub-Matrix: Water							Labore	tory Duplicate (D	or) Report		
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
hysical Tests (QC	<u> </u>										
J2202286-001	PD3-A	solids, total suspended [TSS]		E160	3.0	mg/L	9.3	9.3	0	Diff <2x LOR	
hysical Tests (QC	Lot: 624668)										
(S2203157-001	Anonymous	pH		E108	0.10	pH units	8.35	8.35	0.0958%	4%	
hysical Tests (QC	Lot: 624669)										
(S2203157-001	Anonymous	alkalinity, total (as CaCO3)		E290	1.0	mg/L	214	212	0.845%	20%	
hysical Tests (QC	Lot: 624670)										
S2203157-001	Anonymous	conductivity		E100	2.0	μS/cm	2060	2070	0.484%	10%	
nions and Nutrien	ts (QC Lot: 624671)										
J2202325-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.104	0.107	0.003	Diff <2x LOR	
nions and Nutrien	ts (QC Lot: 624672)										
J2202325-001	Anonymous	chloride	16887-00-6	E235.CI	2.50	mg/L	9.34	9.28	0.06	Diff <2x LOR	
nions and Nutrien	ts (QC Lot: 624673)										
J2202325-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0330	0.0327	0.0004	Diff <2x LOR	
nions and Nutrien	ts (QC Lot: 624674)										
J2202325-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0085	0.0082	0.0003	Diff <2x LOR	
nions and Nutrien	ts (QC Lot: 624675)										
J2202325-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	173	172	0.321%	20%	
Organic / Inorganic	Carbon (QC Lot: 6281	34)									
J2202286-001	PD3-A	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.24	3.12	0.12	Diff <2x LOR	
rganie / Inorganie	Carbon (QC Lot: 6281	25)									
J2202286-001	PD3-A	carbon, total organic [TOC]		E355-L	0.50	mg/L	2.92	2.78	0.14	Diff <2x LOR	
otal Metals (QC Lo						J	-	-			
C2201915-001	Anonymous	mercury, total	7439-97-6	E508-L	5.00	ng/L	6.82	7.66	0.84	Diff <2x LOR	
		merodry, tetal									
Dissolved Metals (C VA22C0108-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.500	mg/L	206	209	1.59%	20%	
A2200100-001	Anonymous	·	7439-95-4	E421	0.0500	•	56.8	55.2	2.84%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	30.0	55.2	2.04%	20%	
issolved Metals ((,					_					
C2201927-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	
peciated Metals (,										
C2201977-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000126	0.000143	12.2%	30%	
peciated Metals (0	OC Lot: 630059)										

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Speciated Metals (C	C Lot: 630059) - continu	ned											
FC2201977-001	Anonymous	methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000091	0.000089	0.000002	Diff <2x LOR			

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	
Solids, total suspended [TSS]	Qualifier
Physical Tests (QCLot: 624689) alkalinity, total (as CaCO3)	
Second Communication Second Communication	
Physical Tests (QCLot: 624670) conductivity	
Conductivity	
Anions and Nutrients (QCLot: 624671) fluoride 16984-48-8 E235.F 0.0.2 mg/L <0.020 Anions and Nutrients (QCLot: 624672) chloride 16887-00-6 E235.Cl 0.5 mg/L <0.50 Anions and Nutrients (QCLot: 624673) nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L <0.0050 Anions and Nutrients (QCLot: 624674) nitrite (as N) 14797-65-0 E235.NO2-L 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic (DOC) E358-L 0.5 mg/L <0.50 Organic / Inorganic Carbon (QCLot: 628135) carbon, total organic (TOC) E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 mg/L <0.50 Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.005 mg/L <0.050 mg/L <0.050 mg/L <0.050 mg/L <0.050	
Tituride 16984-48-8 E235.F 0.02 mg/L <0.020	
Anions and Nutrients (QCLot: 624672) chloride 16887-0-6 E235.Cl 0.5 mg/L <0.50 Anions and Nutrients (QCLot: 624673) nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L <0.0050 Anions and Nutrients (QCLot: 624674) nitrite (as N) 14797-65-0 E235.NO2-L 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC] E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 mg/L <0.50 Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050 magnesium, dissolved 7439-95-6 E421 0.05 mg/L <0.0050 magnesium, dissolved 7439-95-6 E421 0.05 mg/L <0.0050	
Chloride 16887-00-6 E235.Cl 0.5 mg/L <0.50	
Anions and Nutrients (QCLot: 624673) nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L <0.0050 Anions and Nutrients (QCLot: 624674) nitrite (as N) 14797-65-0 E235.NO2-L 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC] E358-L 0.5 mg/L <0.50 Organic / Inorganic Carbon (QCLot: 628135) carbon, total organic [TOC] E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 mg/L <0.50 Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050 magnesium, dissolved 7439-95-4 E421 0.005 mg/L <0.0050	
nitrate (as N) 14797-55-8 E235.NO3-L 0.005 mg/L <0.0050 Anions and Nutrients (QCLot: 624674) 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) 0.3 mg/L <0.50 Carbon, dissolved organic [DOC] E358-L 0.5 mg/L <0.50 Organic / Inorganic Carbon (QCLot: 628135) E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) 7439-97-6 E508-L 0.5 ng/L <0.50 Dissolved Metals (QCLot: 624762) 0.5 mg/L <0.050 mg/L <0.050 magnesium, dissolved 7439-97-4 E421 0.05 mg/L <0.050	
Anions and Nutrients (QCLot: 624674) nitrite (as N)	
Intrite (as N) 14797-65-0 E235.NO2-L 0.001 mg/L <0.0010 Anions and Nutrients (QCLot: 624675) sulfate (as SO4) 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC]	
Anions and Nutrients (QCLot: 624675) sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC] E358-L 0.5 mg/L <0.50 Organic / Inorganic Carbon (QCLot: 628135) carbon, total organic [TOC] E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 mg/L <0.50 Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050 magnesium, dissolved 7439-95-4 E421 0.005 mg/L <0.0050	
Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L <0.30 Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC] E358-L 0.5 mg/L <0.50 Organic / Inorganic Carbon (QCLot: 628135) carbon, total organic [TOC] E355-L 0.5 mg/L <0.50 Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 ng/L <0.50 Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050 magnesium, dissolved 7439-95-4 E421 0.005 mg/L <0.0050	
Organic / Inorganic Carbon (QCLot: 628134) carbon, dissolved organic [DOC] E358-L 0.5 mg/L <0.50	
Carbon, dissolved organic [DOC]	
Organic / Inorganic Carbon (QCLot: 628135) carbon, total organic [TOC] E355-L 0.5 mg/L <0.50	
Carbon, total organic [TOC]	
Total Metals (QCLot: 625824) mercury, total 7439-97-6 E508-L 0.5 ng/L <0.50	
Dissolved Metals (QCLot: 624762) E508-L 0.5 ng/L <0.50 calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050	
Dissolved Metals (QCLot: 624762) calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050	
calcium, dissolved 7440-70-2 E421 0.05 mg/L <0.050	
magnesium, dissolved 7439-95-4 E421 0.005 mg/L <0.0050	
Dissolved Metals (QCI at: 626630)	
Discorred Metals (4020th 62000)	
mercury, dissolved 7439-97-6 E509-L 0.5 ng/L <0.50	
Speciated Metals (QCLot: 627800)	
methylmercury (as MeHg), dissolved 22967-92-6 E537 0.00002 µg/L <0.000020	
Speciated Metals (QCLot: 630059)	
methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L <0.000020	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water	Laboratory Control Sample (LCS) Report											
					Spike Recovery (%) Recovery Limits (%)							
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Physical Tests (QCLot: 624063)												
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	96.8	85.0	115				
Physical Tests (QCLot: 624668)												
рН		E108		pH units	7 pH units	100.0	98.0	102				
Physical Tests (QCLot: 624669)									•			
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	110	85.0	115				
Physical Tests (QCLot: 624670)									'			
conductivity		E100	1	μS/cm	146.9 μS/cm	101	90.0	110				
Anions and Nutrients (QCLot: 624671)												
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	94.7	90.0	110				
Anions and Nutrients (QCLot: 624672)												
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	98.9	90.0	110				
Anions and Nutrients (QCLot: 624673)												
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.6	90.0	110				
Anions and Nutrients (QCLot: 624674)									•			
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110				
Anions and Nutrients (QCLot: 624675)									'			
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110				
Organic / Inorganic Carbon (QCLot: 628134)												
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	99.8	80.0	120				
Organic / Inorganic Carbon (QCLot: 628135)												
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120				
Total Metals (QCLot: 625824)												
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	108	80.0	120				
Dissolved Metals (QCLot: 624762)												
calcium, dissolved	7440-70-2		0.05	mg/L	50 mg/L	97.2	80.0	120				
magnesium, dissolved	7439-95-4		0.005	mg/L	50 mg/L	102	80.0	120				
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	107	80.0	120				
Speciated Metals (QCLot: 627800)												
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	89.2	70.0	130				
Speciated Metals (QCLot: 630059)												

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water		Laboratory Control Sample (LCS) Report									
		Spike	Recovery (%)	Recovery	Limits (%)						
Analyte	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Speciated Metals (QCLot: 630059) - cont	tinued										
methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	76.1	70.0	130			

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spik	e (MS) Report	(MS) Report			
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutr	ients (QCLot: 624671)									
KS2203157-001	Anonymous	fluoride	16984-48-8	E235.F	19.8 mg/L	20 mg/L	99.1	75.0	125	
Anions and Nutr	ients (QCLot: 624672)									
KS2203157-001	Anonymous	chloride	16887-00-6	E235.CI	1990 mg/L	2000 mg/L	99.6	75.0	125	
Anions and Nutr	ients (QCLot: 624673)									
KS2203157-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	50 mg/L	ND	75.0	125	
Anions and Nutr	ients (QCLot: 624674)									
KS2203157-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	9.88 mg/L	10 mg/L	98.8	75.0	125	
Anions and Nutr	ients (QCLot: 624675)									
KS2203157-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	2050 mg/L	2000 mg/L	102	75.0	125	
Organic / Inorga	nic Carbon (QCLot: 62	8134)								
FJ2202315-002	Anonymous	carbon, dissolved organic [DOC]		E358-L	5.44 mg/L	5 mg/L	109	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 62	8135)								
FJ2202315-002	Anonymous	carbon, total organic [TOC]		E355-L	5.13 mg/L	5 mg/L	103	70.0	130	
Total Metals (Q0	CLot: 625824)									
FC2201915-002	Anonymous	mercury, total	7439-97-6	E508-L	58.7 ng/L	50 ng/L	117	70.0	130	
Dissolved Metals	(QCLot: 624762)									
KS2203131-001	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 626630)									
FC2201927-002	Anonymous	mercury, dissolved	7439-97-6	E509-L	4.56 ng/L	5 ng/L	91.1	70.0	130	
Speciated Metals	(QCLot: 627800)									
FJ2202286-001	PD3-A	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00214 μg/L	0.0025 μg/L	85.6	60.0	140	
Speciated Metals	(QCLot: 630059)									
FJ2202286-001	PD3-A	methylmercury (as MeHg), total	22967-92-6	E536	0.00172 μg/L	0.0025 μg/L	68.8	60.0	140	

Page : 10 of 10 Work Order : FJ2202286

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



ALS Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC #: 2022AUG WATER

	www.alsglobal.com	Report Format / Distribution					Scient Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply														
eport To	Contact and company						Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply														
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ontact:	Leah Hull			Quality Control (C Zompare Results t	¥ 0 17		ay [P			- 1	NG I	Sa	ame Da	y, Wee							
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	Company address below wi	ill appear on the final re	port	Select Distributio	n:	☐MAIL ☐FA		Date and Time Required for all EAP TATS													
Street:	600 Comox Rd.				inun@econsinesea	brasearch com	011.00	For tests that can not be performed according to the service level selected, you will be contacted.													
City/Province:	Courtenay, BC			Citian 2	tkasubuchi@ecofis waterqualitylabdata		h com		Analysis Request												
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Company:	Ecofish Research Ltd.				accountspayable@	econsilesea cit.	COM		in Water by GCAFS	CVAFS (Low Level	٩	(SS)	1	1	- 1				1 [ıρ	
Contact:	accountspayable@ecofis	shresearch.com		Email 2	and Gas Required	Fields (client u	501	GCAFS	ŏ	<u>}</u>	E.	Ę.	1		1	- 1			1 1	äine	
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	rk Order# (lab use only	Nia		ALS Contact:	Sneha Sansare	Sampler:	Kevin Ganshor	Total Methylmer (0.02 ng/L)	I Met	Mercury = 0.5 ng/	H Me	General (Anions		LO I		ONBALANCE-BG-CI					
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	taken from a Regulated DW			in their EDD for	mat:		acks		_	_	s [C	ustody	y seal i	ntact	res	☐ No	ш			
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Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number:

COC #: 2022AUG SED

OCTOBER 2015 FRONT

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(www.alsglobal.com		Ca	nada Tol	i Free: 1 800 6	68 9878																
Report To	Contact and comp	any name below will appe	ear on the final rep	er on the final report Report Format / Distribution							el Below	- Please	confirm	all E&P	TATs wil	th your /	AM - surr	charges 1	will appl	у		
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ALS Lab Wo	ork Order# (lab use on		ALS Contact: Sneha Sansare Sampler: Kevin Ganshor			<u>-</u> ح	Methylmercury	Size (Pipette	, TOC in	meter (1:2 Soil: water extraction)	on Ignition at 375 degrees	Content by										
ALS Sample #	Sa	mple Identification	and/or Coord	linates	•	Date	Time	Samula Tuna	\ E	ly fi	Particle	TC, TIC,	by n	son	Moisture							
(lab use only)	(1	This description will a	appear on the r	eport)		(dd-mmm-yy)	(hh:mm)	Sample Type	Tot	Met	Par	TC,	pH by	Loss	Moi		Ш					
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	PD4							Sediment	R	R	R	R	R	R	R						2	
	PD3					23 AUG 22		Sediment	R	R	R	R	R	R	R						2	
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Special Instructions			ictions / S	pecify Criteria to	add on report by cli	cking on the drop	p-down list below				SAME	LECC	NDIT	ON A	SRE	CEIVE	±D (lab) use	only)	-		
Drinking Water (DW) Samples¹ (client use)				(electronic COC only)				Frozen SIF Observations Yes No														
Are samples taken from a Regulated DW System?			anca VA2	.22-ECOF100-004 (MMP Sediment) for parameters/detection limits				Ice Pac	cks		Ice (Cubes		Cust	ody se	eal inta	act '	Yes [☐ No			
☐ YES ☑ NO STANDARD				Ex-2001 197-504 (minic Securion) for parameters/detection limits					Cooling Initiated													
Are samples for human drinking water use?									000000000000000000000000000000000000000		LER TI	MPERA	TURES	i °C			FINAL (COOLE	R TEMPER	ATURES °C		
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Released by:	25	Date: Au 23	2022	Time:	Received by:	and the state of t	Date:	23-22	Time:	6	Rece	eived t	by:				Date:	:			Time:	

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

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

100

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

25.0

MICHOLMOICA

Canada Toll Free: 1 800 668 9878

COC #: 2022AUG WATER MMP

Affix ALS barcode label here

(lab use only)

ALS Sample # (lab use only) ALS Account # / Quote #: VA22-ECOF100-004 (MMP Surface Water) ALS Lab Work Order # (lab use only) samples taken from a Regulated DW System Drinking Water (DW) Samples (client use) ples for human drinking water use? O YES 250-334-3042 Site C MMP - Surface Water V9N 3P6 Ecofish Research Ltd. accountspayable@ecofishresearch.com Ecofish Research Ltd. Copy of Invoice with Report Same as Report To Courtenay, BC 600 Comox Rd. Leah Hull W4 Beggate 1200-25.03.05 Company address below will appear on the final report S S mact and company name below will appear on the final report Sample Identification and/or Coordinates (This description will appear on the report) O YES | \delta | \ FJAE Shipping & Receiving رم ح Expedite Call Out NO NO Special Instructions / Specify Criteria to add on Priority アスの # of Coolers LAir Ground # of Carboys Please send Azimuth a copy of the data in their EDD format: Time: ort St. John ALS Contact: AFE/Cost Center Email 1 or Fax Compare Results to Criteria on Report - provide details below if box checked Quality Control (QC) Report with Report ☑YES ☐NO Work Order Reference FJ2202286 ocation: mail 1 or Fax Select Distribution: elect Report Format: ajor/Minor Code Oil and Gas Required Fields (client use) 23-246-22 thull@ecofishresearch.com, kganshorn@ecofishr accountspayable@ecofishresearch.com (kasubuchi@ecofishresearch.com Sneha Sansare Date NATE OF THE PERSON Invoice Distribution <u>당</u> NO. □ MAIC Routing Code 3,2 [3/20 (Mr.mm) Time SEDD (DIGITAL) __ ₹ Sample Type Water 225.30 Ice Packs Cooling Initiated Ó Ŧ 3 day [P3] 4 day [P4] Regular [R] Received by: Ŧ tce Cubes red for all E&P TATS: ☑ Standard TAT if received by 3 pm - business days - no surchar æ æ Seneral (Anions, Cond., Total Alk, pH, TSS) æ æ 20 FINAL SHIPMENT Custody seal intact æ æ æ æ æ æ 70 æ æ -lardness F æ 20 æ Ŋ æ æ 70 20 æ DOC æ tevel selected, you will be contacted. Same Day, Weekend or Statutory holiday (E0) Business day [E1] ᅏ æ סג æ æ 70 ONBALANCE-BC-CL æ Þ æ æ (F/P) below Ύes 2 Z es apply œ œ Number of Containers œ

nplete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the User actnowledges and agrees with the Terms or samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form. d on the back page of the white - report copy



CERTIFICATE OF ANALYSIS

Work Order : FJ2202287

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-Mon8/9-Day 4

Sampler : PD

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 23-Aug-2022 18:54

Date Analysis Commenced : 25-Aug-2022

Issue Date : 09-Sep-2022 17:47

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Erin Sanchez		Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 4 Work Order : FJ2202287

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units
-	•

<: less than.

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

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

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

Qualifiers

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

>: greater than.

Page : 3 of 4 Work Order : FJ2202287

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	Pouce	PD4	KR	PD3	
(Matrix: Water)									
			Client samp	ling date / time	23-Aug-2022 10:05	23-Aug-2022 10:55	23-Aug-2022 12:40	23-Aug-2022 13:20	
Analyte	CAS Number	Method	LOR	Unit	FJ2202287-001	FJ2202287-002	FJ2202287-003	FJ2202287-004	
					Result	Result	Result	Result	
Physical Tests									
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	184	88.3	192	88.9	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	9.0	<1.0	14.2	<1.0	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	4.5	<1.0	7.1	<1.0	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	193	88.3	206	88.9	
colour, true		E329	5.0	CU	13.9	10.6	10.2	6.0	
conductivity		E100	2.0	μS/cm	1100	192	420	192	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	416	106	208	102	
рН		E108	0.10	pH units	8.40	8.15	8.54	8.17	
solids, total dissolved [TDS]		E162	10	mg/L	908	124	282	133	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	10.1	29.7	<3.0	
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0183	<0.0050	0.0052	<0.0050	
chloride	16887-00-6	E235.CI	0.50	mg/L	21.8	<0.50	1.08	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.252	0.038	0.106	0.037	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.530	0.077	0.324	0.080	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 DLDS	0.0543	<0.0050	0.0566	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	0.0016	<0.0010	0.0016	
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.523	0.145	0.301	0.136	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0120	0.0128	0.0222	0.0109	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0045	<0.0020	<0.0020	<0.0020	
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	0.60	4.20	2.83	4.20	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	396	15.4	36.6	15.2	
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	11.7	4.01	7.89	2.97	
carbon, total organic [TOC]		E355-L	0.50	mg/L	12.1	3.40	8.28	2.89	
Ion Balance									
anion sum		EC101	0.10	meq/L	12.7	2.09	4.91	2.10	
cation sum		EC101	0.10	meq/L	13.2	2.19	5.16	2.12	

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Work Order : FJ2202287

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	Pouce	PD4	KR	PD3	
(Matrix: Water)									
			Client samp	ling date / time	23-Aug-2022 10:05	23-Aug-2022 10:55	23-Aug-2022 12:40	23-Aug-2022 13:20	
Analyte	CAS Number	Method	LOR	Unit	FJ2202287-001	FJ2202287-002	FJ2202287-003	FJ2202287-004	
					Result	Result	Result	Result	
Ion Balance									
ion balance (APHA)		EC101	0.010	%	1.93	2.34	2.48	0.474	
Dissolved Metals									
calcium, dissolved	7440-70-2	E421	0.050	mg/L	102	30.7	49.5	29.1	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	39.3	7.02	20.6	7.24	
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202287** Page : 1 of 19

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1

Fort St. John. British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 23-Aug-2022 18:54

 PO
 : 1200-25.03.02
 Issue Date
 : 09-Sep-2022 17:47

C-O-C number : 2022-Aug-Mon8/9-Day 4

Sampler : PD

Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: × =	Holding time exce	edance ; •	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pre	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) KR	E298	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence									1	
Amber glass total (sulfuric acid) PD3	E298	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD4	E298	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	√
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Pouce	E298	23-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	7 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE KR	E235.CI	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	√
Anions and Nutrients : Chloride in Water by IC										
HDPE PD3	E235.CI	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	√
Anions and Nutrients : Chloride in Water by IC									. '	
HDPE PD4	E235.Cl	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓

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Client : Ecofish Research Ltd



Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; •	✓ = Within	Holding ¹
Analyte Group	Method	Sampling Date	Ext	traction / P	reparation			Analysis		
Container / Client Sample ID(s)			Preparation	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
nions and Nutrients : Chloride in Water by IC			Date	Nec	Actual			Nec	Actual	
HDPE										
Pouce	E235.CI	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colour	imetry (Ultra Trace Level 0.001									
HDPE										
KR	E378-U	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colour	imetry (Ultra Trace Level 0.001									
HDPE										
PD3	E378-U	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
nions and Nutrients : Dissolved Orthophosphate by Colour	imetry (Ultra Trace Level 0.001									
HDPE										
PD4	E378-U	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
urione and Nutwinster Discoluted Onther beauthors by Colour	simpature // Utara Turana Lavral 0.004									
nions and Nutrients : Dissolved Orthophosphate by Colour	imetry (Offra Trace Level 0.001									
HDPE										
Pouce	E378-U	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
nions and Nutrients : Fluoride in Water by IC										
HDPE							T			
KR	E235.F	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
nions and Nutrients : Fluoride in Water by IC HDPE							T			
PD3	E235.F	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
nions and Nutrients : Fluoride in Water by IC										
HDPE PD4	E235.F	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
FD4	E230.F	20-Aug-2022	20-Mug-2022				20-Aug-2022	20 days	∠ uays	•
nions and Nutrients : Fluoride in Water by IC										
HDPE										
Pouce	E235.F	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE KR	E235.NO3-L	23-Aug-2022	25-Aug-2022	3 days	2 days	✓	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD3	E235.NO3-L	23-Aug-2022	25-Aug-2022	3 days	2 days	✓	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD4	E235.NO3-L	23-Aug-2022	25-Aug-2022	3 days	2 days	✓	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Pouce	E235.NO3-L	23-Aug-2022	25-Aug-2022	3 days	2 days	✓	25-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE KR	E235.NO2-L	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PD3	E235.NO2-L	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	√
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PD4	E235.NO2-L	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Pouce	E235.NO2-L	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE KR	E392	23-Aug-2022					25-Aug-2022	28 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PD3	E392	23-Aug-2022					25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PD4	E392	23-Aug-2022					25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE Pouce	E392	23-Aug-2022					25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC									1	
HDPE KR	E235.SO4	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PD3	E235.SO4	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PD4	E235.SO4	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Pouce	E235.SO4	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) KR	E375-T	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD3	E375-T	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ext	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD4	E375-T	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) Pouce	E375-T	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) KR	E318	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)									1	
Amber glass total (sulfuric acid) PD3	E318	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PD4	E318	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) Pouce	E318	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	9 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) KR	E366	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry								·		
Amber glass total (sulfuric acid) PD3	E366	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) PD4	E366	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Pouce	E366	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) KR	E372-U	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD3	E372-U	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD4	E372-U	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Pouce	E372-U	23-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) KR	E421	23-Aug-2022	25-Aug-2022				26-Aug-2022	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD3	E421	23-Aug-2022	25-Aug-2022				26-Aug-2022	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD4	E421	23-Aug-2022	25-Aug-2022				26-Aug-2022	180 days	3 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Pouce	E421	23-Aug-2022	25-Aug-2022				26-Aug-2022	180 days	3 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Method Sampling Date Extraction / Preparation Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 23-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 7 days ✓ KR Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L ✓ PD3 23-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 7 days ----Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) PD4 E358-L 23-Aug-2022 28 days 7 days ✓ 30-Aug-2022 30-Aug-2022 Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L Pouce 23-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 7 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 23-Aug-2022 30-Aug-2022 KR 30-Aug-2022 28 days 7 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 23-Aug-2022 30-Aug-2022 ✓ PD3 30-Aug-2022 28 days 7 davs Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PD4 E355-L 23-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 7 days ✓ Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) ✓ Pouce E355-L 23-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 7 days Physical Tests: Alkalinity Species by Titration HDPE E290 KR 23-Aug-2022 25-Aug-2022 25-Aug-2022 14 days 2 days ✓ --------

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE PD3	E290	23-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PD4	E290	23-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Pouce	E290	23-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE KR	E329	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD3	E329	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD4	E329	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Pouce	E329	23-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE KR	E100	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE PD3	E100	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Extraction / Preparation			Anal			is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
PD4	E100	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Pouce	E100	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE KR	E108	23-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	3.25 hrs	# EHTR-FM
Physical Tests : pH by Meter										
HDPE PD3	E108	23-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	3.25 hrs	# EHTR-FM
Physical Tests : pH by Meter										
HDPE PD4	E108	23-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	3.25 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE Pouce	E108	23-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	3.25 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE KR	E162	23-Aug-2022					29-Aug-2022	7 days	6 days	~
Physical Tests : TDS by Gravimetry										
HDPE PD3	E162	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE PD4	E162	23-Aug-2022					29-Aug-2022	7 days	6 days	~

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

							,		
Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
		Preparation			Eval	Analysis Date			Eval
		Date	Rec	Actual			Rec	Actual	
E162	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
E160	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
E160	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
E160	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
E160	23-Aug-2022					29-Aug-2022	7 days	6 days	✓
	E162 E160 E160	E162 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022	E162 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022	Preparation Date Holding Rec E162 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022	Method Sampling Date Extraction / Preparation Preparation Date Holding Times Rec Actual E162 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022 E160 XTraction Holding Times Rec	Method Sampling Date Extraction / Preparation Preparation Date Holding Times Rec Actual E162 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022 E160 23-Aug-2022	Method Sampling Date Extraction / Preparation Holding Times Rec Eval Analysis Date E162 23-Aug-2022 29-Aug-2022 E160 23-Aug-2022 29-Aug-2022 E160 23-Aug-2022 29-Aug-2022 E160 23-Aug-2022 29-Aug-2022	Method Sampling Date Extraction / Preparation Preparation Analysis Date Analysis Date Holding Times Rec Eval Analysis Date Holding Rec E162 23-Aug-2022 29-Aug-2022 7 days E160 23-Aug-2022 29-Aug-2022 7 days E160 23-Aug-2022 29-Aug-2022 7 days E160 23-Aug-2022 29-Aug-2022 7 days	Preparation Date Holding Times Rec Eval Analysis Date Holding Times Rec Actual E162 23-Aug-2022 29-Aug-2022 7 days 6 days E160 23-Aug-2022 29-Aug-2022 7 days 6 days E160 23-Aug-2022 29-Aug-2022 7 days 6 days E160 23-Aug-2022 29-Aug-2022 7 days 6 days

Legend & Qualifier Definitions

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

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type		·	C	ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	617797	1	8	12.5	5.0	1
Ammonia by Fluorescence	E298	624165	1	18	5.5	5.0	√
Chloride in Water by IC	E235.CI	617801	1	19	5.2	5.0	<u>√</u>
Colour (True) by Spectrometer (5 CU)	E329	617808	1	6	16.6	5.0	1
Conductivity in Water	E100	617798	1	17	5.8	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624168	1	12	8.3	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617807	1	16	6.2	5.0	1
Fluoride in Water by IC	E235.F	617800	1	9	11.1	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	617802	1	11	9.0	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	617803	1	18	5.5	5.0	1
pH by Meter	E108	617796	1	17	5.8	5.0	1
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	617804	1	19	5.2	5.0	√
TDS by Gravimetry	E162	623212	2	40	5.0	5.0	1
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624170	1	4	25.0	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624166	1	17	5.8	5.0	√
Total Nitrogen by Colourimetry	E366	624169	1	5	20.0	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624167	1	16	6.2	5.0	1
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624164	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	623197	2	40	5.0	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	617797	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	624165	1	18	5.5	5.0	_
Chloride in Water by IC	E235.CI	617801	1	19	5.2	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	617808	1	6	16.6	5.0	1
Conductivity in Water	E100	617798	1	17	5.8	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624168	1	12	8.3	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617807	1	16	6.2	5.0	1
Fluoride in Water by IC	E235.F	617800	1	9	11.1	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	617802	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	617803	1	18	5.5	5.0	<u>√</u>
pH by Meter	E108	617796	1	17	5.8	5.0	✓
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	617804	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	623212	2	40	5.0	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Ouglity Control Sample Type		. Evaluati	ion: × = QC rrequ		I		•
Quality Control Sample Type	Method	QC Lot #	QC	ount Regular	Actual	Frequency (%) Expected	Evaluation
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued		221172			05.0		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624170	1	4	25.0	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624166	1	17	5.8	5.0	✓
Total Nitrogen by Colourimetry	E366	624169	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624167	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624164	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	623197	2	40	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	617797	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	624165	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.CI	617801	1	19	5.2	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	617808	1	6	16.6	5.0	✓
Conductivity in Water	E100	617798	1	17	5.8	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624168	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617807	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	617800	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	617802	1	11	9.0	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	617803	1	18	5.5	5.0	✓
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	617804	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	623212	2	40	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624170	1	4	25.0	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624166	1	17	5.8	5.0	✓
Total Nitrogen by Colourimetry	E366	624169	1	5	20.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624167	1	16	6.2	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624164	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	623197	2	40	5.0	5.0	√
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	624165	1	18	5.5	5.0	1
Chloride in Water by IC	E235.CI	617801	1	19	5.2	5.0	<u>√</u>
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	<u> </u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624168	1	12	8.3	5.0	<u>√</u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	617807	1	16	6.2	5.0	<u> </u>
Fluoride in Water by IC	E235.F	617800	1	9	11.1	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	617802	1	11	9.0	5.0	
Nitrite in Water by IC (Low Level)	E235.NO2-L	617803	1	18	5.5	5.0	<u> </u>
Reactive Silica by Colourimetry	E392	619371	1	20	5.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	617804	1	19	5.2	5.0	<u> </u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624170	1	4	25.0	5.0	<u> </u>
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624166	1	17	5.8	5.0	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Matrix Fracti	Evaluation	QO IIOque	oney carolae ope	omounom,	Quinoquonoy wanin opcomounon.					
Quality Control Sample Type			Count			Frequency (%)				
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Matrix Spikes (MS) - Continued										
Total Nitrogen by Colourimetry	E366	624169	1	5	20.0	5.0	✓			
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624167	1	16	6.2	5.0	✓			
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624164	1	19	5.2	5.0	✓			

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	Vancouver -			with gravimetric measurement of the residue.
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			
	2	1		

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202287

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-Mon8/9-Day 4

Sampler : PD

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :+1 250 261 5517

Date Samples Received : 23-Aug-2022 18:54

Date Analysis Commenced : 25-Aug-2022

Issue Date : 09-Sep-2022 17:47

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

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Work Order : FJ2202287

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	ntory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
Physical Tests (QC	,										
FJ2202287-001	Pouce	рН		E108	0.10	pH units	8.40	8.40	0.00%	4%	
Physical Tests (QC	Lot: 617797)										
FJ2202287-001	Pouce	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	184	184	0.380%	20%	
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	9.0	8.4	0.6	Diff <2x LOR	
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	4.5	4.2	0.3	Diff <2x LOR	
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	193	193	0.0519%	20%	
Physical Tests (QC	Lot: 617798)										
FJ2202287-001	Pouce	conductivity		E100	2.0	μS/cm	1100	1090	0.548%	10%	
Physical Tests (QC	Lot: 617808)										
FJ2202287-001	Pouce	colour, true		E329	5.0	CU	13.9	15.3	1.4	Diff <2x LOR	
Physical Tests (QC	Lot: 623197)										
FJ2202287-002	PD4	solids, total suspended [TSS]		E160	3.0	mg/L	10.1	11.5	1.4	Diff <2x LOR	
Physical Tests (QC	L of: 623212)										
FJ2202287-002	PD4	solids, total dissolved [TDS]		E162	13	mg/L	124	128	4	Diff <2x LOR	
Physical Tests (QC	L ot: 622504)	,									
FJ2202299-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
	·	solido, total suspended [186]				9.=					
Physical Tests(QC FJ2202299-001	Anonymous	solids, total dissolved [TDS]		E162	20	mg/L	571	589	3.19%	20%	
	,	solids, total dissolved [TD5]		E 102	20	IIIg/L	571	369	3.1970	20%	
	ts (QC Lot: 617800)		10001 10 0	5005 F	0.000	,,				D:# 0 100	
VA22B9769-001	Anonymous	fluoride	16984-48-8	E235.F	0.200	mg/L	<0.200	<0.200	0	Diff <2x LOR	
	ts (QC Lot: 617801)										
VA22B9769-001	Anonymous	chloride	16887-00-6	E235.CI	5.00	mg/L	377	376	0.236%	20%	
Anions and Nutrien	ts (QC Lot: 617802)										
VA22B9769-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0500	mg/L	2.50	2.48	0.862%	20%	
Anions and Nutrien	ts (QC Lot: 617803)										
VA22B9769-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0100	mg/L	0.0102	<0.0100	0.0002	Diff <2x LOR	
Anions an <u>d Nutrien</u>	ts (QC Lot: 617804)										
VA22B9769-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	116	115	0.394%	20%	
Anions and Nutrien	ts (QC Lot: 617807)										
FJ2202287-001	Pouce	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	

Page : 4 of 10 Work Order : FJ2202287

Client : Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrien	ts (QC Lot: 619371)										
FJ2202227-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	6.39	6.38	0.142%	20%	
Anions and Nutrien	ts (QC Lot: 624164)										
FJ2202287-001	Pouce	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0120	0.0123	0.0003	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624165)										
FJ2202287-001	Pouce	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0183	0.0194	0.0010	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624166)										
FJ2202287-001	Pouce	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.530	0.514	3.08%	20%	
Anions and Nutrien	ts (QC Lot: 624169)										
FJ2202287-001	Pouce	nitrogen, total	7727-37-9	E366	0.030	mg/L	0.523	0.532	1.70%	20%	
Anions and Nutrien	ts (QC Lot: 624170)										
FJ2202287-001	Pouce	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0045	0.0047	0.0002	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 624167	7)									
FJ2202287-001	Pouce	carbon, total organic [TOC]		E355-L	0.50	mg/L	12.1	12.4	2.70%	20%	
Organic / Inorganic	Carbon (QC Lot: 624168	3)									
FJ2202287-001	Pouce	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	11.7	12.2	4.81%	20%	
Dissolved Metals (QC Lot: 618486)										
FJ2202295-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	34.9	36.0	3.28%	20%	
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	7.69	7.91	2.83%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 617797)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	1.4	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	1.4	
Physical Tests (QCLot: 617798)					
conductivity	E100	1	μS/cm	1.4	
Physical Tests (QCLot: 617808)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 623197)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 623212)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 623501)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 623508)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 617800)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 617801)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 617802)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 617803)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 617804)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 617807)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 619371)					
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 624164)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	

Page : 6 of 10 Work Order : FJ2202287

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 624165)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 624166)						
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 624169)						
nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 624170)						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	
Organic / Inorganic Carbon (QCLot: 62	24167)					
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 62	24168)					
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 618486)						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water	Laboratory Control Sample (LCS) Report										
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR Unit Concentration		LCS	Low	High	Qualifier			
Physical Tests (QCLot: 617796)											
pH		E108		pH units	7 pH units	100	98.0	102			
Physical Tests (QCLot: 617797)											
alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	103	75.0	125			
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	108	85.0	115			
Physical Tests (QCLot: 617798)											
conductivity		E100	1	μS/cm	146.9 μS/cm	96.5	90.0	110			
Physical Tests (QCLot: 617808)											
colour, true		E329	5	CU	100 CU	103	85.0	115			
Physical Tests (QCLot: 623197)											
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	91.5	85.0	115			
Physical Tests (QCLot: 623212)											
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	109	85.0	115			
Physical Tests (QCLot: 623501)											
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	104	85.0	115			
Physical Tests (QCLot: 623508)											
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	105	85.0	115			
Anions and Nutrients (QCLot: 617800)											
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.7	90.0	110			
Anions and Nutrients (QCLot: 617801)											
chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110			
Anions and Nutrients (QCLot: 617802)											
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110			
Anions and Nutrients (QCLot: 617803)											
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.6	90.0	110			
Anions and Nutrients (QCLot: 617804)											
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	104	90.0	110			
Anions and Nutrients (QCLot: 617807)											
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120			
Anions and Nutrients (QCLot: 619371)											
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	101	85.0	115			
Anions and Nutrients (QCLot: 624164)											
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	91.2	80.0	120			

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Client : Ecofish Research Ltd



Sub-Matrix: Water	Laboratory Control Sample (LCS) Report									
				Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Anions and Nutrients (QCLot: 624165)										
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115		
Anions and Nutrients (QCLot: 624166)										
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	99.2	75.0	125		
Anions and Nutrients (QCLot: 624169)										
nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	104	75.0	125		
Anions and Nutrients (QCLot: 624170)										
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	91.5	80.0	120		
Organic / Inorganic Carbon (QCLot: 624167)										
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	98.5	80.0	120		
Organic / Inorganic Carbon (QCLot: 624168)										
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120		
Dissolved Metals (QCLot: 618486)										
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120		
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.9	80.0	120		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik			
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
	ients (QCLot: 617800)									
VA22B9819-001	Anonymous	fluoride	16984-48-8	E235.F	0.998 mg/L	1 mg/L	99.8	75.0	125	
Anions and Nutri	ients (QCLot: 617801)									
VA22B9819-001	Anonymous	chloride	16887-00-6	E235.CI	105 mg/L	100 mg/L	105	75.0	125	
Anions and Nutri	ients (QCLot: 617802)									
VA22B9819-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.65 mg/L	2.5 mg/L	106	75.0	125	
Anions and Nutri	ients (QCLot: 617803)									
VA22B9819-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	
Anions and Nutri	ients (QCLot: 617804)									
VA22B9819-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	
Anions and Nutri	ients (QCLot: 617807)									
FJ2202287-002	PD4	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0296 mg/L	0.03 mg/L	98.6	70.0	130	
Anions and Nutri	ients (QCLot: 619371)									
FJ2202227-002	Anonymous	silicate (as SiO2)	7631-86-9	E392	9.46 mg/L	10 mg/L	94.6	75.0	125	
Anions and Nutri	ients (QCLot: 624164)									
FJ2202287-002	PD4	phosphorus, total	7723-14-0	E372-U	0.0488 mg/L	0.05 mg/L	97.6	70.0	130	
Anions and Nutri	ients (QCLot: 624165)									
FJ2202287-002	PD4	ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 624166)									
FJ2202287-002	PD4	Kjeldahl nitrogen, total [TKN]		E318	2.58 mg/L	2.5 mg/L	103	70.0	130	
Anions and Nutri	ients (QCLot: 624169)									
FJ2202287-002	PD4	nitrogen, total	7727-37-9	E366	0.407 mg/L	0.4 mg/L	102	70.0	130	
Anions and Nutri	ients (QCLot: 624170)									
FJ2202287-002	PD4	phosphorus, total dissolved	7723-14-0	E375-T	0.0482 mg/L	0.05 mg/L	96.4	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 62	24167)								
FJ2202287-002	PD4	carbon, total organic [TOC]		E355-L	5.19 mg/L	5 mg/L	104	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 62	24168)								
FJ2202287-002	PD4	carbon, dissolved organic [DOC]		E358-L	4.16 mg/L	5 mg/L	83.3	70.0	130	

Page : 10 of 10 Work Order : FJ2202287

Client : Ecofish Research Ltd



Sub-Matrix: Water		Matrix Spike (MS) Report												
	Spi	ke	Recovery (%)	Recovery										
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier				
Dissolved Metals	pissolved Metals (QCLot: 618486) - continued													
VA22B9732-001	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130					
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130					

Chain of Custody (COC) / Analytical Request Form



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coc Number: 2022-Aug-MON8/9- Day 4

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Report To	Contact and company name below will appo	ear on the final report	Reports / Re	ecipients		Turnaround Time (TAT) Requested															
Company:	Ecofish Research Ltd.	Select Report	Format: 🗵 PDF 🗵	EXCEL I EDO	(DIGITAL) [☑ Routine (R] if rea	eived by 3p	om M-F - r	no surchan	ges apply										
Contact:	Leah Hutl	Merge QC/Q	CI Reports with COA	☑ YES 📋 NO	□ N/A	4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum								AFFIX ALS BARCODE LABEL HE							
Phone:	250-334-3042	☑ Compare Re	Compare Results to Criteria of Report - provide details below if box criecker					3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum								IIY)					
1 110110.	Company address below will appear on the fin		Select Distribution:					2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum													
Street:	600 Comox Rd.	Email 1 or Fa	Email For Fax Intelligence Inte						Same day [E2] if received by 10am M-S - 200% rush surcharge. Addition- fees may apply to rush requests on weekends, statutory holidays and non-												
City/Province:	Courtenay, BC	Email 2						routine tests							d-mmer. Mene Areoff						
Postal Code:	V9N 3P6	Email 3	Email 3 waterqualitylabdata@ecofishresearch.com					Date and Time Required for all E&P TATs:									~				
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Company:	Ecofish Research Ltd.	Email 1 or Fa	Email 1 or Fax accountspayable@ecofishresearch.com							Preserved	(P) or Filte	ed and Pre	served (F/P)	below		1	품 불				
Contact:	accountspayable@ecofishresearch.com	Email 2	Email 2					F/P F		-				_	\vdash		교투				
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ALS Account #	# / Quote #: VA22-EC0F100-0	004 AFE/Cost Cente		PO#		ONT Anions,			Ę,							ᅙᅵ	<u>ا ا ا</u>				
Job #:	Surface water MON8/9- no metals	Major/Minor Cod	Email 2 Cil and Gas Required Fields (client use) AFE/Cost Center: Major/Minor Code: Routing Code: O				표 등		ži Lođ					Į.		프ㅣ	\$ I \$				
PO / AFE:	1200-25.03.02	Requisitioner	Requisitioner:						를 님	'	1	'				ON HOLD	STORAGE O HAZARD				
LSD:		Location:							BC BC								S				
ALS Lab Wor	k Order# (ALS use only):	ALS Contac	t: Sneha Sansare	Sampler:	Pat Beaupre	NUMBER	rtho P, colour, pH Total dissolved P	SS	NH3, Total Kjeldahl, Nitrogen, I N, TOC, Total P IONBALANCE-BC-CL			÷				SAMPLES	EXTENDED STORAGE REQUIRET SUSPECTED HAZARD (see notes				
ALS Sample #	Sample Identification	and/or Coordinates	Date	Time	Sample Type	1≧ ⊩	diss ort DOC, T	Hardness	NH3, To N, TOC, IONBAL							₹					
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Are samples fo	r human consumption/ use?	gmann@azimuthgroup.ca	imcivor@azimuth			ر بن ا		AL COOLE	R TEMPER	(A URES	~		FINAL C	JULEK IE	WIF LEVA I	onco.	Y				
	YES 🗹 NO	Add. for report: csuzanne@ecofi	nne@ecofishresearch.com,kganshorn@ecofishresearch.com																		
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

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Chain of Custody (COC) / Analytical Request Form



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COC Number: 2022-Aug-MON8/9- Day 4

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Report To	Contact and company name below will app	pear on the final report		Reports / R	ecipients				Tu	maro	und Tir	ne (TA	T) Requ	ested				· Sale	Jak			100 100			
Company:	Ecofish Research Ltd.	Sele	ect Report F	ormat: 🕢 PDF 🗓	EXCEL DEC	D (DIGITAL)	☑ Rou	rtine [R]	if receiv	ved by	3pm M	-F - no	surcharg	es apply											
Contact:	Leah Hull	Me	Merge QC/QCI Reports with COA ☑ YES ☐ NO ☐ N/A				4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum							Ī			u.T								
Phone:	250-334-3042	☑ (El Compare recorde de arreche del recipir - provide decums belor il box directed				3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum								AFFIX ALS BARCODE LABEL HERE (ALS use only)					5					
	Company address below will appear on the fir	nal report Sele	Select Distribution: 🗹 EMAIL 🗀 MAIL 🗀 FAX 🗓				2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum								1:						1,418				
Street:	600 Comox Rd.	Ema	Email 1 or Fax hull@ecofishresearch.com				Same day [E2] if received by 10am M-S - 200% rush surcharge. Addition											¥7.40							
City/Province:	Courtenay, BC							- fees may apply to rush requests on weekends, statutory holidays and non- routine tests								non-						1 P			
Postal Code:	V9N 3P6	Ema	Email 3 waterqualitylabdata@ecofishresearch.com					Date and Time Required for all E&P TATs: 600 do-mmm-yy hh:mm am/om									71								
Invoice To	Same as Report To	Z NO		Invoice Re	cipients		Ţ			For a	all tests v	vith rush	TATs req	wested, pla	ease cont	act your /	M to con	irm availa	oility.			_			
	Copy of Invoice with Report	☑ NO Sele	ct Invoice E	Distribution: 🖸 EMA	VIL MAIL] FAX							-	Analysis	Requ	est									
Company:	Ecofish Research Ltd.	Ema	ail 1 or Fax	accountspayable@	ecofishresearch	1.com	2	Т	In	ndicate	Filtered	(F), Pre	served (P) or Filter	red and f	Preserve	d (F/P) be	low	T	Т	出	S			
Contact:	accountspayable@ecofishresearch.com	Ema	ail 2				19		F/P	F/P	Р	- 1]	1					-	REQUIRE	notes			
	Project Information		Oil	and Gas Required	Fields (client	use)	7₹	is		-	Fotal									~ 1	ğ	eee)			
ALS Account #	/ Quote #: VA22-ECOF100-0	04 AFE/	Cost Center:		PO#		1 5		- 1		i'		1	1	1 1				· 1	וב		<u>s</u>			
Job #:	Surface water MON8/9- no metals	Majo	r/Minor Code:		Routing Code:		CONTAINER	Anions			ğ			1			İ			회	빙	š			
PO / AFE:	1200-25.03.02	Req	uisitioner:					SS F	<u>a</u>	Nitrogen,					I		J	1		S	2	Ž			
LSD:	-	Loca	ation:				P				2 Sahi, ahi, ahi ahi, ahi ahi, ahi ahi, ahi ahi, ahi ahi, ahi ahi, ahi ahi, ahi ahi ahi ahi ahi ahi ahi ahi ahi ahi				ပ္မွ						1			STORA	ř
ALS Lab Work	Order # (ALS use only):	ALS	Contact:	Sneha Sansare	Sampler:	Pat Beaupre	NUMBER	Ec, pH, TD ortho P, col	Total diss		Total Kjeldahl, I C, Total P	ONBALANCE-BC-CL								SAMPLES	EXTENDED :	SUSPECTED HAZARD			
ALS Sample #	Sample Identification	and/or Coordinates		Date	Time		1≧	교원		Hardness	NH3, TO N TOC.	줊							ł	ΣΙ		Ž.			
(ALS use only)	(This description will	appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	13	를 W	, 000	-fard	포트	ĕ							- 1	S	<u> </u>	ؿ			
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and Hiller	PD4					 	+	+ +			-		_	1	=						+				
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	KR			23-AJG-22		Water	4	R	R	R	R	R	_			3		25							
	PD3			23-206-22	12:20	Water	4	R	R	R	R	R	_ }	\mathbf{z}	- 5			261	•						
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Drinking	Water (DW) Samples ¹ (client use)	Notes / Specify Limits		valuation by selectin	g from drop-dow	n below	Cool	ing Me	thod:		inches .			EIPT DI ICE PAC	_	'FROZE		y) □ cox	OLING I	NITIAT	ED	\blacksquare			
Are samples take	n from a Regulated DW System?	Diameter A	_!	anni af tha data in t	hair EDD fa	4.	Subr	mission	Com	ment	s ident	ified o	n Samp	le Rece	ipt Noti	fication		YES	□ NO)	الوارات	5.7			
☐ YE	S ☑ NO	Piease seno A	zimuth a c	opy of the data in t	neir EDD form:	at:	Cool	er Cus	ody S	Seals	Intact	C	YES [] N/A	Samp	e Cust	ody Sea	ls intac		YES.	□ N/A				
Are samples for human consumption/ use? qmann@azimuthgroup				imcivor@azimuthg	roup.ca				TIAL C	COOLE	R TEMP	PERATU	RES °C			marks or many	FINAL COOLER TEMPERATURES C								
[] .YES	s 🗵 NO	•	zanne@ecofishresearch.com,kganshorn@ecofishresearch.com				90°												, jih						
	SHIPMENT RELEASE (client use)		NITIAL SHIPMENT	RECEPTION (A	LS use only)	i de			- 00 (0.1) 11		FIN	IAL SH	IPMENT	RECE	PTION			/) .		7				
Released by:	Date: Aus 23	2022 Time Rec						6,40	Rece	ived	by:	- 77		Date	:	1	81	7 Y	1	ime:(سرجر				

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

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

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CERTIFICATE OF ANALYSIS

Work Order : FJ2202313

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

°O : 1200-25.03.02

C-O-C number : 2022-Aug-Mon8/9-Day 4

Sampler : PB

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 25-Aug-2022 08:07

Date Analysis Commenced : 27-Aug-2022

Issue Date : 09-Sep-2022 17:48

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 4
Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

Page : 3 of 4 Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PD5	MD-FB	Travel Blank	
(Matrix: Water)								
			Client samp	ling date / time	24-Aug-2022 08:55	24-Aug-2022 12:00	[24-Aug-2022]	
Analyte	CAS Number	Method	LOR	Unit	FJ2202313-001	FJ2202313-002	FJ2202313-003	
					Result	Result	Result	
Physical Tests								
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	89.9	1.0	<1.0	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	89.9	1.0	<1.0	
colour, true		E329	5.0	CU	6.8	<5.0	<5.0	
conductivity		E100	2.0	μS/cm	193	<2.0	<2.0	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	105	<0.60		
рН		E108	0.10	pH units	8.20	5.69	5.59	
solids, total dissolved [TDS]		E162	10	mg/L	116	<10	<10	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	<3.0	
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0.0071 RRV	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.043	<0.020	<0.020	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.094	<0.050	<0.050	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0499	<0.0050	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0016	<0.0010	<0.0010	
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.155	<0.030	<0.030	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	<0.0010	<0.0010	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	<0.0020	<0.0020	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020		
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.17	<0.50	<0.50	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.9	<0.30	<0.30	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.95	<0.50		
carbon, total organic [TOC]		E355-L	0.50	mg/L	3.09	<0.50	<0.50	
Ion Balance								
anion sum		EC101	0.10	meq/L	2.11	<0.10		
cation sum		EC101	0.10	meq/L	2.18	<0.10		
1	1		•				'	

Page : 4 of 4
Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	lient sample ID	PD5	MD-FB	Travel Blank	
(Matrix: Water)								
			Client samp	oling date / time	24-Aug-2022 08:55	24-Aug-2022 12:00	[24-Aug-2022]	
Analyte	CAS Number	Method	LOR	Unit	FJ2202313-001	FJ2202313-002	FJ2202313-003	
					Result	Result	Result	
Ion Balance								
ion balance (APHA)		EC101	0.010	%	1.63	<0.010		
Dissolved Metals								
calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.2	<0.050		
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.21	<0.0050		
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory		

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202313** Page : 1 of 16

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John. British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

Project : Surface Water MON8/9-No Metals : 25-Aug-2022 08:07

PO : 1200-25.03.02 Issue Date : 09-Sep-2022 17:49
C-O-C number : 2022-Aug-Mon8/9-Day 4

C-O-C number : 2022-Aug-Mon8/9-Day 4
Sampler : PB

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 3
No. of samples analysed : 3

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



Page : 3 of 16 Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	raluation: 🗴 =	Holding time exce	edance ; 🖠	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MD-FB	E298	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	√
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD5	E298	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence									'	
Amber glass total (sulfuric acid) Travel Blank	E298	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Anions and Nutrients : Chloride in Water by IC										
MD-FB	E235.CI	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD5	E235.CI	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.CI	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lo	evel 0.001									
HDPE							<u> </u>			
MD-FB	E378-U	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓

Page : 4 of 16 Work Order : FJ2202313

Client : Ecofish Research Ltd



latrix: Water					Ev	/aluation: 🗴 =	Holding time exce	edance ; 🔹	= Within	Holding Ti
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE										
PD5	E378-U	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	.evel 0.001									
HDPE										
Travel Blank	E378-U	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
MD-FB	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Asiana and Nutrianta - Fluorida in Water by IC										
Anions and Nutrients : Fluoride in Water by IC HDPE										
PD5	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MD-FB	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	✓	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD5	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	✓	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	√	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
MD-FB	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓

Page : 5 of 16 Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viaurix: water						aldation.	nolding time excee	Judinoo ,	***************************************	riolaling rilli
Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation					
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Times	Eval	
			Date	Rec	Actual		-	Rec	Actual	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD5	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
							_		-	
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
MD-FB	E392	24-Aug-2022					31-Aug-2022	28 days	7 days	✓
		-					_			
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PD5	E392	24-Aug-2022					31-Aug-2022	28 days	7 days	✓
								_		
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
Travel Blank	E392	24-Aug-2022					31-Aug-2022	28 days	7 days	✓
							Ĭ	,		
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MD-FB	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
			· ·					_		
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD5	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 davs	✓
			3 -				J -	,		
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Travel Blank	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 davs	✓
			· · · · · · · · · · · · · · · · · · ·					,-	, -	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
	E375-T	24-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	7 days	1
MD-FB										

Page : 6 of 16 Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) PD5 E375-T 24-Aug-2022 30-Aug-2022 31-Aug-2022 28 days 7 days ✓ Anions and Nutrients: Total Kjeldahl Nitrogen by Fluorescence (Low Level) Amber glass total (sulfuric acid) ✓ MD-FB E318 24-Aug-2022 30-Aug-2022 01-Sep-2022 28 days 8 days --------Anions and Nutrients: Total Kjeldahl Nitrogen by Fluorescence (Low Level) Amber glass total (sulfuric acid) PD5 E318 24-Aug-2022 30-Aug-2022 01-Sep-2022 28 days 8 days ✓ Anions and Nutrients: Total Kjeldahl Nitrogen by Fluorescence (Low Level) Amber glass total (sulfuric acid) E318 Travel Blank 24-Aug-2022 01-Sep-2022 02-Sep-2022 28 days 9 days **Anions and Nutrients: Total Nitrogen by Colourimetry** Amber glass total (sulfuric acid) MD-FB E366 24-Aug-2022 30-Aug-2022 31-Aug-2022 ✓ 28 days 7 days **Anions and Nutrients : Total Nitrogen by Colourimetry** Amber glass total (sulfuric acid) PD5 24-Aug-2022 31-Aug-2022 ✓ E366 30-Aug-2022 28 days 7 davs Anions and Nutrients: Total Nitrogen by Colourimetry Amber glass total (sulfuric acid) Travel Blank E366 24-Aug-2022 01-Sep-2022 02-Sep-2022 28 days 9 days ✓ Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U ✓ MD-FB 24-Aug-2022 30-Aug-2022 31-Aug-2022 28 days 7 days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U PD5 24-Aug-2022 30-Aug-2022 31-Aug-2022 28 days 7 days ✓ --------

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Client : Ecofish Research Ltd



Matrix: Water						aluation: 🗴 =	Holding time excee	edance ; 🔻	/ = Within	Holding T
Analyte Group	Method	Sampling Date	Ext	raction / Pre	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	24-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) MD-FB	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD5	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid) MD-FB	E358-L	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid) PD5	E358-L	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)						L			
Amber glass total (sulfuric acid) MD-FB	E355-L	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid) PD5	E355-L	24-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid) Travel Blank	E355-L	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration								-		
HDPE MD-FB	E290	24-Aug-2022	27-Aug-2022				27-Aug-2022	14 days	3 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

wattix: water						diddion.	noiding time excee	suarroc , .	- 44161111	r riolaling Till
Analyte Group	Method	Sampling Date	Ext	traction / P	reparation					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date Holding Times			Eval
			Date	Rec	Actual		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD5	E290	24-Aug-2022	27-Aug-2022				27-Aug-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Travel Blank	E290	24-Aug-2022	27-Aug-2022				27-Aug-2022	14 days	3 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
MD-FB	E329	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PD5	E329	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
Travel Blank	E329	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Physical Tests : Conductivity in Water									I	
HDPE										
MD-FB	E100	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD5	E100	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Travel Blank	E100	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Physical Tests : pH by Meter									1	I
HDPE										
MD-FB	E108	24-Aug-2022	27-Aug-2022				27-Aug-2022	0.25	7.25	*
								hrs	hrs	EHTR-FM

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Project : Surface Water MON8/9-No Metals



 Matrix: Water
 Evaluation: x = Holding time exceedance; √ = Within Holding Time

 Analyte Group
 Method
 Sampling Date
 Extraction / Preparation
 Analysis

Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Physical Tests : pH by Meter										
HDPE PD5	E108	24-Aug-2022	27-Aug-2022				27-Aug-2022	0.25 hrs	7.25 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	24-Aug-2022	27-Aug-2022				27-Aug-2022	0.25 hrs	7.25 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE MD-FB	E162	24-Aug-2022					31-Aug-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry						1				
HDPE PD5	E162	24-Aug-2022					30-Aug-2022	7 days	7 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	24-Aug-2022					30-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MD-FB	E160	24-Aug-2022					31-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE PD5	E160	24-Aug-2022					30-Aug-2022	7 days	7 days	✓
Physical Tests : TSS by Gravimetry								1		
HDPE Travel Blank	E160	24-Aug-2022					30-Aug-2022	7 days	7 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended Rec. HT: ALS recommended hold time (see units).

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Matrix: Water		Evaluat		ency outside sp	J		
Quality Control Sample Type	Matterd	001-44	QC	ount	0-61	Frequency (%)) Evaluation
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	624520	2	37	5.4	5.0	✓
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	621470	1	3	33.3	5.0	✓
Conductivity in Water	E100	621469	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624515	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	621460	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓
pH by Meter	E108	621467	1	8	12.5	5.0	1
Reactive Silica by Colourimetry	E392	627591	1	20	5.0	5.0	1
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	1
TDS by Gravimetry	E162	626133	2	39	5.1	5.0	1
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624519	1	20	5.0	5.0	1
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624514	2	18	11.1	5.0	1
Total Nitrogen by Colourimetry	E366	624517	2	30	6.6	5.0	-
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624516	2	23	8.7	5.0	1
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624518	2	29	6.9	5.0	-
TSS by Gravimetry	E160	626137	2	39	5.1	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	1
Ammonia by Fluorescence	E298	624520	2	37	5.4	5.0	√
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	621470	1	3	33.3	5.0	1
Conductivity in Water	E100	621469	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624515	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	621460	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)		621465	1	12	8.3	5.0	✓
pH by Meter	E235.NO2-L	621467	1	8	12.5	5.0	_
Reactive Silica by Colourimetry	E108	627591		20	5.0	5.0	√
<u> </u>	E392		1	12			√
Sulfate in Water by IC TDS by Gravimetry	E235.SO4 E162	621466 626133	1 2	39	8.3 5.1	5.0 5.0	√

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Client : Ecofish Research Ltd



Matrix: Water	Evaluation: \times = QC frequency outside specification; \checkmark = QC frequency within specification.

Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624519	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624514	2	18	11.1	5.0	✓
Total Nitrogen by Colourimetry	E366	624517	2	30	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624516	2	23	8.7	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624518	2	29	6.9	5.0	✓
TSS by Gravimetry	E160	626137	2	39	5.1	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	✓
Ammonia by Fluorescence	E298	624520	2	37	5.4	5.0	√
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	621470	1	3	33.3	5.0	√
Conductivity in Water	E100	621469	1	8	12.5	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624515	1	20	5.0	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	621460	1	10	10.0	5.0	√
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓
Reactive Silica by Colourimetry	E392	627591	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓
TDS by Gravimetry	E162	626133	2	39	5.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624519	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624514	2	18	11.1	5.0	✓
Total Nitrogen by Colourimetry	E366	624517	2	30	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624516	2	23	8.7	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624518	2	29	6.9	5.0	✓
TSS by Gravimetry	E160	626137	2	39	5.1	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	624520	2	37	5.4	5.0	✓
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	624515	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	621460	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓
Reactive Silica by Colourimetry	E392	627591	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	624519	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	624514	2	18	11.1	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: × = QC frequency outside specification, ✓ = QC frequency within specification.

Quality Control Sample Type		·	Col	unt		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
Total Nitrogen by Colourimetry	E366	624517	2	30	6.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	624516	2	23	8.7	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	624518	2	29	6.9	5.0	✓

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Vancouver - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Vancouver - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Vancouver - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Colour (True) by Spectrometer (5 CU)	E329 Vancouver - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Vancouver - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver -	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	Environmental			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Vancouver - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Vancouver - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	Environmental EP366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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 Work Order
 : FJ2202313

Client : Ecofish Research Ltd



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a
				persulfate digestion reagent.
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Work Order : FJ2202313

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Aug-Mon8/9-Day 4

Sampler : PB

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :+1 250 261 5517

Date Samples Received :25-Aug-2022 08:07

Date Analysis Commenced : 27-Aug-2022

Issue Date : 09-Sep-2022 17:49

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water	ıb-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie	
Physical Tests (QC												
FJ2202313-001	PD5	pH		E108	0.10	pH units	8.20	8.16	0.489%	4%		
Physical Tests (QC	Lot: 621468)											
FJ2202313-001	PD5	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	89.9	89.2	0.782%	20%		
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	89.9	89.2	0.782%	20%		
Physical Tests (QC	Lot: 621469)											
FJ2202313-001	PD5	conductivity		E100	2.0	μS/cm	193	194	0.361%	10%		
Physical Tests (QC	Lot: 621470)											
FJ2202313-001	PD5	colour, true		E329	5.0	CU	6.8	7.5	0.7	Diff <2x LOR		
Physical Tests (QC	Lot: 626133)											
FJ2202313-001	PD5	solids, total dissolved [TDS]		E162	13	mg/L	116	118	2	Diff <2x LOR		
Physical Tests (QC	L of: 626137)											
FJ2202313-001	PD5	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR		
Physical Tests (QC	L et: 627022)											
FJ2202313-002	MD-FB	solids, total dissolved [TDS]		E162	10	mg/L	<10	<10	0	Diff <2x LOR		
		conde, total disserved [120]				9.=						
Physical Tests(QC FJ2202313-002	MD-FB	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR		
		solids, total suspended [155]		E100	3.0	IIIg/L	\3.0	\ 3.0		DIII \ZX LOR		
	ts (QC Lot: 621460)		11005 11 0	E070 II	0.0040	//	0.0047	0.0044	0.0000	D:# -0 1 OD		
FJ2202313-001	PD5	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0017	0.0014	0.0003	Diff <2x LOR		
	ts (QC Lot: 621461)											
FJ2202312-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.086	0.083	0.002	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 621462)											
FJ2202312-001	Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 621464)											
-J2202312-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0197	0.0200	0.0002	Diff <2x LOR		
Anions an <u>d Nutrien</u>	ts (QC Lot: 621465)											
FJ2202312-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 621466)									I.		
FJ2202312-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	73.8	73.5	0.443%	20%		

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Client : Ecofish Research Ltd



Sub-Matrix: Water	Aatrix: Water						Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Anions and Nutrien	ts (QC Lot: 624514)											
FJ2202313-001	PD5	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.094	0.091	0.003	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 624517)											
FJ2202313-001	PD5	nitrogen, total	7727-37-9	E366	0.030	mg/L	0.155	0.156	0.001	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 624518)											
FJ2202313-001	PD5	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	0.0147	0.0033	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 624519)											
FJ2202313-001	PD5	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 624520)											
FJ2202313-001	PD5	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 627591)											
EO2206998-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	2.89	2.88	0.01	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 628489)											
FJ2202313-003	Travel Blank	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 628490)											
FJ2202313-003	Travel Blank	nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 628491)											
FJ2202313-003	Travel Blank	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 628492)											
FJ2202313-003	Travel Blank	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0071	0.0068	0.0002	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 62451	5)										
FJ2202313-001	PD5	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.95	3.25	0.30	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 62451	6)										
FJ2202313-001	PD5	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.09	3.08	0.005	Diff <2x LOR		
Organic / Inorganic	Carbon (QC Lot: 62855	4)										
FJ2202313-003	Travel Blank	carbon, total organic [TOC]		E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR		
Dissolved Metals (QC Lot: 622631)							<u>'</u>				
VA22B9855-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.8	39.7	2.40%	20%		
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.77	7.50	3.59%	20%		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 621468)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	1.0	
Physical Tests (QCLot: 621469)					
conductivity	E100	1	μS/cm	1.4	
Physical Tests (QCLot: 621470)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 626133)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 626137)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 627022)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 627036)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 621460)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 621461)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 621462)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 621464)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 621465)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 621466)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 624514)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 624517)					
nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Sub-Matrix: Water					
Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 624518)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 624519)					
phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 624520)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 627591)					
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 628489)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 628490)					
nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 628491)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 628492)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Organic / Inorganic Carbon (QCLot: 62451	15)				
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 62451	16)				
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 62858	54)				
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 622631)					
calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water	Sub-Matrix: Water						Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)						
Analyte	CAS Number Meth	od	LOR	Unit	Concentration	LCS	Low	High	Qualifier					
Physical Tests (QCLot: 621467)														
рН	E108			pH units	7 pH units	100	98.0	102						
Physical Tests (QCLot: 621468)														
alkalinity, phenolphthalein (as CaCO3)	E290		1	mg/L	229 mg/L	110	75.0	125						
alkalinity, total (as CaCO3)	E290		1	mg/L	500 mg/L	111	85.0	115						
Physical Tests (QCLot: 621469)														
conductivity	E100		1	μS/cm	146.9 μS/cm	97.1	90.0	110						
Physical Tests (QCLot: 621470)														
colour, true	E329		5	CU	100 CU	103	85.0	115						
Physical Tests (QCLot: 626133)														
solids, total dissolved [TDS]	E162	!	10	mg/L	1000 mg/L	107	85.0	115						
Physical Tests (QCLot: 626137)														
solids, total suspended [TSS]	E160	1	3	mg/L	150 mg/L	95.0	85.0	115						
Physical Tests (QCLot: 627022)														
solids, total dissolved [TDS]	E162	!	10	mg/L	1000 mg/L	105	85.0	115						
Physical Tests (QCLot: 627036)														
solids, total suspended [TSS]	E160		3	mg/L	150 mg/L	99.8	85.0	115						
Anions and Nutrients (QCLot: 621460)														
phosphate, ortho-, dissolved (as P)	14265-44-2 E378	i-U	0.001	mg/L	0.03 mg/L	104	80.0	120						
Anions and Nutrients (QCLot: 621461)														
fluoride	16984-48-8 E235	i.F	0.02	mg/L	1 mg/L	98.6	90.0	110						
Anions and Nutrients (QCLot: 621462)														
chloride	16887-00-6 E235	i.Cl	0.5	mg/L	100 mg/L	100	90.0	110						
Anions and Nutrients (QCLot: 621464)														
nitrate (as N)	14797-55-8 E235	.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110						
Anions and Nutrients (QCLot: 621465)														
nitrite (as N)	14797-65-0 E235	.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110						
Anions and Nutrients (QCLot: 621466)														
sulfate (as SO4)	14808-79-8 E235	.SO4	0.3	mg/L	100 mg/L	102	90.0	110						
Anions and Nutrients (QCLot: 624514)														
Kjeldahl nitrogen, total [TKN]	E318		0.05	mg/L	4 mg/L	96.0	75.0	125						
Anions and Nutrients (QCLot: 624517)														
nitrogen, total	7727-37-9 E366		0.03	mg/L	0.5 mg/L	102	75.0	125						

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Client : Ecofish Research Ltd



Sub-Matrix: Water		Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 624518)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.6	80.0	120	
Anions and Nutrients (QCLot: 624519)									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	90.4	80.0	120	
Anions and Nutrients (QCLot: 624520)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.9	85.0	115	
Anions and Nutrients (QCLot: 627591)									
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	99.0	85.0	115	
Anions and Nutrients (QCLot: 628489)									
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	94.1	75.0	125	
Anions and Nutrients (QCLot: 628490)									
nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	103	75.0	125	
Anions and Nutrients (QCLot: 628491)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.8	80.0	120	
Anions and Nutrients (QCLot: 628492)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.5	85.0	115	
Organic / Inorganic Carbon (QCLot: 624515)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	98.4	80.0	120	
Organic / Inorganic Carbon (QCLot: 624516)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	107	80.0	120	
Organic / Inorganic Carbon (QCLot: 628554)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	95.3	80.0	120	
Dissolved Metals (QCLot: 622631)									
calcium, dissolved	7440-70-2		0.05	mg/L	50 mg/L	97.7	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report								
					Spi	ke	Recovery (%)	Recovery	Limits (%)				
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Anions and Nutri	ients (QCLot: 621460)												
FJ2202313-002	MD-FB	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0306 mg/L	0.03 mg/L	102	70.0	130				
Anions and Nutri	ients (QCLot: 621461)												
FJ2202312-002	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125				
Anions and Nutri	ients (QCLot: 621462)												
FJ2202312-002	Anonymous	chloride	16887-00-6	E235.CI	104 mg/L	100 mg/L	104	75.0	125				
Anions and Nutri	ients (QCLot: 621464)												
FJ2202312-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125				
Anions and Nutri	ients (QCLot: 621465)												
FJ2202312-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.507 mg/L	0.5 mg/L	101	75.0	125				
Anions and Nutri	ients (QCLot: 621466)												
FJ2202312-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125				
Anions and Nutri	ients (QCLot: 624514)												
FJ2202313-002	MD-FB	Kjeldahl nitrogen, total [TKN]		E318	2.38 mg/L	2.5 mg/L	95.2	70.0	130				
Anions and Nutri	ients (QCLot: 624517)												
FJ2202313-002	MD-FB	nitrogen, total	7727-37-9	E366	0.401 mg/L	0.4 mg/L	100	70.0	130				
Anions and Nutri	ients (QCLot: 624518)												
FJ2202313-002	MD-FB	phosphorus, total	7723-14-0	E372-U	0.0463 mg/L	0.05 mg/L	92.7	70.0	130				
Anions and Nutri	ients (QCLot: 624519)												
FJ2202313-002	MD-FB	phosphorus, total dissolved	7723-14-0	E375-T	0.0495 mg/L	0.05 mg/L	99.0	70.0	130				
Anions and Nutri	ients (QCLot: 624520)												
FJ2202313-002	MD-FB	ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125				
Anions and Nutri	ients (QCLot: 627591)												
FJ2202313-001	PD5	silicate (as SiO2)	7631-86-9	E392	10.2 mg/L	10 mg/L	102	75.0	125				
Anions and Nutri	ients (QCLot: 628489)												
VA22B9712-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.39 mg/L	2.5 mg/L	95.8	70.0	130				
Anions and Nutri	ients (QCLot: 628490)												
FJ2202321-001	Anonymous	nitrogen, total	7727-37-9	E366	ND mg/L	0.4 mg/L	ND	70.0	130				
Anions and Nutri	ients (QCLot: 628491)												

Page : 10 of 10 Work Order : FJ2202313

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water	Sub-Matrix: Water				Matrix Spike (MS) Report								
					Spi	ke	Recovery (%)	Recovery	Limits (%)				
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Anions and Nutri	ents (QCLot: 628491) -	continued											
FJ2202321-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0461 mg/L	0.05 mg/L	92.1	70.0	130				
Anions and Nutri	ents (QCLot: 628492)												
FJ2202321-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	MS-B			
Organic / Inorgan	ic Carbon (QCLot: 624	515)											
FJ2202313-002	MD-FB	carbon, dissolved organic [DOC]		E358-L	4.94 mg/L	5 mg/L	98.9	70.0	130				
Organic / Inorgan	ic Carbon (QCLot: 624	516)											
FJ2202313-002	MD-FB	carbon, total organic [TOC]		E355-L	5.01 mg/L	5 mg/L	100	70.0	130				
Organic / Inorgan	ic Carbon (QCLot: 628	554)											
KS2203134-001	Anonymous	carbon, total organic [TOC]		E355-L	5.28 mg/L	5 mg/L	106	70.0	130				
Dissolved Metals	(QCLot: 622631)												
VA22B9855-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130				
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130				

Qualifiers

Qualifier Description

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

Chain of Custody (COC) / Analytical Request Form



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

Page

COC Number: 2022-Aug-MON8/9- Day 4

Report To	Contact and company name below will appear of	on the final report		Reports / R	ecipients		Turnaround Time (TAT) Requested							10205	Commence of the Commence of th					
Company:	Ecofish Research Ltd.	Sel	ect Report Fo	ormat: PDF	Z EXCEL Z EDD	(DIGITAL)	Routine [R] if received by 3pm M-F - no surcharges apply						71. 4967 (12)							
Contact:	Leah Hull	Me	erge QC/QCI	Reports with COA	✓YES		4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum							FIX ALS BAF		80EL 13				
Phone:	250-334-3042	4	Compare Results	to Criteria on Report - _I	orovide details below	if box checked	B day [P3] if received by 3pm M-F - 25% rush surcharge minimum						Ar		i use onl					
	Company address below will appear on the final re-	eport Sel	ect Distribution	on: 🗹 EMAIL	MAIL F	x	2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum L day [E] if received by 3pm M-F - 100% rush surcharge minimum							641 1 10 40 1 1 10 10 10 10 10 10 10 10 10 10 10 10 10						
Street:	600 Comox Rd.	Em	ail 1 or Fax	lhull@ecofishresea	rch.com		Same day [E2] if received by 10am M-5 - 200% rush surcharge. Additionation of the same day apply to rush requests on weekends, statutory holidays and non-							na 🔠						
City/Province:	Courtenay, BC							ne tests		SITIC	ueses un	WEEKEIK	is, statuto	i y Holiday	3 414 1101		(Special Control			
Postal Code:	V9N 3P6	Em	nail 3 waterqualitylabdata@ecofishresearch.com					Date and Time Required for all E&P TATs:							id-mmr	d-mmm-yy inhimm anvjani				
Invoice To	Same as Report To ☐ YES ☑ N	10		Invoice Re	cipients		For all tests with rush TATs requested, please contact your AM to confirm availability.													
	Copy of Invoice with Report YES IN	io Se	ect Invoice D	istribution: 🗹 EMA	IL MAIL [FAX							An	alysis F	Request					
Company:	Ecofish Research Ltd.	Em	ail 1 or Fax	accountspayable@	ecofishresearch	com	RS		lni	dicate	Filtered	F), Pres	erved (P)	or Filtered	i and Pres	erved (F/	P) below			(Se
Contact:	accountspayable@ecofishresearch.com	Em	iail 2				里		F/P I	F/P	Р								REQUIRED	notes)
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Job #:	Surface water MON8/9- no metals	Maj	or/Minor Code:		Routing Code:		CONTAINERS	Anions,			Nitrogen,								STORAGE	
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Are samples for human consumption/ use? gmann@azimuthgroup.ca				imcivor@azimuth				. 11	IIITIAL (COOL	RTEM	PERATU	RES °C			FINAL	COOLER TEM	PERATU	RES °C	
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CERTIFICATE OF ANALYSIS

Work Order : FJ2202315

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

PO : 1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 27-Aug-2022

Issue Date : 16-Sep-2022 17:10

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia	
Ophelia Chiu	Department Manager - Organics	Inorganics, Burnaby, British Columbia	

Page : 2 of 4
Work Order : FJ2202315

Client : Ecofish Research Ltd

Project : Site C MMP - Surface Water



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Description
No Unit
percent
Microsiemens per centimetre
milliequivalents per litre
milligrams per litre
nanograms per litre
pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

Page : 3 of 4 Work Order : FJ2202315

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

1200	Sub-Matrix: Water			Ci	ient sample ID	PR2-A-FB	PD1-A	PD1-B	PD5-A	PD5-B
CAS Number Method LOR Unit F12202151-002 F12202151-004 F12202151	(Matrix: Water)									
Physical Tests Result Re				Client samp	ling date / time	-	_	_	-	24-Aug-2022 08:55
Physical Tests alkalinity, total (as CaCO3)	Analyte	CAS Number	Method	LOR	Unit	FJ2202315-001	FJ2202315-002	FJ2202315-003	FJ2202315-004	FJ2202315-005
Easility (total (as CaCO3)						Result	Result	Result	Result	Result
Conductivity E100 2.0 µS/cm 188 198 198 198 198 hardness (as CaCO3), dissolved E100 0.80 mg/L 104 108										
Aardness (as CaCO3), dissolved EC100	alkalinity, total (as CaCO3)		E290	1.0	mg/L				91.8	
PH	conductivity		E100	2.0	μS/cm		189		198	
solids, total suspended [TSS] E 160 3.0 mg/L 9.7 <3.0	hardness (as CaCO3), dissolved		EC100	0.60	mg/L		104		108	
Anions and Nutrients	рН		E108	0.10	pH units		8.18		8.17	
Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50 <0.50	solids, total suspended [TSS]		E160	3.0	mg/L		9.7		<3.0	
Fluoride 1984-48-8 E235.F 0.020 mg/L 0.044 0.043	Anions and Nutrients									
nitrate (as N) 14797-55-8 E235 NO3-L 0.0050 mg/L 0.0856 0.0497 nitrite (as N) 14797-65-0 E235 NO2-L 0.0010 mg/L 0.0020 0.0011 sulfate (as SQ4) 14808-79-8 E235 SO4 0.30 mg/L 14.5 0.0011 Organic / Inorganic Carbon E235 SO4 0.50 mg/L 2.66 3.41 ms	chloride	16887-00-6	E235.CI	0.50	mg/L		<0.50		<0.50	
nitrite (as N) 14797-65-0 te235.NO2-L 0.0010 mg/L	fluoride	16984-48-8	E235.F	0.020	mg/L		0.044		0.043	
sulfate (as SO4) 14808-79-8 E235.SQ4 0.30 mg/L	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L		0.0656		0.0497	
Organic / Inorganic Carbon Carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.66 3.41 mm/s carbon, total organic [TOC] E358-L 0.50 mg/L 2.93 2.99 mm/s Ion Balance Ion sum EC101 0.10 meq/L 2.04 2.15 cation sum EC101 0.10 meq/L 2.14 2.23 ion balance (APHA) EC101 0.010 % 2.39 1.83 Total Metals mercury, total 7439-97-6 E508-L 0.50 ng/L <0.50 0.89 0.61 0.68 0.70 Dissolved Metals mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 0.89 0.61 0.68 0.70 Dissolved Met	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L		0.0020		0.0011	
carbon, dissolved organic [DOC]	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L		14.5		14.8	
carbon, total organic [TOC] E355-L 0.50 mg/L	Organic / Inorganic Carbon									
Dissolved Metals Metals	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L		2.66			
anion sum	carbon, total organic [TOC]		E355-L	0.50	mg/L		2.93		2.99 RRV	
cation sum	Ion Balance									
Total Metals	anion sum		EC101	0.10	meq/L		2.04		2.15	
Total Metals Tota	cation sum		EC101	0.10	meq/L		2.14		2.23	
mercury, total 7439-97-6 E508-L 0.50 ng/L <0.50 0.89 0.61 0.68 0.70 Dissolved Metals mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50<	ion balance (APHA)		EC101	0.010	%		2.39		1.83	
Dissolved Metals mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50	Total Metals									
mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50<	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	0.89	0.61	0.68	0.70
calcium, dissolved 7440-70-2 E421 0.050 mg/L 30.1 31.0 magnesium, dissolved 7439-95-4 E421 0.0050 mg/L 7.05 7.37 dissolved MeHg filtration location EP537 - - Field	Dissolved Metals									
magnesium, dissolved 7439-95-4 E421 0.0050 mg/L 7.05 7.37 dissolved MeHg filtration location EP537 - - Field	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	<0.50	<0.50	<0.50
dissolved MeHg filtration location	calcium, dissolved	7440-70-2	E421	0.050	mg/L		30.1		31.0	
dissolved mercury filtration location EP509-L - - Field <	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L		7.05		7.37	
dissolved metals filtration location	dissolved MeHg filtration location		EP537	-	-	Field	Field	Field	Field	Field
Speciated Metals methylmercury (as MeHg), total 22967-92-6 E536 0.020 ng/L <0.020	dissolved mercury filtration location		EP509-L	-	-	Field	Field	Field	Field	Field
methylmercury (as MeHg), total 22967-92-6 E536 0.020 ng/L < 0.020 < 0.020 < 0.020 0.024 0.023	dissolved metals filtration location		EP421	-	-		Laboratory		Laboratory	
methylmercury (as MeHg), total 22967-92-6 E536 0.020 ng/L <0.020 <0.020 <0.020 0.024 0.023	Speciated Metals									
	·	22967-92-6	E536	0.020	ng/L	<0.020	<0.020	<0.020	0.024	0.023
methylmercury (as MeHg), dissolved 22967-92-6 E537 0.020 ng/L < 0.020 < 0.020 < 0.020 0.022 0.020	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.020	ng/L	<0.020	<0.020	<0.020	0.022	0.020

Page : 4 of 4

Work Order : FJ2202315

Client : Ecofish Research Ltd

Project : Site C MMP - Surface Water



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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202315** Page : 1 of 13

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Roa

: 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3
Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Site C MMP - Surface Water
 Date Samples Received
 : 25-Aug-2022 08:45

 PO
 : 1200-25.03.05
 Issue Date
 : 16-Sep-2022 17:10

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd
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Analysis Holding Time Compliance

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

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

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

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

Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date Holding Times Eval Preparation Actual Rec Actual Date Rec Anions and Nutrients : Chloride in Water by IC HDPE E235.CI 24-Aug-2022 27-Aug-2022 1 PD1-A 27-Aug-2022 28 days 3 days Anions and Nutrients : Chloride in Water by IC HDPE PD5-A E235.CI 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days ✓ ----Anions and Nutrients: Fluoride in Water by IC HDPE PD1-A E235.F 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients: Fluoride in Water by IC HDPE PD5-A E235.F 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients : Nitrate in Water by IC (Low Level) HDPE PD1-A E235.NO3-L 24-Aug-2022 27-Aug-2022 3 days 3 days ✓ 27-Aug-2022 3 days 0 days Anions and Nutrients: Nitrate in Water by IC (Low Level) HDPE E235.NO3-L 1 24-Aug-2022 27-Aug-2022 27-Aug-2022 PD5-A 3 days 3 days 3 days 0 days Anions and Nutrients: Nitrite in Water by IC (Low Level) HDPE E235.NO2-L 24-Aug-2022 27-Aug-2022 ✓ PD1-A 27-Aug-2022 3 days 3 days

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

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Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE											
PD5-A	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓	
Anions and Nutrients : Sulfate in Water by IC											
HDPE											
PD1-A	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓	
			Ü								
Anions and Nutrients : Sulfate in Water by IC											
HDPE											
PD5-A	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 davs	✓	
			3 -						,		
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0	0 F mmt)										
Pre-cleaned amber glass - dissolved (lab preserved)	υ. 5 pp τ)						1				
PD1-A	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	1	
10170	2000 2	217 tag 2022	017 Aug 2022				017 (ag 2022	20 dayo	, dayo	·	
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0	0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved) PD1-B	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓	
PD1-B	L309-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	20 uays	7 uays	•	
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0	0.5 ppt)								l		
Pre-cleaned amber glass - dissolved (lab preserved)	E500 I	04 4 0000	24 4 2022				24 4 2022	00 -1	7 -1	1	
PD5-A	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	•	
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR =)	0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)	F500 !	04.4					04.4				
PD5-B	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓	
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0	0.5 ppt)										
Pre-cleaned amber glass - dissolved (lab preserved)											
PR2-A-FB	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS											
HDPE - dissolved (lab preserved)											
PD1-A	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180	6 days	✓	
								days			

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

viatrix: water							nolaling time exce	,		
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD5-A	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180	6 days	✓
								days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Le	vel)									
Amber glass dissolved (sulfuric acid)										
PD1-A	E358-L	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Le	vel)									
Amber glass dissolved (sulfuric acid)										
PD5-A	E358-L	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combust	ion (Low Level)								'	
Amber glass total (sulfuric acid)										
PD1-A	E355-L	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combust	ion (Low Level)								1	
Amber glass total (sulfuric acid)										
PD5-A	E355-L	24-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration									'	
HDPE										
PD1-A	E290	24-Aug-2022	27-Aug-2022				27-Aug-2022	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD5-A	E290	24-Aug-2022	27-Aug-2022				27-Aug-2022	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD1-A	E100	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD5-A	E100	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓

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Project : Site C MMP - Surface Water



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

Matrix: water					L v	aldation. • -	Holding time exce	cuarioc ,	- VVICIIII	i i ioiding Tili	
Analyte Group	Method	Sampling Date	Ex	traction / P	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Rec	Actual		
Physical Tests : pH by Meter											
HDPE											
PD1-A	E108	24-Aug-2022	27-Aug-2022				27-Aug-2022	0.25	7.25	3 0	
								hrs	hrs	EHTR-FM	
Physical Tests : pH by Meter											
HDPE											
PD5-A	E108	24-Aug-2022	27-Aug-2022				27-Aug-2022	0.25	7.25	s:	
								hrs	hrs	EHTR-FM	
Physical Tests : TSS by Gravimetry											
HDPE											
PD1-A	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PD5-A	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS											
Amber glass dissolved (hydrochloric acid)											
PD1-A	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓	
				days				days			
Speciated Metals : Dissolved Methylmercury in Water by GCAFS											
Amber glass dissolved (hydrochloric acid)											
PD1-B	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓	
				days				days			
Speciated Metals : Dissolved Methylmercury in Water by GCAFS											
Amber glass dissolved (hydrochloric acid)											
PD5-A	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓	
				days				days			
Speciated Metals : Dissolved Methylmercury in Water by GCAFS											
Amber glass dissolved (hydrochloric acid)											
PD5-B	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓	
				days				days			
Speciated Metals : Dissolved Methylmercury in Water by GCAFS											
Amber glass dissolved (hydrochloric acid)											
PR2-A-FB	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓	
				days				days			

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Project : Site C MMP - Surface Water



Matrix: Water

Evaluation: 🗴 =	Holding time exceedance ; ✓ = Within Holding Time
tion	Analysis

Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PD1-A	E536	24-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	14 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PD1-B	E536	24-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	14 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PD5-A	E536	24-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	14 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR2-A-FB	E536	24-Aug-2022	02-Sep-2022				07-Sep-2022	180 days	14 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PD5-B	E536	24-Aug-2022	02-Sep-2022				09-Sep-2022	180 days	16 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) PD1-A	E508-L	24-Aug-2022	01-Sep-2022	28 days	8 days	✓	01-Sep-2022	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) PD1-B	E508-L	24-Aug-2022	01-Sep-2022	28 days	8 days	✓	01-Sep-2022	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) PD5-A	E508-L	24-Aug-2022	01-Sep-2022	28 days	8 days	✓	01-Sep-2022	28 days	0 days	✓
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) PD5-B	E508-L	24-Aug-2022	01-Sep-2022	28 days	8 days	✓	01-Sep-2022	28 days	0 days	✓

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: Water

Evaluation: **x** = Holding time exceedance : ✓ = Within Holding Time

watti. water					L,	aluation. • -	i lolding time excel	cuarice, .	- *************************************	Tribiumig Til
Analyte Group	Method	Sampling Date	Extraction / Preparation		Analysis					
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) PR2-A-FB	E508-L	24-Aug-2022	01-Sep-2022	28 days	8 days	✓	01-Sep-2022	28 days	0 days	*

Legend & Qualifier Definitions

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

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

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Quality Control Parameter Frequency Compliance

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

Matrix: Water Quality Control Sample Type			ion: × = QC frequ	ount		<u> </u>	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%, Expected	Evaluation
Laboratory Duplicates (DUP)	- Mountain	Q - 2 - 1 · · ·			7.000	2//	
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	1
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	<u>√</u>
Conductivity in Water	E100	621469	1	8	12.5	5.0	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	<u> </u>
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	<u> </u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	<u> </u>
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	<u> </u>
pH by Meter	E108	621467	1	8	12.5	5.0	
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629034	1	16	6.2	5.0	
Total Methylmercury in Water by GCAFS	E536	630059	2	40	5.0	5.0	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	<u> </u>
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	1
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	
Conductivity in Water	E100	621469	1	8	12.5	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	<u>√</u>
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	<u>√</u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	√
pH by Meter	E108	621467	1	8	12.5	5.0	√
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629034	1	16	6.2	5.0	√
Total Methylmercury in Water by GCAFS	E536	630059	2	40	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	621468	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	✓
Conductivity in Water	E100	621469	1	8	12.5	5.0	✓

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Client : Ecofish Research Ltd
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Matrix: Water

Evaluation: \times = QC frequency outside specification: \checkmark = QC frequency within specification

Matrix: Water Evaluation: × = <i>QC frequency outside specification</i> ; √ = <i>QC frequency within</i> s								
Quality Control Sample Type			Co	ount)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued								
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓	
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	✓	
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓	
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629034	1	16	6.2	5.0	✓	
Total Methylmercury in Water by GCAFS	E536	630059	2	40	5.0	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓	
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	✓	
Matrix Spikes (MS)								
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	✓	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓	
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	628134	1	18	5.5	5.0	✓	
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓	
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629034	1	16	6.2	5.0	✓	
Total Methylmercury in Water by GCAFS	E536	630059	2	40	5.0	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	628135	1	19	5.2	5.0	✓	
		•						

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Vancouver - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20\pm5^{\circ}$ C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Vancouver - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.Cl Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Vancouver - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

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Project : Site C MMP - Surface Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd
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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	Vancouver -			used where available. Minor ions are included where data is present.
	Environmental			Ion Balance cannot be calculated accurately for waters with very low electrical
				conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355	Water		Preparation for Total Organic Carbon by Combustion
	Vancouver -			
	Environmental			
Preparation for Dissolved Organic Carbon for Combustion	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration (Low Level)	EP509-L	Water	АРНА 3030В	Water samples are filtered (0.45 um), and preserved with HCl.
,	Vancouver -			
	Environmental			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hq and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202315

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

PO : 1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site : Site C RSEM Water Quality Monitoring

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 27-Aug-2022

Issue Date : 16-Sep-2022 17:10

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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: Ecofish Research Ltd Client : Site C MMP - Surface Water Project



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water						Labora	tory Duplicate (D	UP) Report			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
Physical Tests (QC	Lot: 621467)										
FJ2202313-001	Anonymous	pH		E108	0.10	pH units	8.20	8.16	0.489%	4%	
Physical Tests (QC	Lot: 621468)										
FJ2202313-001	Anonymous	alkalinity, total (as CaCO3)		E290	1.0	mg/L	89.9	89.2	0.782%	20%	
Physical Tests (QC	Lot: 621469)										
FJ2202313-001	Anonymous	conductivity		E100	2.0	μS/cm	193	194	0.361%	10%	
Physical Tests (QC	Lot: 625937)										
FJ2202315-002	PD1-A	solids, total suspended [TSS]		E160	3.0	mg/L	9.7	8.5	1.2	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621461)										
FJ2202312-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.086	0.083	0.002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621462)										
FJ2202312-001	Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621464)										
FJ2202312-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0197	0.0200	0.0002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621465)										
FJ2202312-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621466)										
FJ2202312-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	73.8	73.5	0.443%	20%	
Organic / Inorganic	Carbon (QC Lot: 628	134)									
FJ2202286-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.24	3.12	0.12	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 628	135)									
FJ2202286-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	2.92	2.78	0.14	Diff <2x LOR	
Total Metals (QC Lo	ot: 629034)										
CG2211434-001	Anonymous	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	
Dissolved Metals (0	C L at: 622631)					-					
VA22B9855-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.8	39.7	2.40%	20%	
	,	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.77	7.50	3.59%	20%	
Dissolved Metals (0	OC L at: 626630)										
FC2201927-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	
	·	,,				J. –				,	
Speciated Metals(C FC2201977-001	Anonymous	methylmercury (as MeHq), total	22967-92-6	E536	0.000020	μg/L	0.000091	0.000089	0.000002	Diff <2x LOR	
02201011-001	7 shortymous	mouryimercury (as interrig), total	22301-32-0		0.000020	µ9/∟	0.000031	0.000003	0.000002	Dill 32X LOIX	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie		
Speciated Metals (0	QC Lot: 630063) - continu	ied											
FJ2202315-001	PR2-A-FB	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	<0.020 ng/L	<0.000020	0	Diff <2x LOR			
Speciated Metals (0	Speciated Metals (QC Lot: 631430)												
CG2211557-001	Anonymous	methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000064	0.000065	0.000001	Diff <2x LOR			

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Method Blank (MB) Report

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

Sub-Matrix: Water

THE PARTY OF THE P					
Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 621468)					
alkalinity, total (as CaCO3)	E290	1	mg/L	1.0	
Physical Tests (QCLot: 621469)					
conductivity	E100	1	μS/cm	1.4	
Physical Tests (QCLot: 625937)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 621461)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 621462)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 621464)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 621465)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 621466)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Organic / Inorganic Carbon (QCLot: 6281	34)				
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 6281	35)				
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Total Metals (QCLot: 629034)					
mercury, total	7439-97-6 E508-L	0.5	ng/L	<0.50	
Dissolved Metals (QCLot: 622631)					
calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 626630)					
mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
Speciated Metals (QCLot: 630059)					
methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
Speciated Metals (QCLot: 630063)					
methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
Speciated Metals (QCLot: 631430)					
methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	

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Client : Ecofish Research Ltd
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Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water		Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 621467)									
pH		E108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 621468)									
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	111	85.0	115	
Physical Tests (QCLot: 621469)									
conductivity		E100	1	μS/cm	146.9 μS/cm	97.1	90.0	110	
Physical Tests (QCLot: 625937)									
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	94.2	85.0	115	
Anions and Nutrients (QCLot: 621461)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.6	90.0	110	
Anions and Nutrients (QCLot: 621462)									
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 621464)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 621465)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	
Anions and Nutrients (QCLot: 621466)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	
Organic / Inorganic Carbon (QCLot: 628134)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	99.8	80.0	120	
Organic / Inorganic Carbon (QCLot: 628135)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	
Total Metals (QCLot: 629034)									
mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	101	80.0	120	
Dissolved Metals (QCLot: 622631)									
calcium, dissolved	7440-70-2		0.05	mg/L	50 mg/L	97.7	80.0	120	
magnesium, dissolved	7439-95-4		0.005	mg/L	50 mg/L	98.8	80.0	120	
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	107	80.0	120	
Speciated Metals (QCLot: 630059)									
methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	76.1	70.0	130	
Speciated Metals (QCLot: 630063)									

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water		Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Speciated Metals (QCLot: 630063) - conti	nued								
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 µg/L	82.7	70.0	130	
Speciated Metals (QCLot: 631430)									
methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	76.0	70.0	130	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix Spike (MS) Report

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

Sub-Matrix: Water		Matrix Spike (MS) Report								
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ents (QCLot: 621461)									
FJ2202312-002	Anonymous	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	
Anions and Nutri	ents (QCLot: 621462)									
FJ2202312-002	Anonymous	chloride	16887-00-6	E235.CI	104 mg/L	100 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 621464)									
FJ2202312-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125	
Anions and Nutri	ents (QCLot: 621465)									
FJ2202312-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.507 mg/L	0.5 mg/L	101	75.0	125	
Anions and Nutri	ents (QCLot: 621466)									
FJ2202312-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 628	134)								
FJ2202315-002	PD1-A	carbon, dissolved organic [DOC]		E358-L	5.44 mg/L	5 mg/L	109	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 628	135)								
FJ2202315-002	PD1-A	carbon, total organic [TOC]		E355-L	5.13 mg/L	5 mg/L	103	70.0	130	
Fotal Metals (QC	Lot: 629034)									
CG2211434-002	Anonymous	mercury, total	7439-97-6	E508-L	5.03 ng/L	5 ng/L	100	70.0	130	
Dissolved Metals	(QCLot: 622631)									
VA22B9855-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 626630)									
FC2201927-002	Anonymous	mercury, dissolved	7439-97-6	E509-L	4.56 ng/L	5 ng/L	91.1	70.0	130	
Speciated Metals	(QCLot: 630059)									
FJ2202286-001	Anonymous	methylmercury (as MeHg), total	22967-92-6	E536	0.00172 μg/L	0.0025 µg/L	68.8	60.0	140	
Speciated Metals	(QCLot: 630063)									
FJ2202315-002	PD1-A	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00191 μg/L	0.0025 μg/L	76.6	60.0	140	
Speciated Metals	(QCLot: 631430)									
FJ2202315-005	PD5-B	methylmercury (as MeHg), total	22967-92-6	E536	0.00213 μg/L	0.0025 μg/L	85.2	60.0	140	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number. COC # 2022AUG WATER

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Canada Toli Free: 1 800 668 9878

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Company:	Ecofish Research Ltd.					Email 1 or Fax accountspayable@ecofishresearch.com				GCAFS	Level	MO.	(SS)	1		i	1			- 1		
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ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2202327** Page : 1 of 6

Amendment : 1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare
Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Ro

: 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Address

: 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

 Telephone
 : 250 334 3042
 Telephone
 : +1 250 261 5517

 Project
 : Site C MMP - Surface Water
 Date Samples Received
 : 26-Aug-2022 07:2

 Project
 : Site C MMP - Surface Water
 Date Samples Received
 : 26-Aug-2022 07:25

 PO
 : 1200-25.03.05
 Date Analysis Commenced
 : 30-Aug-2022

C-O-C number : 2022Aug Water MMP Issue Date : 06-Jun-2023 14:36

Sampler : KG Site :

Quote number : VA22-ECOF100-004

No. of samples received : 10
No. of samples analysed : 10

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia	
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia	
Sukhman Khosa	Lab Assistant	Metals, Burnaby, British Columbia	

Page : 2 of 6

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA Vancouver - Environmental	8081 Lougheed Highway, Burnaby, British
			Columbia

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (6/6/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sarah Kennedy on 6/6/2023. All analysis results are as per the previous report.

Page : 3 of 6

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Sub-Matrix: Water			C	lient sample ID	PR3-A	PR3-B	D1-Shallow-A	D1-Shallow-B	D1-Deep-A
(Matrix: Water)									
			Client samp	oling date / time	25-Aug-2022 17:15	25-Aug-2022 17:15	25-Aug-2022 12:20	25-Aug-2022 12:20	25-Aug-2022 11:55
Analyte	CAS Number M	ethod/Lab	LOR	Unit	FJ2202327-001	FJ2202327-002	FJ2202327-003	FJ2202327-004	FJ2202327-005
Physical Tests					Result	Result	Result	Result	Result
Alkalinity, total (as CaCO3)	E290/V	Α Α	1.0	mg/L	81.0		81.7		80.1
Conductivity	E100/V	Α Α	2.0	μS/cm	186		176		178
Hardness (as CaCO3), dissolved	EC100/	VA	0.60	mg/L	93.2		93.7		95.1
pH	E108/V	Α Α	0.10	pH units	8.12		7.78		7.82
Solids, total suspended [TSS]	E160/V	Α Α	3.0	mg/L	5.3		3.3		3.7
Anions and Nutrients									
Chloride	16887-00-6 E235.C	/VA A	0.50	mg/L	<0.50		<0.50		<0.50
Fluoride	16984-48-8 E235.F	VA A	0.020	mg/L	0.038		0.035		0.035
Nitrate (as N)	14797-55-8 E235.N	O3-L/V A	0.0050	mg/L	0.0675		0.0756		0.0775
Nitrite (as N)	14797-65-0 E235.N	O2-L/V A	0.0010	mg/L	<0.0010		0.0024		0.0016
Sulfate (as SO4)	A 14808-79-8 E235.S	O4/VA A	0.30	mg/L	13.9		13.4		13.3
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	E358-L	VA A	0.50	mg/L	2.83		2.83		3.13
Carbon, total organic [TOC]	E355-L	VA A	0.50	mg/L	2.86		2.84		3.35
Ion Balance									
Anion sum	EC101/	VA	0.10	meq/L	1.91		1.92		1.88
Cation sum	EC101/	VA	0.10	meq/L	1.92		1.93		1.96
Ion balance (APHA)	EC101/	VA	0.010	%	0.261		0.260		2.08
Total Metals									
Mercury, total	7439-97-6 E508-L	VA A	0.50	ng/L	0.58	0.61	0.59	0.60	0.57
Dissolved Metals									
Mercury, dissolved	7439-97-6 E509-L		0.50	ng/L	<0.50	<0.50	<0.50	<0.50	<0.50
Calcium, dissolved	7440-70-2 E421/V		0.050	mg/L	26.6		27.4		27.4
Magnesium, dissolved	7439-95-4 E421/V		0.0050	mg/L	6.50		6.13		6.48
Dissolved MeHg filtration location	EP537/	VA	-	-	Field	Field	Field	Field	Field
Dissolved mercury filtration location	EP509-		-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	EP421/	VA	-	-	Laboratory		Laboratory		Laboratory

Page : 4 of 6

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Sub-Matrix: Water				Cl	ient sample ID	PR3-A	PR3-B	D1-Shallow-A	D1-Shallow-B	D1-Deep-A
(Matrix: Water)										
				Client samp	ling date / time	25-Aug-2022 17:15	25-Aug-2022 17:15	25-Aug-2022 12:20	25-Aug-2022 12:20	25-Aug-2022 11:55
Analyte	CAS Number	Method/Lab		LOR	Unit	FJ2202327-001	FJ2202327-002	FJ2202327-003	FJ2202327-004	FJ2202327-005
						Result	Result	Result	Result	Result
Speciated Metals										
Methylmercury (as MeHg), total	22967-92-6 ^E	E536/VA	А	0.020	ng/L	0.022	0.026	<0.020	<0.020	<0.020
Methylmercury (as MeHg), dissolved	22967-92-6 E	E537/VA	Α	0.020	ng/L	<0.020	<0.020	<0.020	<0.020	<0.020

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

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

Page : 5 of 6

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Sub-Matrix: Water				CI	ient sample ID	D1-Deep-B	W1-Shallow-A	W1-Shallow-B	W1-Deep-A	W1-Deep-B
(Matrix: Water)										
				Client samp	ling date / time	25-Aug-2022 11:55	25-Aug-2022 10:30	25-Aug-2022 10:30	25-Aug-2022 10:00	25-Aug-2022 10:00
Analyte	CAS Number	Method/La	b	LOR	Unit	FJ2202327-006	FJ2202327-007	FJ2202327-008	FJ2202327-009	FJ2202327-010
						Result	Result	Result	Result	Result
Physical Tests Alkalinity, total (as CaCO3)	le le	E290/VA	A	1.0	mg/L		79.6		78.3	l
Conductivity		E100/VA	A	2.0			168		169	
Hardness (as CaCO3), dissolved		EC100/VA	A	0.60	μS/cm		89.5		90.4	
pH		E108/VA	Α	0.00	mg/L pH units		7.86		7.85	
Solids, total suspended [TSS]		E160/VA	A	3.0	· .		<3.0		<3.0	
		E100/VA	A	3.0	mg/L		\\ 3.0		\ 3.0	
Anions and Nutrients Chloride	16887-00-6	E235 CIA/A	A	0.50	ma/l		<0.50		<0.50	l
Fluoride	16984-48-8		A	0.020	mg/L		0.033		0.034	
Nitrate (as N)			A	0.020	mg/L		0.033		0.034	
Nitrate (as N)	14/9/-55-8	E235.NO3-L/V A	A	0.0030	mg/L		0.0390		0.0396	
Nitrite (as N)	14797-65-0	E235.NO2-L/V	Α	0.0010	mg/L		<0.0010		<0.0010	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	Α	0.30	mg/L		11.9		11.9	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]		E358-L/VA	Α	0.50	mg/L		3.04		3.04	
Carbon, total organic [TOC]	[E355-L/VA	Α	0.50	mg/L		3.07		3.31	
Ion Balance										
Anion sum		EC101/VA		0.10	meq/L		1.84		1.82	
Cation sum		EC101/VA		0.10	meq/L		1.84		1.86	
Ion balance (APHA)	[EC101/VA		0.010	%		<0.010		1.09	
Total Metals										
Mercury, total	7439-97-6	E508-L/VA	Α	0.50	ng/L	0.60	0.51	0.66	0.59	0.58
Dissolved Metals										
Mercury, dissolved	7439-97-6 l		Α	0.50	ng/L	<0.50	<0.50	<0.50	<0.50	<0.50
Calcium, dissolved	7440-70-2 I		Α	0.050	mg/L		25.6		26.3	
Magnesium, dissolved	7439-95-4		Α	0.0050	mg/L		6.22		6.01	
Dissolved MeHg filtration location		EP537/VA		-	-	Field	Field	Field	Field	Field
Dissolved mercury filtration location	E	EP509-L/VA		-	-	Field	Field	Field	Field	Field
Dissolved metals filtration location	[EP421/VA		-	-		Laboratory		Laboratory	
Speciated Metals										

Page : 6 of 6

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Sub-Matrix: Water				Cli	ient sample ID	D1-Deep-B	W1-Shallow-A	W1-Shallow-B	W1-Deep-A	W1-Deep-B
(Matrix: Water)										
				Client samp	ling date / time	25-Aug-2022 11:55	25-Aug-2022 10:30	25-Aug-2022 10:30	25-Aug-2022 10:00	25-Aug-2022 10:00
Analyte	CAS Number	Method/Lab		LOR	Unit	FJ2202327-006	FJ2202327-007	FJ2202327-008	FJ2202327-009	FJ2202327-010
						Result	Result	Result	Result	Result
Speciated Metals										
Methylmercury (as MeHg), total	22967-92-6 E	536/VA	Α	0.020	ng/L	<0.020	<0.020	<0.020	0.021	<0.020
Methylmercury (as MeHg), dissolved	22967-92-6 E	537/VA	Α	0.020	ng/L	<0.020	<0.020	<0.020	<0.020	<0.020

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202327** Page : 1 of 19

Amendment :1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

:1220 - 1175 Douglas Street Address :11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

 Telephone
 : 250 334 3042
 Telephone
 : +1 250 261 5517

 Project
 : Site C MMP - Surface Water
 Date Samples Received
 : 26-Aug-2022 07:25

Sampler : KG Site :

Quote number : VA22-ECOF100-004

No. of samples received :10
No. of samples analysed :10

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

Key

Address

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

Page : 3 of 19

Matrix: Water

D1-Shallow-A

Work Order : FJ2202327 Amendment 1
Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Analysis Holding Time Compliance

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

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

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

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

Analyte Group Sampling Date Extraction / Preparation Analysis Method Container / Client Sample ID(s) Holding Times Eval Analysis Date Holding Times Eval Preparation Rec Actual Rec Actual Date Anions and Nutrients : Chloride in Water by IC **HDPE** E235.CI 28 days ✓ D1-Deep-A 25-Aug-2022 30-Aug-2022 30-Aug-2022 5 days Anions and Nutrients : Chloride in Water by IC HDPE D1-Shallow-A E235.CI 25-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 5 days ----Anions and Nutrients : Chloride in Water by IC **HDPE** E235.CI 25-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 5 days W1-Deep-A Anions and Nutrients: Chloride in Water by IC **HDPE** 28 days W1-Shallow-A E235.CI 25-Aug-2022 30-Aug-2022 30-Aug-2022 5 davs Anions and Nutrients : Chloride in Water by IC HDPE PR3-A E235.CI 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days 1 Anions and Nutrients : Fluoride in Water by IC HDPE E235.F 30-Aug-2022 D1-Deep-A 25-Aug-2022 30-Aug-2022 28 days 5 days ----Anions and Nutrients : Fluoride in Water by IC **HDPE**

25-Aug-2022

30-Aug-2022

E235.F

✓

5 days

30-Aug-2022

28 days

Page 4 of 19

Matrix: Water

HDPE W1-Deep-A

HDPE

HDPE

HDPE

PR3-A

D1-Deep-A

W1-Shallow-A

Analyte Group

Work Order · FJ2202327 Amendment 1 Client Ecofish Research Ltd Site C MMP - Surface Water **Project**

Anions and Nutrients : Nitrate in Water by IC (Low Level)

Anions and Nutrients : Nitrate in Water by IC (Low Level)

Anions and Nutrients : Nitrate in Water by IC (Low Level)

Anions and Nutrients : Nitrite in Water by IC (Low Level)



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

30-Aug-2022

30-Aug-2022

01-Sep-2022

3 days

3 days

3 days

5 days

5 days

7 days

✓

✓

Analysis

Extraction / Preparation

Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Anions and Nutrients: Fluoride in Water by IC HDPE E235.F 25-Aug-2022 30-Aug-2022 30-Aug-2022 28 days ✓ W1-Deep-A 5 days Anions and Nutrients : Fluoride in Water by IC HDPE W1-Shallow-A E235.F 25-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 5 days ✓ Anions and Nutrients : Fluoride in Water by IC HDPE PR3-A E235.F 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days ✓ Anions and Nutrients : Nitrate in Water by IC (Low Level) HDPE E235.NO3-L 25-Aug-2022 D1-Deep-A 30-Aug-2022 30-Aug-2022 3 days 5 days Anions and Nutrients : Nitrate in Water by IC (Low Level) HDPE E235.NO3-L 25-Aug-2022 30-Aug-2022 30-Aug-2022 ✓ D1-Shallow-A 3 days 5 days

25-Aug-2022

25-Aug-2022

25-Aug-2022

25-Aug-2022

30-Aug-2022

30-Aug-2022

01-Sep-2022

30-Aug-2022

Sampling Date

Method

E235.NO3-L

E235.NO3-L

E235.NO3-L

E235.NO2-L

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Matrix: Water

HDPE

HDPE

HDPE

HDPE

PR3-A

D1-Shallow-A

W1-Deep-A

W1-Shallow-A

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Anions and Nutrients : Sulfate in Water by IC

Anions and Nutrients : Sulfate in Water by IC

Anions and Nutrients: Sulfate in Water by IC

Anions and Nutrients: Sulfate in Water by IC



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

30-Aug-2022

30-Aug-2022

30-Aug-2022

01-Sep-2022

28 days

28 days

28 days

28 days 7 days

5 days

5 days

5 days

✓

✓

✓

Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Anions and Nutrients: Nitrite in Water by IC (Low Level) HDPE E235.NO2-L 25-Aug-2022 30-Aug-2022 D1-Shallow-A 30-Aug-2022 3 days 5 days æ EHT Anions and Nutrients: Nitrite in Water by IC (Low Level) HDPE W1-Deep-A E235.NO2-L 25-Aug-2022 30-Aug-2022 30-Aug-2022 3 days 5 days æ ----EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE W1-Shallow-A E235.NO2-L 25-Aug-2022 30-Aug-2022 30-Aug-2022 3 days 5 days æ ----EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE E235.NO2-L PR3-A 25-Aug-2022 01-Sep-2022 01-Sep-2022 3 days 7 days æ EHT Anions and Nutrients : Sulfate in Water by IC HDPE E235.SO4 25-Aug-2022 30-Aug-2022 30-Aug-2022 28 days 5 days ✓ D1-Deep-A

25-Aug-2022

25-Aug-2022

25-Aug-2022

25-Aug-2022

30-Aug-2022

30-Aug-2022

30-Aug-2022

01-Sep-2022

E235.SO4

E235.SO4

E235.SO4

E235.SO4

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Matrix: Water Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 25-Aug-2022 28 days 1 02-Sep-2022 02-Sep-2022 8 days D1-Deep-A Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) D1-Deep-B E509-L 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days ✓ Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) D1-Shallow-A E509-L 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days 1 ----Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L D1-Shallow-B 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days ✓ PR3-A 8 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 25-Aug-2022 ✓ PR3-B 02-Sep-2022 02-Sep-2022 28 days 8 days ----Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days ✓ W1-Deep-A Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L ✓ W1-Deep-B 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L W1-Shallow-A 25-Aug-2022 02-Sep-2022 02-Sep-2022 28 days 8 days ✓

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

Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppst)	Matrix: Water						/aluation. ^ –	Holding time exce	euance, v	– vviuiiii	Holding Tilli
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Dissolved Metals : Dissolved Metals in Water by CVAFS (Low Level, LOR = 0.5 ppt)	Container / Client Sample ID(s)			Preparation Holding Times		Eval	Analysis Date	Holding Times		Eval	
Pro-Clase and amber glass - dissolved (lab preserved)				Date	Rec	Actual			Rec	Actual	
W1-Shallow-B E509-L 25-Aug-2022 22-Sep-2022	Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)									
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS	Pre-cleaned amber glass - dissolved (lab preserved)										
HDPE - dissolved (lab preserved) E421 25-Aug-2022 05-Sep-2022 06-Sep-2022 180 12 days ✓	W1-Shallow-B	E509-L	25-Aug-2022	02-Sep-2022				02-Sep-2022	28 days	8 days	✓
HDPE - dissolved (lab preserved) E421 25-Aug-2022 05-Sep-2022 06-Sep-2022 180 12 days ✓											
PR3-A E421 25-Aug-2022 05-Sep-2022 06-Sep-2022 180 days ✓ days	Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS	HDPE - dissolved (lab preserved)										
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS	PR3-A	E421	25-Aug-2022	05-Sep-2022				06-Sep-2022	180	12 days	✓
HDPE - dissolved (lab preserved) E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 5 days ✓									days		
HDPE - dissolved (lab preserved) E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 5 days ✓	Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
Dissolved Metals: Dissolved Metals in Water by CRC ICPMS	·										
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 4ays 5 days ✓	D1-Deep-A	E421	25-Aug-2022	30-Aug-2022				30-Aug-2022	180	5 days	✓
HDPE - dissolved (lab preserved) D1-Shallow-A So-Aug-2022 So-Aug									days		
HDPE - dissolved (lab preserved) D1-Shallow-A So-Aug-2022 So-Aug	Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
Dissolved Metals : Dissolved (lab preserved) E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days 5 days ✓	·										
Dissolved Metals : Dissolved (lab preserved) E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days 5 days ✓	D1-Shallow-A	E421	25-Aug-2022	30-Aug-2022				30-Aug-2022	180	5 days	✓
HDPE - dissolved (lab preserved) W1-Deep-A E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days									days		
M1-Deep-A E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days √	Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS	HDPE - dissolved (lab preserved)										
Dissolved Metals: Dissolved (lab preserved) W1-Shallow-A E421 25-Aug-2022 30-Aug-2022 B180	W1-Deep-A	E421	25-Aug-2022	30-Aug-2022				30-Aug-2022	180	5 days	✓
HDPE - dissolved (lab preserved) W1-Shallow-A E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days F days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep-A Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)									days		
HDPE - dissolved (lab preserved) W1-Shallow-A E421 25-Aug-2022 30-Aug-2022 30-Aug-2022 180 days F days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep-A Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)	Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep-A Crganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 O1-Sep-2022 O1-Sep-											
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Deep-A Corganic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 01-Sep-2022 01-Sep	W1-Shallow-A	E421	25-Aug-2022	30-Aug-2022				30-Aug-2022	180	5 days	✓
Amber glass dissolved (sulfuric acid) D1-Deep-A E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)									days		
D1-Deep-A E358-L 25-Aug-2022 D1-Sep-2022 —— D1-Sep-2022 28 days 7 days ✓ Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) E358-L 25-Aug-2022 D1-Sep-2022 D1-	Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-Shallow-A Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)	Amber glass dissolved (sulfuric acid)										
Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 01-Sep-2022 O1-Sep-2022 28 days 7 days 7 days 7 days 7 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	D1-Deep-A	E358-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 01-Sep-2022 O1-Sep-2022 28 days 7 days 7 days 7 days 7 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)											
Amber glass dissolved (sulfuric acid) D1-Shallow-A E358-L 25-Aug-2022 01-Sep-2022 O1-Sep-2022 28 days 7 days 7 days 7 days 7 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
D1-Shallow-A E358-L 25-Aug-2022 O1-Sep-2022 O1-Sep-2022 28 days 7 days ✓ Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)	• • • • • • • • • • • • • • • • • • • •	ĺ									
Amber glass dissolved (sulfuric acid)	· · · · · · · · · · · · · · · · · · ·	E358-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Amber glass dissolved (sulfuric acid)											
Amber glass dissolved (sulfuric acid)	Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve)									
PR3-A E358-L 25-Aug-2022 01-Sep-2022 01-Sep-2022 28 days 7 days ✓		E358-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
									,		

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naun. Water						raidation. • -				
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analysis		
Container / Client Sample ID(s)			Preparation	Preparation Holding Times		Eval	Analysis Date	Date Holding Times		Eval
			Date	Rec	Actual		,	Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid)										
W1-Deep-A	E358-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
W1-Shallow-A	E358-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	on (Low Level)									
Amber glass total (sulfuric acid)										
D1-Deep-A	E355-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
D1-Shallow-A	E355-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	on (Low Level)									
Amber glass total (sulfuric acid)										
PR3-A	E355-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
W1-Deep-A	E355-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	on (Low Level)									
Amber glass total (sulfuric acid)										
W1-Shallow-A	E355-L	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-Deep-A	E290	25-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-Shallow-A	E290	25-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	5 days	✓
	1	1		T.	1		I	1		

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water							nolding time excee	,		
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Holding Times Eval			Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
W1-Deep-A	E290	25-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
W1-Shallow-A	E290	25-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PR3-A	E290	25-Aug-2022	01-Sep-2022				01-Sep-2022	14 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE										
D1-Deep-A	E100	25-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
D1-Shallow-A	E100	25-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
W1-Deep-A	E100	25-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
W1-Shallow-A	E100	25-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PR3-A	E100	25-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	7 days	1
			·				·			
Physical Tests : pH by Meter										
HDPE										
	E108	25-Aug-2022	01-Sep-2022				01-Sep-2022	0.25	0.29	*
PR3-A	E100	20-Aug-2022	01-06b-2022							

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Preparation Preparation	Matrix: Water						raidation. • =	Holding time exce	dance,	- vvitiiii	Tiolding Time
Date Rec Actual	Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation		Analysis			
Part Part	Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
## PETERS Page 2022 Sunday					Rec	Actual			Rec	Actual	
## PETERS Page 2022 Sunday	Physical Tests : pH by Meter										
D1-Deep-A											
hysical Tests : pH by Meter HDPE D1-Shallow-A E108 25-Aug-2022 30-Aug-2022 30		E108	25-Aug-2022	30-Aug-2022				30-Aug-2022	0.25	1.63	*
### Note	21 200p //			007.449 2022				007.09 2022			FHTR-FM
## HOPE D1-Shallow-A									1113	1113	Litticiti
D1-Shallow-A											
hrs hrs EHTR-FI											
## Property	D1-Shallow-A	E108	25-Aug-2022	30-Aug-2022				30-Aug-2022			
## Property Region Fig. Fi									hrs	hrs	EHTR-FM
## Property Region Fig. Fi	Physical Tests : pH by Meter										
htysical Tests : pH by Meter HDPE W1-Shallow-A E108 25-Aug-2022 30-Aug-2022 30	HDPE										
hrs hrs EHR-FI Hysical Tests : pH by Meter HUPE W1-Shallow-A E108 25-Aug-2022 30-Aug-2022	W1-Deep-A	E108	25-Aug-2022	30-Aug-2022				30-Aug-2022	0.25	1.63	*
hysical Tests : pH by Meter HDPE W1-Shallow-A E108 25-Aug-2022 30-Aug-2022 30-Aug-2022 0.25 1.63 ★ hrs hrs HTR-FI Physical Tests : TSS by Gravimetry HDPE D1-Dep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE D1-Shallow-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE W1-Dep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE W1-Dep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE W1-Dep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓									hrs	hrs	EHTR-FM
## E108 25-Aug-2022 30-Aug-2022 30-Aug-2022 0.25 1.63 ** EHTR-FI	Dhysical Tests until by Mater										
### Physical Tests : TSS by Gravimetry ###################################											
hrs hrs EHTR-FI Physical Tests : TSS by Gravimetry HDPE D1-Deep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE D1-Shallow-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓ Physical Tests : TSS by Gravimetry HDPE HDPE W1-Deep-A E160 25-Aug-2022 01-Sep-2022 7 days 7 days ✓		E100	25 Aug 2022	20 100				20 10 2022	0.05	4.00	
Physical Tests : TSS by Gravimetry	W1-Snallow-A	E100	25-Aug-2022	30-Aug-2022				30-Aug-2022			
HDPE D1-Deep-A E160									hrs	hrs	EHTK-FM
D1-Deep-A	Physical Tests : TSS by Gravimetry										
Physical Tests : TSS by Gravimetry HDPE D1-Shallow-A E160 25-Aug-2022 Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 D1-Sep-2022 T days T days T days T	HDPE										
HDPE	D1-Deep-A	E160	25-Aug-2022					01-Sep-2022	7 days	7 days	✓
HDPE											
HDPE	Physical Tests : TSS by Gravimetry										
D1-Shallow-A											
Physical Tests : TSS by Gravimetry HDPE PR3-A E160 25-Aug-2022 Physical Tests : TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 W1-Deep-A E160 25-Aug-2022 W1-Sep-2022 T days T da		F160	25-Aug-2022					01-Sen-2022	7 days	7 days	1
HDPE PR3-A E160 25-Aug-2022 Physical Tests: TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 E160 25-Aug-2022 E160 25-Aug-2022 O1-Sep-2022 7 days 7 days 7 days ✓ Thysical Tests: TSS by Gravimetry Physical Tests: TSS by Gravimetry HDPE HDPE	B 1 - Official Own 1	2.00	207109 2022					0 1 00p 2022	, dayo	, aayo	
HDPE PR3-A E160 25-Aug-2022 Physical Tests: TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 E160 25-Aug-2022 E160 25-Aug-2022 O1-Sep-2022 7 days 7 days 7 days ✓ Thysical Tests: TSS by Gravimetry Physical Tests: TSS by Gravimetry HDPE HDPE											
PR3-A											
Physical Tests : TSS by Gravimetry HDPE W1-Deep-A E160 25-Aug-2022 Physical Tests : TSS by Gravimetry HDPE HDPE											
HDPE W1-Deep-A E160 25-Aug-2022 U1-Sep-2022 7 days 7 days 7 days ✓ Physical Tests: TSS by Gravimetry HDPE	PR3-A	E160	25-Aug-2022					01-Sep-2022	7 days	7 days	✓
HDPE W1-Deep-A E160 25-Aug-2022 U1-Sep-2022 7 days 7 days 7 days ✓ Physical Tests: TSS by Gravimetry HDPE											
HDPE W1-Deep-A E160 25-Aug-2022 U1-Sep-2022 7 days 7 days 7 days ✓ Physical Tests: TSS by Gravimetry HDPE	Physical Tests : TSS by Gravimetry										
W1-Deep-A E160 25-Aug-2022 01-Sep-2022 7 days ✓ Physical Tests: TSS by Gravimetry HDPE Image: Color of the color of	HDPE										
Physical Tests: TSS by Gravimetry HDPE		E160	25-Aug-2022					01-Sep-2022	7 days	7 days	✓
HDPE	'							·	,		
HDPE	PLANT OF TOOL OF THE										
W1-Shallow-A		E400	05 4 0000					04.0			,
	W1-Shallow-A	E160	25-Aug-2022					u1-Sep-2022	/ days	/ days	✓

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Matrix: Water					EV	aluation. ^ –	Holding time excee	euance,	• - vviuiiii	Holding Hill
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
D1-Deep-A	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
D1-Deep-B	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
D1-Shallow-A	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
D1-Shallow-B	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)	T									
PR3-A	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR3-B	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
W1-Deep-A	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
W1-Deep-B	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
			, i	days				days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (nydrochioric acid)									1 1	
Amber glass dissolved (hydrochloric acid) W1-Shallow-A	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓

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Matrix: Water					Lv	raiuation. * =	Holding time excee	euance,	• - vvitiiiii	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / P	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
W1-Shallow-B	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
D1-Deep-A	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
D1-Deep-B	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
D1-Shallow-A	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
			, ,				, ,	days		
Speciated Metals : Total Methylmercury in Water by GCAFS								,		
Amber glass total (hydrochloric acid)										
D1-Shallow-B	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	1
							00 p	days		
Speciated Metals : Total Methylmercury in Water by GCAFS								uayo		
Amber glass total (hydrochloric acid)										
PR3-A	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	1
11071		207.69 2022	02 GGP 2022				00 COP 2022	days	10 dayo	
0.016.18.615.7.618.615.000.5.86.6.000.50								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR3-B	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	1
FNJ-D	L330	25-Aug-2022	02-3 6 p-2022				09-3ep-2022		15 days	•
								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)	E536	25 Aug 2022	02-Sep-2022				09-Sep-2022	400	15 days	1
W1-Deep-A	E530	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	•
								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)	F500	05.4. 0005							4.5	
W1-Deep-B	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
								days		

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Matrix: Water					EV	aluation. * –	Holding time excee	euance, v	– vvitriiri	Holding Time
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
W1-Shallow-A	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
								days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
W1-Shallow-B	E536	25-Aug-2022	02-Sep-2022				09-Sep-2022	180	15 days	✓
								days		
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-Deep-A	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-Deep-B	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-Shallow-A	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-Shallow-B	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR3-A	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR3-B	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
W1-Deep-A	E508-L	25-Aug-2022	01-Sep-2022	28	7 days	✓	01-Sep-2022	28 days	0 days	✓

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

Analyte Group	Method	Sampling Date	Ext	raction / Pro	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) W1-Deep-B	E508-L	25-Aug-2022	01-Sep-2022	28 days	7 days	✓	01-Sep-2022	28 days	0 days	4
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) W1-Shallow-A	E508-L	25-Aug-2022	01-Sep-2022	28 days	7 days	✓	01-Sep-2022	28 days	0 days	4
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) W1-Shallow-B	E508-L	25-Aug-2022	01-Sep-2022	28 days	7 days	✓	01-Sep-2022	28 days	0 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Matrix: Water Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification									
Quality Control Sample Type				ount		Frequency (%			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Duplicates (DUP)									
Alkalinity Species by Titration	E290	624246	2	39	5.1	5.0	✓		
Chloride in Water by IC	E235.CI	624251	2	39	5.1	5.0	✓		
Conductivity in Water	E100	624244	2	39	5.1	5.0	✓		
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓		
Dissolved Metals in Water by CRC ICPMS	E421	624762	3	38	7.8	5.0	✓		
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓		
Fluoride in Water by IC	E235.F	624248	2	21	9.5	5.0	✓		
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	2	39	5.1	5.0	✓		
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	2	39	5.1	5.0	✓		
pH by Meter	E108	624245	2	39	5.1	5.0	✓		
Sulfate in Water by IC	E235.SO4	624247	2	39	5.1	5.0	✓		
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629555	1	20	5.0	5.0	1		
Total Methylmercury in Water by GCAFS	E536	631430	1	20	5.0	5.0	1		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	1		
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	1		
Laboratory Control Samples (LCS)									
Alkalinity Species by Titration	E290	624246	2	39	5.1	5.0	1		
Chloride in Water by IC	E235.CI	624251	2	39	5.1	5.0	1		
Conductivity in Water	E100	624244	2	39	5.1	5.0	1		
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	√		
Dissolved Metals in Water by CRC ICPMS	E421	624762	2	38	5.2	5.0	1		
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	<u>-</u>		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	1		
Fluoride in Water by IC	E235.F	624248	2	21	9.5	5.0	1		
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	2	39	5.1	5.0	1		
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	2	39	5.1	5.0	1		
pH by Meter	E108	624245	2	39	5.1	5.0	<u> </u>		
Sulfate in Water by IC	E235.SO4	624247	2	39	5.1	5.0	1		
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629555	1	20	5.0	5.0	1		
Total Methylmercury in Water by GCAFS	E536	631430	1	20	5.0	5.0	1		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	1		
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	1		
Method Blanks (MB)	2.55						_		
Alkalinity Species by Titration	E290	624246	2	39	5.1	5.0	1		
The second of th	L230	02 12 10	-		Ŭ. I	0.0	v		

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

				יום פונים ומונים אונים ליוים			
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Chloride in Water by IC	E235.CI	624251	2	39	5.1	5.0	✓
Conductivity in Water	E100	624244	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	624762	2	38	5.2	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	624248	2	21	9.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	2	39	5.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	624247	2	39	5.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629555	1	20	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	631430	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.CI	624251	2	39	5.1	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	624762	2	38	5.2	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	624248	2	21	9.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	2	39	5.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	2	39	5.1	5.0	✓
Sulfate in Water by IC	E235.SO4	624247	2	39	5.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	629555	1	20	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	631430	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	√

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCI, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
lon Balance using Dissolved Metals	EC101	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA
	Vancouver -			Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	Environmental			used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical
	Environmental			, ,
				conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by	EP355	Water		Preparation for Total Organic Carbon by Combustion
Combustion				
	Vancouver -			
	Environmental			
Preparation for Dissolved Organic Carbon for Combustion	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCI.
Level)	EF309-L	VVator	74 177 00000	water samples are intered (c+o uni), and preserved warrior.
	Vancouver -			
	Environmental			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".

ALS Canada Ltd.



QUALITY CONTROL REPORT

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Amendment : 1

Address

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

: 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project :Site C MMP - Surface Water Date Samples Received :26-Aug-2022 07:25

Sampler : KG 250 224 2042

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 10

No. of samples analysed : 10

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

250 334 3042

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Victoria BC Canada V8W 2E1

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	
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General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 624244)										
FJ2202327-007	W1-Shallow-A	Conductivity		E100	2.0	μS/cm	168	171	1.65%	10%	
Physical Tests (QC	Lot: 624245)										
FJ2202327-007	W1-Shallow-A	pH		E108	0.10	pH units	7.86	7.87	0.127%	4%	
Physical Tests (QC	Lot: 624246)										
FJ2202327-007	W1-Shallow-A	Alkalinity, total (as CaCO3)		E290	1.0	mg/L	79.6	78.9	0.883%	20%	
Physical Tests (QC	Lot: 628236)										
YL2201331-001	Anonymous	Conductivity		E100	2.0	μS/cm	<2.0	<2.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 628237)										
YL2201331-001	Anonymous	рН		E108	0.10	pH units	5.72	5.73	0.175%	4%	
Physical Tests (QC	Lot: 628238)										
YL2201331-001	Anonymous	Alkalinity, total (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 629645)										
FJ2202327-001	PR3-A	Solids, total suspended [TSS]		E160	3.0	mg/L	5.3	5.1	0.2	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 624247)										
FJ2202328-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.5	28.5	0.111%	20%	
Anions and Nutrient	s (QC Lot: 624248)										
FJ2202328-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.156	0.150	0.006	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 624249)										
FJ2202328-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0157	0.0155	0.0002	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 624250)										
FJ2202328-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 624251)										
FJ2202328-001	Anonymous	Chloride	16887-00-6	E235.CI	0.50	mg/L	0.78	0.77	0.007	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 628239)										
VA22C0190-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	24.3	24.2	0.336%	20%	
Anions and Nutrient	s (QC Lot: 628240)										
VA22C0190-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 628241)										
VA22C0190-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 628242)										

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ub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrien	its (QC Lot: 628242) - co	ntinued									
VA22C0190-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.144	0.146	0.002	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 628243)										
VA22C0190-001	Anonymous	Chloride	16887-00-6	E235.CI	0.50	mg/L	73.3	73.3	0.0140%	20%	
Organic / Inorganic	Carbon (QC Lot: 62955	1)									
FJ2202327-001	PR3-A	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.83	2.76	0.06	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629552	2)									
FJ2202327-001	PR3-A	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.86	2.85	0.01	Diff <2x LOR	
Total Metals (QC L	ot: 629555)										
FJ2202327-001	PR3-A	Mercury, total	7439-97-6	E508-L	0.50	ng/L	0.58	0.58	0.004	Diff <2x LOR	
Dissolved Metals (QC Lot: 624762)										
VA22C0108-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.500	mg/L	206	209	1.59%	20%	
		Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	56.8	55.2	2.84%	20%	
Dissolved Metals (QC Lot: 630550)										
EO2206775-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	14.0	13.0	6.97%	20%	
Dissolved Metals (QC Lot: 632979)										
YL2201358-001	Anonymous	Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	47.5	46.7	1.73%	20%	
YL2201358-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	157	161	2.21%	20%	
Speciated Metals (QC Lot: 630063)										
FJ2202315-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	<0.020 ng/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (QC Lot: 631430)										
CG2211557-001	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000064	0.000065	0.000001	Diff <2x LOR	

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Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 624244)					
Conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 624246)					
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 628236)					
Conductivity	E100	1	μS/cm	1.1	
Physical Tests (QCLot: 628238)					
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 629645)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 624247)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 624248)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 624249)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 624250)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 624251)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 628239)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 628240)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 628241)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 628242)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 628243)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 629551)					
Carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	

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Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 62	29552) - continued					
Carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Total Metals (QCLot: 629555)						
Mercury, total	7439-97-6	E508-L	0.5	ng/L	<0.50	
Dissolved Metals (QCLot: 624762)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 630550)						
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	
Dissolved Metals (QCLot: 632979)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	
Speciated Metals (QCLot: 630063)						
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	<0.000020	
Speciated Metals (QCLot: 631430)						
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	<0.000020	

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Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number M	lethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 624244)									
Conductivity	E	100	1	μS/cm	146.9 μS/cm	96.0	90.0	110	
Physical Tests (QCLot: 624245)									
рН	E	108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 624246)									
Alkalinity, total (as CaCO3)	E	290	1	mg/L	500 mg/L	107	85.0	115	
Physical Tests (QCLot: 628236)									
Conductivity	E	100	1	μS/cm	146.9 μS/cm	101	90.0	110	
Physical Tests (QCLot: 628237)									
рН	E	108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 628238)									
Alkalinity, total (as CaCO3)	E	290	1	mg/L	500 mg/L	107	85.0	115	
Physical Tests (QCLot: 629645)									
Solids, total suspended [TSS]	E	160	3	mg/L	150 mg/L	88.2	85.0	115	
Anions and Nutrients (QCLot: 624247)									
Sulfate (as SO4)	14808-79-8 E	235.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	
Anions and Nutrients (QCLot: 624248)									
Fluoride	16984-48-8 E	235.F	0.02	mg/L	1 mg/L	97.7	90.0	110	
Anions and Nutrients (QCLot: 624249)									
Nitrate (as N)	14797-55-8 E	235.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	
Anions and Nutrients (QCLot: 624250)		2007.1100.1	0.004						
Nitrite (as N)	14797-65-0 E	235.NO2-L	0.001	mg/L	0.5 mg/L	97.2	90.0	110	
Anions and Nutrients (QCLot: 624251)	40007.00.0	2005.01							
Chloride	16887-00-6 E	235.CI	0.5	mg/L	100 mg/L	98.3	90.0	110	
Anions and Nutrients (QCLot: 628239)	44000 70 6	2005 004					00.0	440	
Sulfate (as SO4)	14808-79-8 E	235.504	0.3	mg/L	100 mg/L	99.8	90.0	110	
Anions and Nutrients (QCLot: 628240)	44707 == 0	2005 NOO I	0.007				00.0	445	
Nitrate (as N)	14797-55-8 E	235.NO3-L	0.005	mg/L	2.5 mg/L	99.1	90.0	110	
Anions and Nutrients (QCLot: 628241)									
Nitrite (as N)	14797-65-0 E	235.NO2-L	0.001	mg/L	0.5 mg/L	96.9	90.0	110	
Anions and Nutrients (QCLot: 628242)									
Fluoride	16984-48-8 E	235.F	0.02	mg/L	1 mg/L	98.3	90.0	110	

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Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 628243)									
Chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	98.7	90.0	110	
Organic / Inorganic Carbon (QCLot: 62955	1)								
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	
Organic / Inorganic Carbon (QCLot: 62955	(2)								
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	99.7	80.0	120	
Total Metals (QCLot: 629555)									
Mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	115	80.0	120	
Dissolved Metals (QCLot: 624762)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.2	80.0	120	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	101	80.0	120	
Dissolved Metals (QCLot: 632979)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.6	80.0	120	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	
Speciated Metals (QCLot: 630063)									
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	82.7	70.0	130	
Speciated Metals (QCLot: 631430)									
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	76.0	70.0	130	

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Matrix Spike (MS) Report

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

Sub-Matrix: Water								e (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutr	ients (QCLot: 624247)									
VA22C0138-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	
Anions and Nutr	ients (QCLot: 624248)									
VA22C0138-001	Anonymous	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	
Anions and Nutr	ients (QCLot: 624249)									
VA22C0138-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	
Anions and Nutr	ients (QCLot: 624250)									
VA22C0138-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125	
Anions and Nutr	ients (QCLot: 624251)									
VA22C0138-001	Anonymous	Chloride	16887-00-6	E235.CI	105 mg/L	100 mg/L	105	75.0	125	
Anions and Nutr	ients (QCLot: 628239)									
VA22C0190-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	107 mg/L	100 mg/L	107	75.0	125	
Anions and Nutr	ients (QCLot: 628240)									
VA22C0190-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.69 mg/L	2.5 mg/L	108	75.0	125	
Anions and Nutr	ients (QCLot: 628241)									•
VA22C0190-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	
Anions and Nutr	ients (QCLot: 628242)									
VA22C0190-001	Anonymous	Fluoride	16984-48-8	E235.F	1.07 mg/L	1 mg/L	107	75.0	125	
Anions and Nutr	ients (QCLot: 628243)									
VA22C0190-001	Anonymous	Chloride	16887-00-6	E235.CI	105 mg/L	100 mg/L	105	75.0	125	
Organic / Inorga	nic Carbon (QCLot: 62	9551)								•
FJ2202327-003	D1-Shallow-A	Carbon, dissolved organic [DOC]		E358-L	4.69 mg/L	5 mg/L	93.9	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 62	29552)								
FJ2202327-003	D1-Shallow-A	Carbon, total organic [TOC]		E355-L	5.08 mg/L	5 mg/L	102	70.0	130	
Total Metals (QC	CLot: 629555)									
FJ2202327-002	PR3-B	Mercury, total	7439-97-6	E508-L	5.64 ng/L	5 ng/L	113	70.0	130	
Dissolved Metals	(QCLot: 624762)									
KS2203131-001	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	

Page : 10 of 10

Work Order: FJ2202327 Amendment 1
Client: Ecofish Research Ltd
Project: Site C MMP - Surface Water



Sub-Matrix: Water						Matrix Spil	re (MS) Report			
					Spi	Spike Recovery		(%) Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 624762) - cont	inued								
KS2203131-001	Anonymous	Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 630550)									
FC2201954-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	4.41 ng/L	5 ng/L	88.3	70.0	130	
Dissolved Metals	(QCLot: 632979)									
YL2201358-002	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
Speciated Metals	(QCLot: 630063)									
FJ2202315-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00191 μg/L	0.0025 μg/L	76.6	60.0	140	
Speciated Metals	(QCLot: 631430)									
FJ2202315-005	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00213 μg/L	0.0025 μg/L	85.2	60.0	140	

Chain of Custody (COC) / Analytical Request Form

ALS GRUNDINGERGE

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only).

FJAE Shipping & Receiving Call Out Expedite Priority # of Coolers * Air Ground # of Carboys

NAL COOLER TEMPERATURES "C Number of Containers 🗹 Standard TAT if received by 3 pm - business days • no surcharges apply Same Day, Weekend or Statutory holiday [E0] 1 Business day (E1) Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Yes e Custody seal intact SIF Observations o i Analysis Request tests that can not be parformed according to the service level œ œ ď TURES *C œ œ œ ce Cubes Regular [R] 3 day [P3] 4 day [P4] 2 day [P2] œ ce Packs mail 1 or Fax Ihull@ecofishresearch.com, kganshorn@ecofishre Sample Type 26,22 Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) Kevin Gans Water Water Water Water Water Water Scompare Results to Criteria on Report - provide details below if box checked Water Water Water Water Jedo (DIGITAL) waterqualitylabdata@ecofishresearch.com <u>₹</u> mail 1 or Fax accountspayable@ecofishresearch.com Oit and Gas Required Fields (client use) Please send Azimuth a copy of the data in their EDD format: (kasubuchi@ecofishresearch.com 00:01 8 15:30 Routing Cade 35 F 1 (2:32 Select Invoice Distribution: ZEMAIL (հետուտ) Sampler ☐ Mali Quality Control (QC) Report with Report 25 AK 22 25 pma 22 Sneha Sansare 25 ANG 22 22 pyle 22 J EMAIL 25 AK 22 RICK Date telect Distribution: ALS Contact: VFE/Cost Center: jor/Winor Code Requisitioner mail 3 ocation: Fort St. John
Work Order Reference
FJ2202327 mail 2 mail 2 mann@azimuthgroup.ca (This description will appear on the report) Sample Identification and/or Coordinates PR3-B ALS Account # / Quote #: VA22-ECOF100-004 (MMP Surface Water) Company address below will appear on the final report NO NO N S O Si □ \ \ Drinking Water (DW) Samples' (client use) Telephone: +1 250 261 5517 Site C MMP - Surface Water Copy of Invoice with Report amples taken from a Regulated DW Syster ALS Lab Work Order # (lab use only) mples for human drinking water use? Ecofish Research Ltd. Ecofish Research Ltd. Same as Report To 600 Comox Rd. Courtenay, BC 1200-25.03.05 D1-Shallow-B W1-Shallow-B 250-334-3042 W1-Shallow-A D1-Shallow-A W1-Deep-B D1-Deep-A W1-Deep.A 71-Deep-B Leah Huil V9N 3P6 900 ☐ ☐ ALS Sample # (lab use only) Company Company

COC Number: COC #: 2022AUG WATER

۵,



CERTIFICATE OF ANALYSIS

Work Order : FJ2202360

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

PO : 1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG Site .

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 26-Aug-2022 17:10

Date Analysis Commenced : 30-Aug-2022

Issue Date : 27-Sep-2022 17:23

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Jennifer Nguyen	Lab Analyst	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Kyle Chang	Lab Assistant	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

Page : 2 of 4

Work Order : FJ2202360

Client : Ecofish Research Ltd

Project : Site C MMP - Surface Water



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202360

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Results

Analyte CAS Number Method LOR Unit FJ2202360-001 FJ2202360-002 FJ2202360-003 FJ2202360-004 FJ2202360-004	Sub-Matrix: Water			Ci	lient sample ID	PR1-A	PR1-B	PR1-C	PR2-A	PR2-B
Analyse CAS Number Method LOR Unit FJ2202368-001 FJ2202368-003 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 FJ2202368-004 Result R	(Matrix: Water)									
Result R				Client samp	lling date / time		_	_	-	26-Aug-2022 13:55
Physical Tests alkalinity, total (as CaCO3)	Analyte	CAS Number	Method	LOR	Unit	FJ2202360-001	FJ2202360-002	FJ2202360-003	FJ2202360-004	FJ2202360-005
Statility, total (as CaCO3) E290 1.0 mg/L 82.0 82.7 82.1						Result	Result	Result	Result	Result
conductivity										
hardness (as CaCO3), dissolved	alkalinity, total (as CaCO3)									
pH	conductivity		E100	2.0	μS/cm	183		183	183	
Solids, total suspended [TSS]	hardness (as CaCO3), dissolved		EC100	0.60	mg/L	90.6		90.7	90.2	
Anions and Nutrients Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50	pH		E108	0.10	pH units	7.95		7.97	7.98	
chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0		<3.0	5.3	
Fluoride	Anions and Nutrients									
nitrate (as N) 14797-55-8 E235 NO3-L 0.0050 mg/L 0.0771 0.0780 0.0711 nitrite (as N) 14797-65-0 E235 NO2-L 0.0010 mg/L 0.0014 0.0014 <0.0010 sulfate (as SO4) 14808-79-8 E235 SO4 0.30 mg/L 13.1 13.1 13.2 Organic / Inorganic Carbon carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.83 2.77 2.77 carbon, dissolved organic [DOC] E355-L 0.50 mg/L 3.10 2.88 3.04 Ion Balance anion sum EC101 0.10 meq/L 1.92 1.93 1.92 cation sum EC101 0.10 meq/L 1.87 1.87 1.86 inspan="6">	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50		<0.50	<0.50	
nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0014	fluoride	16984-48-8	E235.F	0.020	mg/L	0.038		0.037	0.037	
sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 13.1	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0771		0.0780	0.0711	
Organic / Inorganic Carbon carbon, dissolved organic [DOC]	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0014		0.0014	<0.0010	
Carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.83 2.77 2.77 Carbon, total organic [TOC]	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.1		13.1	13.2	
Carbon, total organic [TOC]	Organic / Inorganic Carbon									
Ion Balance	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.83		2.77	2.77	
Cation sum	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.10		2.88	3.04	
cation sum	Ion Balance									
Total Metals	anion sum		EC101	0.10	meq/L	1.92		1.93	1.92	
Total Metals Tota	cation sum		EC101	0.10	meq/L	1.87		1.87	1.86	
Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Metals Dissolved Dissolved Metals	ion balance (APHA)		EC101	0.010	%	1.32		1.58	1.59	
Dissolved Metals mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 <0.50 <0.50 <0.50 calcium, dissolved 7440-70-2 E421 0.050 mg/L 26.7 26.2 26.0 magnesium, dissolved 7439-95-4 E421 0.0050 mg/L 5.81 6.13 6.15 dissolved MeHg filtration location EP537 - - Field Field Field Field dissolved mercury filtration location EP509-L - - - Field Field Field Field	Total Metals									
mercury, dissolved 7439-97-6 E509-L 0.50 ng/L <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50 <0.50<	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	<0.50	<0.50	0.55	0.63
calcium, dissolved 7440-70-2 E421 0.050 mg/L 26.7 26.2 26.0 magnesium, dissolved 7439-95-4 E421 0.0050 mg/L 5.81 6.13 6.15 dissolved MeHg filtration location EP537 - - Field Field Field Field Field dissolved mercury filtration location EP509-L - - Field Field Field Field Field	Dissolved Metals									
magnesium, dissolved 7439-95-4 E421 0.0050 mg/L 5.81 6.13 6.15 dissolved MeHg filtration location EP537 - Field Fie	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	<0.50	<0.50	<0.50
dissolved MeHg filtration location EP537 Field Fiel	calcium, dissolved	7440-70-2	E421	0.050	mg/L	26.7		26.2	26.0	
dissolved mercury filtration location EP509-L Field Field Field Field	magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.81		6.13	6.15	
FD04	dissolved MeHg filtration location		EP537	-	-	Field	Field	Field	Field	Field
dissolved metals filtration location EP421 Laboratory Laboratory Laboratory	dissolved mercury filtration location		EP509-L	-	_	Field	Field	Field	Field	Field
	dissolved metals filtration location		EP421	-	_	Laboratory		Laboratory	Laboratory	
Speciated Metals	Speciated Metals									1
methylmercury (as MeHg), total 22967-92-6 E536 0.020 ng/L < 0.020 0.021 < 0.020 0.030	•	22967-92-6	E536	0.020	ng/L	<0.020	0.021	<0.020	0.030	0.029
methylmercury (as MeHg), dissolved 22967-92-6 E537 0.020 ng/L <0.020 <0.020 <0.020 <0.020	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.020	ng/L	<0.020	<0.020	<0.020	<0.020	0.025

Page : 4 of 4

Work Order : FJ2202360

Client : Ecofish Research Ltd

Project : Site C MMP - Surface Water



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

Analytical Results

Sub-Matrix: Water			CI	ient sample ID	Travel Blank	 	
(Matrix: Water)							
			Client samp	ling date / time	26-Aug-2022	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202360-006	 	
					Result	 	
Total Metals							
mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	 	
Speciated Metals							
methylmercury (as MeHg), total	22967-92-6	E536	0.020	ng/L	<0.020	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202360** Page : 1 of 14

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

Project : Site C MMP - Surface Water : 26-Aug-2022 17:10

Sampler : KG

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



Page : 3 of 14 Work Order : FJ2202360

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analysis Holding Time Compliance

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

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

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

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

Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Matrix: Water Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date Holding Times Eval Preparation Actual Rec Actual Date Rec Anions and Nutrients : Chloride in Water by IC HDPE E235.CI 26-Aug-2022 1 PR1-A 30-Aug-2022 31-Aug-2022 28 days 4 days Anions and Nutrients : Chloride in Water by IC HDPE PR1-C E235.CI 26-Aug-2022 30-Aug-2022 31-Aug-2022 28 days 4 days ✓ ----Anions and Nutrients : Chloride in Water by IC HDPE PR2-A E235.CI 26-Aug-2022 30-Aug-2022 31-Aug-2022 28 days | 4 days Anions and Nutrients: Fluoride in Water by IC HDPE 28 days 4 days PR1-A E235.F 26-Aug-2022 30-Aug-2022 31-Aug-2022 Anions and Nutrients: Fluoride in Water by IC HDPE PR1-C E235.F 26-Aug-2022 30-Aug-2022 31-Aug-2022 28 days 4 days Anions and Nutrients: Fluoride in Water by IC HDPE E235.F 30-Aug-2022 26-Aug-2022 31-Aug-2022 PR2-A 28 days 4 days --------Anions and Nutrients: Nitrate in Water by IC (Low Level) HDPE PR1-A E235.NO3-L 26-Aug-2022 30-Aug-2022 æ 31-Aug-2022 0 days ✓ 3 days 4 days 3 days EHT

Page : 4 of 14 Work Order : FJ2202360

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analysis		
Container / Client Sample ID(s)			Preparation Holding Times Eval		Analysis Date	Holding	g Times	Eval		
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR1-C	E235.NO3-L	26-Aug-2022	30-Aug-2022	3 days	4 days	x EHT	31-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR2-A	E235.NO3-L	26-Aug-2022	30-Aug-2022	3 days	4 days	* EHT	31-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR1-A	E235.NO2-L	26-Aug-2022	30-Aug-2022				31-Aug-2022	3 days	4 days	x EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR1-C	E235.NO2-L	26-Aug-2022	30-Aug-2022				31-Aug-2022	3 days	4 days	* EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR2-A	E235.NO2-L	26-Aug-2022	30-Aug-2022				31-Aug-2022	3 days	4 days	# EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR1-A	E235.SO4	26-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR1-C	E235.SO4	26-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR2-A	E235.SO4	26-Aug-2022	30-Aug-2022				31-Aug-2022	28 days	4 days	√
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)									
Pre-cleaned amber glass - dissolved (lab preserved) PR1-A	E509-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓

Page : 5 of 14 Work Order : FJ2202360

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Method	Sampling Date		raction / Pi				Analys	is	
		Preparation	Holdin	-					
	1	Preparation Holding Times			Eval Analysis Date		Holding Times		Eval
		Date	Rec	Actual		-	Rec	Actual	
ot)									
E509-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓
ot)									
E509-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓
ot)									
E509-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓
ot)									
E509-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓
E421	26-Aug-2022	02-Sep-2022				03-Sep-2022	180	8 days	✓
							days		
E421	26-Aug-2022	02-Sep-2022				03-Sep-2022	180	8 days	✓
							days		
E421	26-Aug-2022	02-Sep-2022				03-Sep-2022	180	8 days	✓
							days		
I)									
									_
E358-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
l)									
E358-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
	E509-L E509-L E509-L E421 E421 E421	E509-L 26-Aug-2022 E509-L 26-Aug-2022 E509-L 26-Aug-2022 E421 26-Aug-2022 E421 26-Aug-2022 E421 26-Aug-2022	E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 03-Sep-2022 02-Sep-2022	E509-L 26-Aug-2022 03-Sep-2022 E509-L 26-Aug-2022 03-Sep-2022 E509-L 26-Aug-2022 03-Sep-2022 E421 26-Aug-2022 02-Sep-2022 E421 26-Aug-2022 02-Sep-2022 E421 26-Aug-2022 02-Sep-2022	E509-L 26-Aug-2022 03-Sep-2022	E509-L 26-Aug-2022 03-Sep-2022	E509-L 26-Aug-2022 03-Sep-2022 03-	E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days	E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days 8 days E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days 8 days E509-L 26-Aug-2022 03-Sep-2022 03-Sep-2022 28 days 8 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days E421 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days E509-L 26-Aug-2022 02-Sep-2022 03-Sep-2022 180 days

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: water						a.aa	Holding time exce	,		
Analyte Group	Method	Sampling Date	Ext							
Container / Client Sample ID(s)			Preparation	Holding Times		Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual		-	Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid)										
PR2-A	E358-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)									
Amber glass total (sulfuric acid)	Lett Lettel)									
PR1-A	E355-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 davs	1
									,-	
Oursuis / Inaugusis Carban - Tatal Oursuis Carban (Nan Burnashla) bu Carabustis	n /l ow l ovel)									
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic Amber glass total (sulfuric acid)	n (Low Level)							<u> </u>		
PR1-C	E355-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
1101-0		207 tag-2022	01-00p-2022				01-00p-2022	20 days	o days	·
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)						I	1		
Amber glass total (sulfuric acid) PR2-A	E355-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	√
PRZ-A	E333-L	20-Aug-2022	01-3ep-2022				01-3ep-2022	20 uays	0 uays	,
Physical Tests : Alkalinity Species by Titration										
HDPE	F000	00 4 0000								
PR1-A	E290	26-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PR1-C	E290	26-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PR2-A	E290	26-Aug-2022	30-Aug-2022				30-Aug-2022	14 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PR1-A	E100	26-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	4 days	✓
Physical Tests : Conductivity in Water									ı	
HDPE										
PR1-C	E100	26-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	4 days	1

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: water						uluulion.	noiding time excee	suarioc , .	- VVICIIII	r rolaling rilli
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation					
Container / Client Sample ID(s)			Preparation Holding Times Eva			Eval	val Analysis Date		Holding Times	
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE										
PR2-A	E100	26-Aug-2022	30-Aug-2022				30-Aug-2022	28 days	4 days	✓
Physical Tests : pH by Meter										
HDPE										
PR1-A	E108	26-Aug-2022	30-Aug-2022				30-Aug-2022	0.25	1.71	*
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PR1-C	E108	26-Aug-2022	30-Aug-2022				30-Aug-2022	0.25	1.71	*
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PR2-A	E108	26-Aug-2022	30-Aug-2022				30-Aug-2022	0.25	1.71	*
								hrs	hrs	EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE										
PR1-A	E160	26-Aug-2022					01-Sep-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PR1-C	E160	26-Aug-2022					01-Sep-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PR2-A	E160	26-Aug-2022					01-Sep-2022	7 days	6 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR1-A	E537	26-Aug-2022	20-Sep-2022	180	25	✓	23-Sep-2022	180	3 days	✓
				days	days			days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR1-B	E537	26-Aug-2022	20-Sep-2022	180	25	✓	23-Sep-2022	180	3 days	✓
				days	days			days		

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: Water

Evaluation	x = Holding time	avecadance	- Mithin	Halding Time

Matrix: Water					Ev	/aluation: 🗴 =	Holding time excee	edance ;	✓ = Within	Holding Tir
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation					
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holdin Rec	g Times Actual	Eval
Speciated Metals : Dissolved Methylmercury in Water by GCAFS			Dato							
Amber glass dissolved (hydrochloric acid)							I			
PR1-C	E537	26-Aug-2022	20-Sep-2022	180 days	25 days	✓	23-Sep-2022	180 days	3 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) PR2-A	E537	26-Aug-2022	20-Sep-2022	180 days	25 days	✓	23-Sep-2022	180 days	3 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) PR2-B	E537	26-Aug-2022	20-Sep-2022	180 days	25 days	✓	23-Sep-2022	180 days	3 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR1-A	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	4
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR1-B	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR1-C	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR2-A	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid) PR2-B	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	✓
Speciated Metals : Total Methylmercury in Water by GCAFS							•			
Amber glass total (hydrochloric acid) Travel Blank	E536	26-Aug-2022	03-Sep-2022				07-Sep-2022	180 days	12 days	✓
		_		_			-			

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix: Water

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

Matrix: Water					E	/aluation: 🔻 =	Holding time exce	edance ; 🔻	= vvitnin	Holding
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analysis		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR1-A	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR1-B	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR1-C	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR2-A	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR2-B	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
Travel Blank	E508-L	26-Aug-2022	03-Sep-2022	28	8 days	✓	03-Sep-2022	28 days	0 days	✓
				days						

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			C	ount		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	626009	1	18	5.5	5.0	1
Chloride in Water by IC	E235.CI	626014	1	18	5.5	5.0	√
Conductivity in Water	E100	626007	1	12	8.3	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	632345	1	5	20.0	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	631727	1	5	20.0	5.0	
Dissolved Methylmercury in Water by GCAFS	E537	654341	1	18	5.5	5.0	_
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	626013	1	18	5.5	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	626011	1	19	5.2	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	626012	1	19	5.2	5.0	<u> </u>
pH by Meter	E108	626008	1	18	5.5	5.0	_
Sulfate in Water by IC	E235.SO4	626010	1	18	5.5	5.0	1
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	632257	1	13	7.6	5.0	_
Total Methylmercury in Water by GCAFS	E536	631443	1	20	5.0	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	<u> </u>
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	√
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	626009	1	18	5.5	5.0	1
Chloride in Water by IC	E235.CI	626014	1	18	5.5	5.0	1
Conductivity in Water	E100	626007	1	12	8.3	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	632345	1	5	20.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	631727	1	5	20.0	5.0	1
Dissolved Methylmercury in Water by GCAFS	E537	654341	1	18	5.5	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	1
Fluoride in Water by IC	E235.F	626013	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	626011	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	626012	1	19	5.2	5.0	✓
pH by Meter	E108	626008	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	626010	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	632257	1	13	7.6	5.0	✓
Total Methylmercury in Water by GCAFS	E536	631443	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	626009	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.CI	626014	1	18	5.5	5.0	✓
Conductivity in Water	E100	626007	1	12	8.3	5.0	√

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Client : Ecofish Research Ltd
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Matrix: Water

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

Matrix: Water		Evaluation	on: 🗴 = QC treque	ency outside sp	ecification; 🗸 =	QC frequency will	nın specificat
Quality Control Sample Type		·	Co	ount		Frequency (%,	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	632345	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	631727	1	5	20.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	654341	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	626013	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	626011	1	19	5.2	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	626012	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	626010	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	632257	1	13	7.6	5.0	✓
Total Methylmercury in Water by GCAFS	E536	631443	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Chloride in Water by IC	E235.CI	626014	1	18	5.5	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	632345	1	5	20.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	631727	1	5	20.0	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	654341	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	626013	1	18	5.5	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	626011	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	626012	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	626010	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	632257	1	13	7.6	5.0	✓
Total Methylmercury in Water by GCAFS	E536	631443	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	√

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	Environmental E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
	2100		,	at ambient laboratory temperature (normally $20 \pm 5^{\circ}$ C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355	Water		Preparation for Total Organic Carbon by Combustion
	Vancouver - Environmental			
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration (Low Level)	EP509-L Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Total Methylmercury Water Preparation	EP536 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537 Vancouver - Environmental	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202360

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Site C MMP - Surface Water

PO : 1200-25.03.05

C-O-C number : 2022Aug Water MMP

Sampler : KG

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 26-Aug-2022 17:10

Date Analysis Commenced : 30-Aug-2022

Issue Date : 27-Sep-2022 17:23

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department	
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia	
Jennifer Nguyen	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
Kyle Chang	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia	
Ophelia Chiu	Department Manager - Organics	Vancouver Inorganics, Burnaby, British Columbia	
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Laboratory Duplicate (DUP) Report

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

ub-Matrix: Water							Labora	ntory Duplicate (D	ог) кероп		
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
Physical Tests (QC											
FJ2202360-004	PR2-A	conductivity		E100	2.0	μS/cm	183	184	0.328%	10%	
Physical Tests (QC	Lot: 626008)										
FJ2202360-004	PR2-A	pН		E108	0.10	pH units	7.98	7.99	0.125%	4%	
Physical Tests (QC	Lot: 626009)										
FJ2202360-004	PR2-A	alkalinity, total (as CaCO3)		E290	1.0	mg/L	82.1	82.3	0.243%	20%	
Physical Tests (QC	Lot: 629645)										
J2202327-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	5.3	5.1	0.2	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 626010)										
FJ2202364-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	469	471	0.384%	20%	
Anions and Nutrien	ts (QC Lot: 626011)										
FJ2202364-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0500	mg/L	0.487	0.490	0.0025	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 626012)										
FJ2202364-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 626013)										
FJ2202364-001	Anonymous	fluoride	16984-48-8	E235.F	0.200	mg/L	0.436	0.434	0.002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 626014)										
FJ2202364-001	Anonymous	chloride	16887-00-6	E235.CI	5.00	mg/L	27.7	27.8	0.04	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629	551)									
FJ2202327-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.83	2.76	0.06	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629	(552)									
FJ2202327-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	2.86	2.85	0.01	Diff <2x LOR	
Total Metals (QC Lo	ot: 632257)										
FJ2202360-001	PR1-A	mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	
Dissolved Metals (0	OC Lat: 631727)										
VA22C0514-004	Anonymous	calcium, dissolved	7440-70-2	E421	0.100	mg/L	564	525	7.11%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0100	mg/L	83.7	75.4	10.5%	20%	
Dissolved Metals (0	OC Lat: 632345)										
FJ2202360-001	PR1-A	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	
Speciated Metals (
Specialed Metals (C CG2211557-002	Anonymous	methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000128	0.000128	0.000003	Diff <2x LOR	
	QC Lot: 654341)				1111120	r-y-				==	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Speciated Metals (C	QC Lot: 654341) - contin	ued									
FC2202096-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000072	0.000055	0.000017	Diff <2x LOR	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 626007)					
conductivity	E100	1	μS/cm	1.1	
Physical Tests (QCLot: 626009)					
alkalinity, total (as CaCO3)	E290	1	mg/L	1.4	
Physical Tests (QCLot: 629645)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 626010)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 626011)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 626012)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 626013)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 626014)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 629551)				
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 629552	2)				
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Total Metals (QCLot: 632257)					
mercury, total	7439-97-6 E508-L	0.5	ng/L	<0.50	
Dissolved Metals (QCLot: 631727)					
calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 632345)					
mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
Speciated Metals (QCLot: 631443)					
methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
Speciated Metals (QCLot: 654341)					
methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Laboratory Control Sample (LCS) Report

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

Conductivity Final	Sub-Matrix: Water						Laboratory Cor	trol Sample (LCS)	Report	
Physical Tosts (CCLots 628007)						Spike	Recovery (%)	Recovery	Limits (%)	
Conductivity Final	Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (OCLot: 628008) pH	Physical Tests (QCLot: 626007)									
Physical Tests (OCLot: \$28019)	conductivity		E100	1	μS/cm	146.9 μS/cm	99.3	90.0	110	
Physical Tosts (QCLot: \$26009)	Physical Tests (QCLot: 626008)									
Mailanipy, boda (see CaCO3) E90 1 mg/L 500 mg/L 108 550 115	рН		E108		pH units	7 pH units	99.7	98.0	102	
Physical Tests (QCLot: 629845) colds, foold suppended [TSS]	Physical Tests (QCLot: 626009)									
Series S	alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	108	85.0	115	
Series S	Physical Tests (QCLot: 629645)									
suifate (as SO4) 14808-798. E235 SO4 0.3 mg/L 100 mg/L 100 mg/L 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626012) Inititie (as N) 14797-65-0 E235 NO3-L 0.001 mg/L 0.5 mg/L 96.0 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 14797-65-0 E235 NO2-L 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 16984-483 E235 F 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Anions and Nutrients (QCLot: 626014) ——Anions and Nutrien	solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	88.2	85.0	115	
suifate (as SO4) 14808-798. E235 SO4 0.3 mg/L 100 mg/L 100 mg/L 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626012) Inititie (as N) 14797-65-0 E235 NO3-L 0.001 mg/L 0.5 mg/L 96.0 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 14797-65-0 E235 NO2-L 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 16984-483 E235 F 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Anions and Nutrients (QCLot: 626014) ——Anions and Nutrien										
suifate (as SO4) 14808-798. E235 SO4 0.3 mg/L 100 mg/L 100 mg/L 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626012) Inititie (as N) 14797-65-0 E235 NO3-L 0.001 mg/L 0.5 mg/L 96.0 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 14797-65-0 E235 NO2-L 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Annowabilities (as No Anions and Nutrients (QCLot: 626013) Inititie (as N) 16984-483 E235 F 0.02 mg/L 1 mg/L 96.9 90.0 110 ——Anions and Nutrients (QCLot: 626014) ——Anions and Nutrien	Anions and Nutrients (QCLot: 626010)									
nitrale (as N) 14797-55-8 E235 NO3-L 0.005 mg/L 2.5 mg/L 99.2 90.0 110	sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	
nitrale (as N) 14797-55-8 E235 NO3-L 0.005 mg/L 2.5 mg/L 99.2 99.0 110	Anions and Nutrients (QCLot: 626011)									
nitrite (as N) 14797-85-0 [235.NO2-L 0.001 mg/L 0.5 mg/L 97.6 90.0 110	nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	
nitrite (as N) 14797-85-0 [235.NO2-L 0.001 mg/L 0.5 mg/L 97.6 90.0 110	Anions and Nutrients (QCLot: 626012)									
Total Metals (QCLot: 63257)	nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.6	90.0	110	
Total Metals (QCLot: 63257)	Anions and Nutrients (QCLot: 626013)									
Corganic / Inorganic Carbon (QCLot: 629551) Carbon, Igsolved organic [DOC] ———————————————————————————————————	fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	96.9	90.0	110	
Corganic / Inorganic Carbon (QCLot: 629551) Carbon, Igsolved organic [DOC] ———————————————————————————————————	Anions and Nutrients (QCLot: 626014)									
Carbon, dissolved organic [DOC]	chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	98.8	90.0	110	
Carbon, dissolved organic [DOC]										
Carbon, dissolved organic [DOC]	Organic / Inorganic Carbon (QCLot: 629551)									
Carbon, total organic [TOC]	carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	
Carbon, total organic [TOC]	Organic / Inorganic Carbon (QCLot: 629552)									
Mercury, total Page 1	carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	99.7	80.0	120	
Mercury, total Page 1										
Mercury, total Page 1	Total Metals (QCLot: 632257)									
calcium, dissolved 7440-70-2 E421 0.05 mg/L 50 mg/L 99.6 80.0 120 magnesium, dissolved 7439-95-4 E421 0.005 mg/L 50 mg/L 97.6 80.0 120 mercury, dissolved 7439-97-6 E509-L 0.5 ng/L 5 ng/L 105 80.0 120 Speciated Metals (QCLot: 631443) methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L 0.00025 µg/L 93.4 70.0 130	mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	105	80.0	120	
calcium, dissolved 7440-70-2 E421 0.05 mg/L 50 mg/L 99.6 80.0 120 magnesium, dissolved 7439-95-4 E421 0.005 mg/L 50 mg/L 97.6 80.0 120 mercury, dissolved 7439-97-6 E509-L 0.5 ng/L 5 ng/L 105 80.0 120 Speciated Metals (QCLot: 631443) methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L 0.00025 µg/L 93.4 70.0 130										
calcium, dissolved 7440-70-2 E421 0.05 mg/L 50 mg/L 99.6 80.0 120 magnesium, dissolved 7439-95-4 E421 0.005 mg/L 50 mg/L 97.6 80.0 120 mercury, dissolved 7439-97-6 E509-L 0.5 ng/L 5 ng/L 105 80.0 120 Speciated Metals (QCLot: 631443) methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L 0.00025 µg/L 93.4 70.0 130	Dissolved Metals (QCLot: 631727)									
mercury, dissolved 7439-97-6 E509-L 0.5 ng/L 5 ng/L 105 80.0 120 Speciated Metals (QCLot: 631443) methylmercury (as MeHg), total 22967-92-6 E536 0.00002 μg/L 0.0025 μg/L 93.4 70.0 130	calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.6	80.0	120	
Speciated Metals (QCLot: 631443) methylmercury (as MeHg), total 22967-92-6 E536 0.00002 μg/L 0.0025 μg/L 93.4 70.0 130	magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	
methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L 0.0025 µg/L 93.4 70.0 130	mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	105	80.0	120	
methylmercury (as MeHg), total 22967-92-6 E536 0.00002 µg/L 0.0025 µg/L 93.4 70.0 130	Speciated Metals (QCLot: 631443)									
Speciated Metals (QCLot: 654341)	methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	93.4	70.0	130	
	Speciated Metals (QCLot: 654341)									

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Sub-Matrix: Water		Laboratory Control Sample (LCS) Report							
	Spike	Recovery (%)	Recovery	Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Speciated Metals (QCLot: 654341) - cont	inued								
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	76.9	70.0	130	

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Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Matrix Spike (MS) Report

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

		implied may be eabject to blac. 11b								
Sub-Matrix: Water							Matrix Spik	e (MS) Report		
					Sp	ike	Recovery (%)	Recovery	/ Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ients (QCLot: 626010)									
FJ2202365-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	2020 mg/L	2000 mg/L	101	75.0	125	
Anions and Nutri	ients (QCLot: 626011)									
FJ2202365-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	51.0 mg/L	50 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 626012)									
FJ2202365-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	9.98 mg/L	10 mg/L	99.8	75.0	125	
Anions and Nutri	ients (QCLot: 626013)									
FJ2202365-001	Anonymous	fluoride	16984-48-8	E235.F	20.4 mg/L	20 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 626014)									
FJ2202365-001	Anonymous	chloride	16887-00-6	E235.Cl	2040 mg/L	2000 mg/L	102	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 629	9551)								
FJ2202327-003	Anonymous	carbon, dissolved organic [DOC]		E358-L	4.69 mg/L	5 mg/L	93.9	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 629	9552)								
FJ2202327-003	Anonymous	carbon, total organic [TOC]		E355-L	5.08 mg/L	5 mg/L	102	70.0	130	
Total Metals (QC	Lot: 632257)									
FJ2202360-002	PR1-B	mercury, total	7439-97-6	E508-L	4.88 ng/L	5 ng/L	97.6	70.0	130	
Dissolved Metals	(QCLot: 631727)									
VA22C0668-001	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	0.972 mg/L	1 mg/L	97.2	70.0	130	
Dissolved Metals	(QCLot: 632345)									
FJ2202360-002	PR1-B	mercury, dissolved	7439-97-6	E509-L	5.25 ng/L	5 ng/L	105	70.0	130	
Speciated Metals	(QCLot: 631443)									
FJ2202360-001	PR1-A	methylmercury (as MeHg), total	22967-92-6	E536	0.00192 μg/L	0.0025 μg/L	76.8	60.0	140	
Speciated Metals	(QCLot: 654341)									
FC2202140-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00177 μg/L	0.0025 μg/L	70.7	60.0	140	

Page : 10 of 10 Work Order : FJ2202360

Client : Ecofish Research Ltd
Project : Site C MMP - Surface Water



Affix ALS barcode label here (lab use only)

COC #: 2022AUG WATER MMP

Canada Toll Free: 1 800 668 9878

<u></u>	www.alsglobal.com								·				125	11.0									
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CERTIFICATE OF ANALYSIS

Work Order : FJ2202608

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : --Sampler : --Site : ---

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 6

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 19-Sep-2022 14:46

Date Analysis Commenced : 21-Sep-2022

Issue Date : 28-Sep-2022 16:57

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta	
Elke Tabora		Inorganics, Calgary, Alberta	
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta	
Kevin Baxter		Metals, Calgary, Alberta	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta	
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta	
Sara Niroomand		Inorganics, Calgary, Alberta	
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta	

Page : 2 of 6

Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical
	Conductivity.
SFT	Sample was filtered due to turbidity interference. Result reflects soluble analyte
	concentration.

Page : 3 of 6 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Client sampling clase Client sampling clase Inc. Sep_2022 19-Sep_2022 19-Sep	Sub-Matrix: Water			CI	ient sample ID	PD2	BEA	PD3	KR	PD4
Method CAS Number Method LOR Unit E12202660-001 F12202660-002 F12202660-003 F12202660-004 F12202660-005 F12202600-005 F12202600-005 F12202600-005 F12202600-005 F12202600-005	(Matrix: Water)									
Physical Tests				Client samp	ling date / time	•		·		•
Physical Tests	Analyte	CAS Number	Method	LOR	Unit	FJ2202608-001	FJ2202608-002	FJ2202608-003	FJ2202608-004	FJ2202608-005
Sabalinity, Joiarhonate (as CaCO3)						Result	Result	Result	Result	Result
alkalinity, carbonate (as CaCO3) E290 1.0 mg/L <1.0	Physical Tests									
alkalinity, hydroxide (as CaCO3)	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	86.7	149	86.1	206	90.7
alkalinity, phenolphthalein (as CaCO3) E290 1.0 mg/L <1.0	alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	10.4	<1.0
alkalinity, total (as CaCO3)	alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
colour, true	alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	5.2	<1.0
Conductivity	alkalinity, total (as CaCO3)		E290	1.0	mg/L	86.7	149	86.1	216	90.7
hardness (as CaCO3), dissolved	colour, true		E329	5.0	CU	6.1	118	6.5	11.4	5.6
pH	conductivity		E100	2.0	μS/cm	182	386	185	539	188
solids, total dissolved [TDS]	hardness (as CaCO3), dissolved		EC100	0.60	mg/L	92.0	149	96.4	169	96.7
solids, total suspended [TSS] E160 3.0 mg/L <3.0	рН		E108	0.10	pH units	8.06	8.24	8.08	8.43	8.10
Anions and Nutrients Ammonia, total (as N) 7664-41-7 E298 0.0050 mg/L <0.0050	solids, total dissolved [TDS]		E162	10	mg/L	108	283	104	365	108
ammonia, total (as N) 7664-41-7 E298 0.0050 mg/L <0.0050	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	<3.0	24.8	<3.0
chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50	Anions and Nutrients									
fluoride 16984-48-8 E235.F 0.020 mg/L 0.034 0.134 0.036 0.180 0.036 Kjeldahl nitrogen, total [TKN] E318 0.050 mg/L 0.104 0.764 0.088 1.01 0.106 nitrate (as N) 14797-55-8 E235.NO3-L 0.0050 mg/L 0.0527 <0.0050	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0091	0.0109	0.0157	0.0060
Reside the introgen, total [TKN]	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	2.65	<0.50	2.29	<0.50
nitrate (as N) 14797-55-8 E235.NO3-L 0.0050 mg/L 0.0527 <0.0050	fluoride	16984-48-8	E235.F	0.020	mg/L	0.034	0.134	0.036	0.180	0.036
nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0017 <0.0010	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.104	0.764	0.088	1.01	0.106
nitrogen, total 7727-37-9 EC368 0.050 mg/L 0.158 0.764 0.142 1.30 0.155 phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.0010 mg/L 0.0015 0.0041 0.0016 0.0019 0.0016 phosphorus, total 7723-14-0 E372-U 0.0020 mg/L 0.0100 0.0356 0.0105 0.231 0.0124 phosphorus, total dissolved 7723-14-0 E375-T 0.0020 mg/L <0.0020 0.0111 <0.0020 0.0256 <0.0020 0.0256 <0.0020 0.0156 0.0020 0.0256 0.0020 0.00256 0.00256 0	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0527	<0.0050	0.0527	0.283	0.0480
phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.0010 mg/L 0.0015 0.0041 0.0016 0.0019 0.0016 phosphorus, total phosphorus, total phosphorus, total dissolved 7723-14-0 E372-U 0.0020 mg/L 0.0020 0.0111 0.0020 0.0111 0.0020 0.0256 0.0020 silicate (as SiO2) silicate (as SiO2) sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 13.6 0.0020 14.0 0.0020 0.0111 0.0020 0.0256 0.0020 0.0111 0.0020 0.0256 0.0020 0.0111 0.0020 0.0256 0.0020 0.0111 0.0020 0.0256 0.0020 0.0256 0.0020 0.00256 0.0020 0.00256 0.0020 0.0020 0.0020 0	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0017	<0.0010	0.0015	0.0053	0.0013
phosphorus, total 7723-14-0 E372-U 0.0020 mg/L 0.0100 0.0356 0.0105 0.231 0.0124 phosphorus, total dissolved 7723-14-0 E375-T 0.0020 mg/L <0.0020	nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.158	0.764	0.142	1.30	0.155
phosphorus, total dissolved 7723-14-0 E375-T 0.0020 mg/L <0.0020	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0015	0.0041	0.0016	0.0019	0.0016
silicate (as SiO2) 7631-86-9 E392 0.50 mg/L 4.15 3.52 set 4.10 0.79 set 4.00 sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 13.6 66.2 14.0 92.4 14.6 Organic / Inorganic Carbon carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.78 26.5 2.85 8.00 2.70 carbon, total organic [TOC] E355-L 0.50 mg/L 3.16 28.9 2.64 10.5 2.81 lon Balance anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0100	0.0356	0.0105	0.231	0.0124
sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 13.6 66.2 14.0 92.4 14.6 Organic / Inorganic Carbon carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.78 26.5 2.85 8.00 2.70 carbon, total organic [TOC] E355-L 0.50 mg/L 3.16 28.9 2.64 10.5 2.81 Ion Balance anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	0.0111	<0.0020	0.0256	<0.0020
Organic / Inorganic Carbon carbon, dissolved organic [DOC]	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.15	3.52 SFT	4.10	0.79 SFT	4.00
carbon, dissolved organic [DOC] E358-L 0.50 mg/L 2.78 26.5 2.85 8.00 2.70 carbon, total organic [TOC] E355-L 0.50 mg/L 3.16 28.9 2.64 10.5 2.81 Ion Balance anion sum anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	13.6	66.2	14.0	92.4	14.6
carbon, total organic [TOC] E355-L 0.50 mg/L 3.16 28.9 2.64 10.5 2.81 lon Balance anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	Organic / Inorganic Carbon									
Ion Balance anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.78	26.5	2.85	8.00	2.70
anion sum EC101 0.10 meq/L 2.02 4.44 2.02 6.33 2.12	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.16	28.9	2.64	10.5	2.81
cation sum EC101 0.10 meq/L 1.90 4.42 2.00 6.21 2.01	anion sum				meq/L					
	cation sum		EC101	0.10	meq/L	1.90	4.42	2.00	6.21	2.01

Page : 4 of 6 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PD2	BEA	PD3	KR	PD4
(Matrix: Water)									
			Client samp	ling date / time	19-Sep-2022 08:50	19-Sep-2022 09:40	19-Sep-2022 10:30	19-Sep-2022 11:15	19-Sep-2022 12:05
Analyte	CAS Number	Method	LOR	Unit	FJ2202608-001	FJ2202608-002	FJ2202608-003	FJ2202608-004	FJ2202608-005
					Result	Result	Result	Result	Result
Ion Balance									
ion balance (APHA)		EC101	0.010	%	3.06	0.226	0.498	0.957	2.66
Dissolved Metals									
calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.6	39.3	27.1	37.2	26.9
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.81	12.3	6.97	18.6	7.18
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory

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

Page : 5 of 6 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	POUCE	 	
(Matrix: Water)							
			Client samp	ling date / time	19-Sep-2022 12:40	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202608-006	 	
					Result	 	
Physical Tests		5000	4.0		007		
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	207	 	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	8.2	 	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	 	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	4.1	 	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	216	 	
colour, true		E329	5.0	CU	12.6	 	
conductivity		E100	2.0	μS/cm	1180	 	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	403	 	
рН		E108	0.10	pH units	8.40	 	
solids, total dissolved [TDS]		E162	10	mg/L	853	 	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	 	
Anions and Nutrients							
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0068	 	
chloride	16887-00-6	E235.CI	0.50	mg/L	28.8	 	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.224	 	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.561	 	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0679	 	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	 	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.629	 	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0016	 	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0167	 	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0026	 	
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	1.19	 	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	427	 	
Organic / Inorganic Carbon							
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	12.1	 	
carbon, total organic [TOC]		E355-L	0.50	mg/L	11.9	 	
Ion Balance				-			
anion sum		EC101	0.10	meq/L	14.0	 	
cation sum		EC101	0.10	meq/L	13.9	 	
ion balance (APHA)	<u></u>	EC101	0.010	%	0.358	 	
			1		2.000		l

Page : 6 of 6 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	lient sample ID	POUCE	 	
(Matrix: Water)							
			Client samp	oling date / time	19-Sep-2022 12:40	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202608-006	 	
					Result	 	
Dissolved Metals							
calcium, dissolved	7440-70-2	E421	0.050	mg/L	92.7	 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	41.6	 	
dissolved metals filtration location		EP421	-	-	Laboratory	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202608** Page : 1 of 21

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1

Fort St. John. British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 19-Sep-2022 14:46

 PO
 : 1200-25.03.02
 Issue Date
 : 28-Sep-2022 16:58

C-O-C number : ----Sampler : ----

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



Page : 3 of 21 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

					_\	/aiuation: 🔻 =	Holding time exce	edance ; 🔻	= Within	Holding I in
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation					
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
BEA	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence									'	
Amber glass total (sulfuric acid)										
KR	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD2	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence									'	
Amber glass total (sulfuric acid)										
PD3	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD4	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
POUCE	E298	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
BEA	E235.CI	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓

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 Work Order
 : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water					Ev	⁄aluation: ≭ =	Holding time exce	edance ; •	✓ = Within	Holding T
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE KR	E235.Cl	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD2	E235.CI	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD3	E235.CI	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD4	E235.CI	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE POUCE	E235.Cl	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetr	y (Ultra Trace Level 0.001									
HDPE BEA	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetr	y (Ultra Trace Level 0.001									
HDPE KR	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetr	y (Ultra Trace Level 0.001									
HDPE PD2	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetr	y (Ultra Trace Level 0.001									
UDDE				1						
HDPE PD3	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓

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 Work Order
 : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water						aluation: × =	Holding time exce			Holding Ti
Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Ext Preparation Date	Holding Rec		Eval	Analysis Date	Analys Holding Rec	g Times Actual	Eval
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra	Trace Level 0.001									
HDPE PD4	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra	Trace Level 0.001									
HDPE POUCE	E378-U	19-Sep-2022	22-Sep-2022				22-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE BEA	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE KR	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD2	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD3	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD4	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE POUCE	E235.F	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE BEA	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓

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Client : Ecofish Research Ltd

: Surface Water MON8/9-No Metals Project



Matrix: Water					Εν	/aluation: × =	Holding time excee	edance ; •	∕ = Within	Holding Ti
Analyte Group	Method	Sampling Date	Ext	traction / Pr				Analys		
Container / Client Sample ID(s)		' "	Preparation	Holding	g Times	Eval	val Analysis Date		Holding Times	
,			Date	Rec	Actual		/ individe Date	Rec	Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
KR	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD2	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD3	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD4	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
POUCE	E235.NO3-L	19-Sep-2022	21-Sep-2022	3 days	2 days	✓	21-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
BEA	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
KR	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD2	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)								<u> </u>		
HDPE										
PD3	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

wattix: water						aluation. • -	nolaing time excee	suarice , ,	- vvitiiiii	riolaling rilling	
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	nalysis Date Holding Times		Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE											
PD4	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓	
Anions and Nutrients : Nitrite in Water by IC (Low Level)									1		
HDPE											
POUCE	E235.NO2-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry								1	1		
HDPE											
BEA	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry											
HDPE											
KR	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry											
HDPE											
PD2	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry											
HDPE											
PD3	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry				1							
HDPE											
PD4	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
Anions and Nutrients : Reactive Silica by Colourimetry											
HDPE											
POUCE	E392	19-Sep-2022					22-Sep-2022	28 days	3 days	✓	
		·							-		
Anions and Nutrients : Sulfate in Water by IC											
HDPE											
BEA	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓	
		,									

Page : 8 of 21 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	ate Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date			Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC										
HDPE KR	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PD2	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PD3	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PD4	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE POUCE	E235.SO4	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) BEA	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) KR	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD2	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PD3	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viatrix: water						aluation. ^ -	nolaing time excee	euance , v	– vviti iii i	Holding Tilli	
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	ate Holding Times		Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass dissolved (sulfuric acid)											
PD4	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass dissolved (sulfuric acid)											
POUCE	E375-T	19-Sep-2022	23-Sep-2022				25-Sep-2022	28 days	6 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)									1		
Amber glass total (sulfuric acid)											
BEA	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)									1		
Amber glass total (sulfuric acid)											
KR	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid)											
PD2	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid)											
PD3	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)											
Amber glass total (sulfuric acid)											
PD4	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)									1		
Amber glass total (sulfuric acid)											
POUCE	E318	19-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	4 days	✓	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass total (sulfuric acid)											
				1	1		l	1		,	
BEA	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water					Ev	/aluation: × =	Holding time exce	edance ; 🔻	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation		Times	Eval	Analysis Date	Holding		Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) KR	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD2	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD3	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PD4	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) POUCE	E372-U	19-Sep-2022	22-Sep-2022				25-Sep-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) BEA	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) KR	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180 days	5 days	√
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD2	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180 days	5 days	√
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD3	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180 days	5 days	√

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viatrix: water						a.aa	nolding time exce	, , , , , , , , , , , , , , , , , , ,	***********	
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD4	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180	5 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
POUCE	E421	19-Sep-2022	24-Sep-2022				24-Sep-2022	180	5 days	✓
. 3332			-					days	,-	
Ourania / Inaurania Carban - Biasalvad Ourania Carban by Cambustian // avy lava	1)							,		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve Amber glass dissolved (sulfuric acid)	')							<u> </u>		
BEA	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
DLA	L330-L	19-0ep-2022	21-06p-2022				21-0ep-2022	20 days	2 days	•
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)				I I			T T		
Amber glass dissolved (sulfuric acid)	F250 I	40.0 0000	04 0 0000				04 0 0000	00 4	0 -1	,
KR	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Amber glass dissolved (sulfuric acid)										
PD2	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Amber glass dissolved (sulfuric acid)										
PD3	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	I)									
Amber glass dissolved (sulfuric acid)										
PD4	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	D									
Amber glass dissolved (sulfuric acid)										
POUCE	E358-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓
			•						1	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid)	II (LOW Level)									
• , ,	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	√
BEA										

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

water						alaation.	nolding time excee	Judinoo ,	***************************************	riolaling rilli	
Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding Times		Eval	
			Date	Rec	Actual		-	Rec	Actual		
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)										
Amber glass total (sulfuric acid)											
KR	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)										
Amber glass total (sulfuric acid)											
PD2	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	n (Low Level)										
Amber glass total (sulfuric acid)	(_00)										
PD3	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓	
		·	·				·				
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)										
Amber glass total (sulfuric acid)	ii (Low Level)										
PD4	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 davs	✓	
			,					,-			
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Level evel)										
Amber glass total (sulfuric acid)	iii (Low Levei)										
POUCE	E355-L	19-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	2 days	✓	
1 GOOL	2000 2	10 000 2022	21-00p-2022				21-00p-2022	20 days	2 days		
DISTRICT OF All of the Original Throats											
Physical Tests : Alkalinity Species by Titration											
HDPE BEA	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	✓	
DEA	L290	19-3ер-2022	24-3ep-2022				24-3ep-2022	14 days	Juays	•	
Physical Tests : Alkalinity Species by Titration											
HDPE	E290	10 Son 2022	24 Can 2022				24 San 2022	11 day:-	E days	√	
KR	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	•	
Physical Tests : Alkalinity Species by Titration											
HDPE										,	
PD2	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE											
PD3	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	✓	
								1			

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext		Analysis					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date			Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE PD4	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE POUCE	E290	19-Sep-2022	24-Sep-2022				24-Sep-2022	14 days	5 days	4
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE BEA	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE KR	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	4
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD2	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD3	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD4	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE POUCE	E329	19-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE BEA	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

watnx: water						diddion. • -	nolding time exce	suarice , •	- vvitiiii	Tiolaing Tim
Analyte Group	Method	Sampling Date	Ext							
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	al Analysis Date		e Holding Times	
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE										
KR	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD2	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 davs	✓
							· - · - · - ·	,-	,-	
Physical Tests - Candustivity in Mater										
Physical Tests : Conductivity in Water HDPE										
PD3	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 days	✓
F D3	L 100	19-06p-2022	24-06p-2022				24-0ep-2022	20 days	5 days	*
Physical Tests : Conductivity in Water										
HDPE	F400	40.0 0000	04.0 0000				04.0 0000	00 1	F 1	
PD4	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
POUCE	E100	19-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE										
BEA	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	*
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
KR	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	æ
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PD2	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	×
		. 5 55p 2522						hrs	hrs	EHTR-FM
No. of the Control of								1113	1113	
Physical Tests : pH by Meter										
HDPE	E400	10 805 2022	24 San 2022				24 80= 2022	0.05	0.00	×
PD3	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	
								hrs	hrs	EHTR-FM

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



 Matrix: Water
 Evaluation: x = Holding time exceedance; √ = Within Holding Time

 Analyte Group
 Method
 Sampling Date
 Extraction / Preparation
 Analysis

 Container / Client Sample ID(s)
 Preparation
 Holding Times
 Eval
 Analysis Date
 Holding Times
 Eval

2 many to Group	Wicthou	Cumping Dute								
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE										
PD4	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	35
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE	5400	40.0 0000					0.4.0			
POUCE	E108	19-Sep-2022	24-Sep-2022				24-Sep-2022	0.25	0.26	*
								hrs	hrs	EHTR-FM
Physical Tests : TDS by Gravimetry							1			
HDPE BEA	E162	10 Can 2022					22-Sep-2022	7 days	2 days	✓
BEA	E102	19-Sep-2022					22-Sep-2022	7 days	3 days	,
Physical Tests : TDS by Gravimetry							I		I	
HDPE KR	E162	19-Sep-2022					22-Sep-2022	7 days	3 days	√
IXX	2.02	10 GGP 2022					22 300 2022	, dayo	o dayo	
Physical Tests : TDS by Gravimetry										
HDPE										
PD2	E162	19-Sep-2022					22-Sep-2022	7 days	3 days	✓
							·			
Physical Tests : TDS by Gravimetry										
HDPE										
PD3	E162	19-Sep-2022					22-Sep-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
PD4	E162	19-Sep-2022					22-Sep-2022	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE	5400	40.0					00.0			
POUCE	E162	19-Sep-2022					22-Sep-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry							I	T	I	I
HDPE BEA	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	√
DLA	2160	19-06p-2022					20-06p-2022	/ uays	+ uays	•

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Physical Tests : TSS by Gravimetry											
HDPE											
KR	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PD2	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PD3	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PD4	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
POUCE	E160	19-Sep-2022					23-Sep-2022	7 days	4 days	✓	

Legend & Qualifier Definitions

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

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Matrix: Water Quality Control Sample Type				ount	pecification; ✓ = QC frequency within spe Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)		40 = 31 ::			1 1000	=: # 2 3 1 2 2	
Alkalinity Species by Titration	E290	663940	1	16	6.2	5.0	✓
Ammonia by Fluorescence	E298	657878	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	✓
Conductivity in Water	E100	663939	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	664252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	659566	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.F E235.NO3-L	657790	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO3-L E235.NO2-L	657791	1	20	5.0	5.0	✓
pH by Meter	E235.NO2-L E108	663938	1	17	5.8	5.0	✓
Reactive Silica by Colourimetry	E392	660946	1	20	5.0	5.0	✓
Sulfate in Water by IC		657792	1	16	6.2	5.0	√
TDS by Gravimetry	E235.SO4 E162	658118	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	661979	1	20	5.0	5.0	
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E375-1	660033	1	20	5.0	5.0	✓ ✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	_
Total Phosphorus by Colourimetry (0.002 mg/L)		660111	2	40	5.0	5.0	√
TSS by Gravimetry	E372-U	661507	1	15	6.6	5.0	✓ ✓
, ,	E160	001307	<u> </u>	15	0.0	3.0	√
Laboratory Control Samples (LCS)		000040		40	0.0	5.0	
Alkalinity Species by Titration	E290	663940	1	16	6.2	5.0	√
Ammonia by Fluorescence	E298	657878	1	18	5.5	5.0	√
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	✓
Conductivity in Water	E100	663939	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	664252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	659566	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	✓
pH by Meter	E108	663938	1	17	5.8	5.0	✓
Reactive Silica by Colourimetry	E392	660946	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	658118	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	661979	1	20	5.0	5.0	✓

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Client : Ecofish Research Ltd



Matrix: Water		Evaluati	on: × = QC frequ	ency outside sp	ecification; ✓ =	QC frequency wi	thin specification
Quality Control Sample Type			С	ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	660033	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	660111	2	40	5.0	5.0	✓
TSS by Gravimetry	E160	661507	1	15	6.6	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	663940	1	16	6.2	5.0	1
Ammonia by Fluorescence	E298	657878	1	18	5.5	5.0	✓
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	✓
Conductivity in Water	E100	663939	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	664252	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	659566	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	660946	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	658118	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	661979	1	20	5.0	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	660033	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	660111	2	40	5.0	5.0	✓
TSS by Gravimetry	E160	661507	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	657878	1	18	5.5	5.0	1
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	<u>√</u>
Dissolved Metals in Water by CRC ICPMS	E421	664252	1	18	5.5	5.0	_
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	659566	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	<u>√</u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	√
Reactive Silica by Colourimetry	E392	660946	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	<u>-</u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	661979	1	20	5.0	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	660033	1	20	5.0	5.0	<u>√</u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	<u>√</u>
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	660111	2	40	5.0	5.0	1

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Calgary - Environmental			sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Calgary - Environmental			pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
	Calgary - Environmental			filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
Ammonia by Fluorescence	E298	Water	Method Fialab 100,	alkalinity values. Ammonia in water is determined by automated continuous flow analysis with membrane
A STATE OF THE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE OFFICE O	E290 Calgary - Environmental	valor	2018	diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
,	Calgary - Environmental			This method is approved under US EPA 40 CFR Part 136 (May 2021).

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Colour (True) by Spectrometer (5 CU)	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	АРНА 3030В	Water samples are filtered (0.45 um), and preserved with HNO3.



QUALITY CONTROL REPORT

Work Order : FJ2202608

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number :---Sampler :---

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 19-Sep-2022 14:46

Date Analysis Commenced : 21-Sep-2022

Laboratani Danartmant

Issue Date : 28-Sep-2022 16:57

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

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- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department	
Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta	
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Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta	
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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	ntory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	C Lot: 658118)										
CG2212867-007	Anonymous	solids, total dissolved [TDS]		E162	10	mg/L	<10	<10	0	Diff <2x LOR	
Physical Tests (QC	Lot: 658631)										
FJ2202603-001	Anonymous	colour, true		E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 661507)										
FJ2202608-001	PD2	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Physical Tests (QC	C Lot: 663938)										
CG2212783-022	Anonymous	рН		E108	0.10	pH units	7.98	8.01	0.375%	4%	
Physical Tests (QC	CLot: 663939)										
CG2212783-023	Anonymous	conductivity		E100	2.0	μS/cm	99.6	98.7	0.908%	10%	
Physical Tests (QC	Lot: 663940)										
CG2212783-023	Anonymous	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	59.0	62.7	6.08%	20%	
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		alkalinity, total (as CaCO3)		E290	2.0	mg/L	59.0	62.7	6.08%	20%	
Anions and Nutrien	its (QC Lot: 657787)										
CG2212850-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.171	0.001	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 657790)										
CG2212850-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	12.3	12.4	0.438%	20%	
Anions and Nutrien	its (QC Lot: 657791)										
CG2212850-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0038	0.0038	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 657792)										
CG2212850-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	205	206	0.485%	20%	
Anions and Nutrien	its (QC Lot: 657793)							I .			
FJ2202608-001	PD2	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 657878)										
FJ2202608-001	PD2	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 659566)										
CG2212844-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0031	0.0030	0.0002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 660033)										
CG2212932-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	1.07	1.04	2.92%	20%	

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Client : Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (Dl	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	s (QC Lot: 660111)										
FC2202240-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0457	0.0468	2.48%	20%	
Anions and Nutrient	s (QC Lot: 660112)										
FJ2202608-006	POUCE	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0167	0.0167	0.00004	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 660946)										
EO2207790-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	11.6	11.5	0.618%	20%	
Anions and Nutrient	s (QC Lot: 661979)										
FC2202257-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0032	0.0029	0.0003	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 657267)									
FJ2202608-001	PD2	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.78	2.78	0.004	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 657271)									
FJ2202608-001	PD2	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.16	3.01	0.14	Diff <2x LOR	
Dissolved Metals (C	QC Lot: 664252)										
CG2212922-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	66.6	65.5	1.69%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	29.9	29.3	1.88%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 658118)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 658631)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 661507)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 663939)					
conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 663940)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Anions and Nutrients (QCLot: 657787)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 657790)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 657791)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 657792)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 657793)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 657878)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 659566)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 660033)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 660111)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 660112)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 660946)						
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 661979)						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	
Organic / Inorganic Carbon (QCLot: 65	7267)					
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 65	7271)					
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 664252)						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	

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Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Co.	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte CAS Nur	ber Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 658118)								
solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	97.9	85.0	115	
Physical Tests (QCLot: 658631)								
colour, true	E329	5	CU	100 CU	101	85.0	115	
Physical Tests (QCLot: 661507)								
solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	89.2	85.0	115	
Physical Tests (QCLot: 663938)								
рН	E108		pH units	7 pH units	101	98.6	101	
Physical Tests (QCLot: 663939)								
conductivity	E100	1	μS/cm	146.9 μS/cm	103	90.0	110	
Physical Tests (QCLot: 663940)								
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	229 mg/L	99.4	75.0	125	
alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	104	85.0	115	
Anions and Nutrients (QCLot: 657787)								
fluoride 16984-	8-8 E235.F	0.02	mg/L	1 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 657790)								
nitrate (as N) 14797-	5-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 657791)								
nitrite (as N) 14797-	5-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	99.8	90.0	110	
Anions and Nutrients (QCLot: 657792)								
sulfate (as SO4) 14808-	9-8 E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 657793)								
chloride 16887-	0-6 E235.CI	0.5	mg/L	100 mg/L	99.6	90.0	110	
Anions and Nutrients (QCLot: 657878)								
ammonia, total (as N) 7664-	1-7 E298	0.005	mg/L	0.2 mg/L	103	85.0	115	
Anions and Nutrients (QCLot: 659566)								
phosphate, ortho-, dissolved (as P) 14265-	4-2 E378-U	0.001	mg/L	0.03 mg/L	99.7	80.0	120	
Anions and Nutrients (QCLot: 660033)								
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	4 mg/L	99.1	75.0	125	
Anions and Nutrients (QCLot: 660111)								
phosphorus, total 7723-	4-0 E372-U	0.002	mg/L	0.03 mg/L	110	80.0	120	
Anions and Nutrients (QCLot: 660112)								
phosphorus, total 7723-	4-0 E372-U	0.002	mg/L	0.03 mg/L	110	80.0	120	

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 : FJ2202608

Client : Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 660946)									
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	106	85.0	115	
Anions and Nutrients (QCLot: 661979)									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.03 mg/L	103	80.0	120	
Organic / Inorganic Carbon (QCLot: 65726									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	93.7	80.0	120	
Organic / Inorganic Carbon (QCLot: 65727	' 1)								
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	
Dissolved Metals (QCLot: 664252)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.4	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	

Page : 9 of 10 Work Order : FJ2202608

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water								e (MS) Report		
					Spi		Recovery (%)	Recovery	Limits (%)	
.aboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
Anions and Nutri	ients (QCLot: 657787)									
CG2212854-001	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 657790)									
CG2212854-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.53 mg/L	2.5 mg/L	101	75.0	125	
Anions and Nutri	ients (QCLot: 657791)									
CG2212854-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	
Anions and Nutri	ients (QCLot: 657792)									
CG2212854-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	
Anions and Nutri	ients (QCLot: 657793)									
FJ2202608-002	BEA	chloride	16887-00-6	E235.CI	95.4 mg/L	100 mg/L	95.4	75.0	125	
Anions and Nutri	ients (QCLot: 657878)									
FJ2202608-002	BEA	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	
Anions and Nutri	ients (QCLot: 659566)									
CG2212844-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0515 mg/L	0.05 mg/L	103	70.0	130	
Anions and Nutri	ients (QCLot: 660033)									
CG2212932-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.60 mg/L	2.5 mg/L	104	70.0	130	
Anions and Nutri	ients (QCLot: 660111)									
FC2202241-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	
Anions and Nutri	ients (QCLot: 660112)									
SK2205149-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	
Anions and Nutri	ients (QCLot: 660946)									
EO2207790-002	Anonymous	silicate (as SiO2)	7631-86-9	E392	ND mg/L	10 mg/L	ND	75.0	125	
Anions and Nutri	ients (QCLot: 661979)									
FC2202258-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0473 mg/L	0.05 mg/L	94.7	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 65	57267)								
FJ2202608-001	PD2	carbon, dissolved organic [DOC]		E358-L	4.77 mg/L	5 mg/L	95.4	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 65	57271)								
FJ2202608-001	PD2	carbon, total organic [TOC]		E355-L	4.92 mg/L	5 mg/L	98.4	70.0	130	

Page : 10 of 10 Work Order : FJ2202608

Client : Ecofish Research Ltd



Sub-Matrix: Water				Matrix Spike (MS) Report									
						ke	Recovery (%)	Recovery	Limits (%)				
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Dissolved Metals	(QCLot: 664252) - cont	tinued											
CG2212922-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130				
		magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130				

Chain of Custody (C

Canada Toll Free: 1 800 668 9878

coc Number: 2022-Sept-MON8/9- Day 2

Page

of

Report To	Contact and company name below will appear on the final report	T	Reports / R	ecipients				Tur	rnaro	und Ti	ne (T	T) Red	jueste	ed									
Company:	Ecofish Research Ltd.	Select Report Fe	ormat: 🖸 PDF 🤅	EXCEL [2] ED	D (DIGITAL)	☑ Rot	ıtine [R]	if rece	ived b	y 3pm	M-F - r	o surch	arges a	pply									1
Contact:	Leah Hull	Merge QC/QCI	Reports with COA	☑ YES ☐ NO	I N/A	1	ay [P4]											-1V A1	C DAD	CODE	LADE	ei ue	DE
Phone:	250-334-3042	[4] Compare Resu	lts to Criteria on Report	provide details belo	w if box checked		ay [P3]										ALL	IA AL		use of		ar tar	AL.
	Company address below will appear on the final report	Select Distributi	on: 🖸 EMAIL	MAIL]	FAX		ay [P2] ay [E] i																
Street:	600 Comox Rd.	Email 1 or Fax	lhull@ecofishresea	rch.com		Sar	ne day [s may ar	E21 if i	receive	ed by 10	am M-	5 - 200	% rust	surch	arge. A	ddition	al						
City/Province:	Courtenay, BC	Email 2	tkasubuchi@ecofis			rou	tine test	s S	1031111	cqueses	011 11 00	340(103)	Justano	,,	.,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,								
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	Copy of Invoice with Report YES NO	Select Invoice E	Distribution: / EM	AIL MAIL	FAX								Ana	lysis	Requ	est							
Company:	Ecofish Research Ltd.	Email 1 or Fax	accountspayable@	ecofishresearch	.com	3		łп	ndicate	Filtered	f (F), P	reserve	d (P) or	Filtere	d and	Preser	rved (F/F	²) belov	W			品	(Sa
Contact:	accountspayable@ecofishresearch.com	Email 2				1 🗓		F/P	F	P											ı	뜩	ğ
	Project Information	Oi	i and Gas Require	l Fields (client u	ıse)	1≨	Si,			Total											ام	REQUIRED	9
ALS Account	# / Quote #: VA22-EC0F100-004	AFE/Cost Center:		PO#		1E	S.	İ		T _O				1				, 1			\exists	Z.	S)
Job #:	Surface water MON8/9- no metals	Major/Minor Code:		Routing Code:		CONTAINERS	Anions,			oger		. 1		1				, 1			모	STORAGE	Ä
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ALS Lab Wor	k Order# (ALS use only):	ALS Contact:	Sneha Sansare	Sampler:	Pat Beaupre	NUMBER	pH, TD Io P, col	DOC, Total dissolved		tal Kjeldahl, Nitrogen, ⁷ Total P	ONBALANCE-BC										SAMPLES	EXTENDED	SUSPECTED HAZARD (see notes)
ALS Sample #	Sample Identification and/or Coordinates		Date	Time		1₹	교통	Σ, T	Hardness	NH3, Total N, TOC, To	BAL							'			3	<u> </u>	SP
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REFER TO BAC	CK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION		WH	ITE - LABORATO	RY COPY YE	LLOW	- CLIE	NT CC	PY													AUG 2	020 FRON

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2202622** Page : 1 of 4

Amendment : 1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1

Fort St. John BC Canada V1J 6P3

: 250 334 3042 Telephone : +1 250 261 5517

Project : Surface Water MON8/9-No Metals Date Samples Received : 20-Sep-2022 11:40

PO : 1200-25.03.02 Date Analysis Commenced : 21-Sep-2022

C-O-C number : 2022-sept-MON8/9-Day2 Issue Date : 06-Jun-2023 14:39

Sampler : PAT BEAUPRE Site :

Quote number : VA22-ECOF100-004

No. of samples received : 3
No. of samples analysed : 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

Telephone

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

Signatories	Position	Laboratory Department
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
indsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Naeun Kim	Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
/ladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 4

Work Order : FJ2202622 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	CG Calgary - Environmental	2559 29th Street NE, Calgary, Alberta
В	CALA ISO/IEC 17025:2017	VA Vancouver - Environmental	8081 Lougheed Highway, Burnaby, British
			Columbia

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (6/6/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sarah Kennedy on 6/6/2023. All analysis results are as per the previous report.

Page : 3 of 4

Work Order : FJ2202622 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water				Cli	ient sample ID	MD	PR3-A	PR3-B	
(Matrix: Water)									
				Client samp	ling date / time	20-Sep-2022 09:25	20-Sep-2022 10:35	20-Sep-2022 10:35	
Analyte	CAS Number	Method/Lab		LOR	Unit	FJ2202622-001	FJ2202622-002	FJ2202622-003	
Physical Tests						Result	Result	Result	
Alkalinity, bicarbonate (as CaCO3)	E29	90/CG	Α	1.0	mg/L	166	84.1	86.5	
Alkalinity, carbonate (as CaCO3)		90/CG	Α	1.0	mg/L	6.0	<1.0	<1.0	
Alkalinity, hydroxide (as CaCO3)		90/CG	Α	1.0	mg/L	<1.0	<1.0	<1.0	
Alkalinity, phenolphthalein (as CaCO3)		90/CG	Α	1.0	mg/L	3.0	<1.0	<1.0	
Alkalinity, total (as CaCO3)		90/CG	Α	1.0	mg/L	172	84.1	86.5	
Colour, true		29/CG	Α	5.0	CU	5.3	6.6	7.0	
Conductivity	E10		Α	2.0	μS/cm	339	175	175	
Hardness (as CaCO3), dissolved		100/CG		0.60	mg/L	174	87.4	86.9	
pH	E10		Α	0.10	pH units	8.34	7.99	7.99	
Solids, total dissolved [TDS]		62/CG	Α	10	mg/L	192	97	110	
Solids, total suspended [TSS]		30/CG	Α	3.0	mg/L	<3.0	<3.0	<3.0	
Anions and Nutrients					3				
Ammonia, total (as N)	7664-41-7 E29	98/CG	Α	0.0050	mg/L	<0.0050	<0.0050	<0.0050	
Chloride	16887-00-6 E23		Α	0.50	mg/L	0.54	<0.50	<0.50	
Fluoride	16984-48-8 E23		Α	0.020	mg/L	0.086	0.033	0.033	
Kjeldahl nitrogen, total [TKN]	E31		Α	0.050	mg/L	0.146	0.092	0.129	
Nitrate (as N)	14797-55-8 E23	35.NO3-L/C	Α	0.0050	mg/L	<0.0050	0.0561	0.0566	
Nitrite (as N)	14797-65-0 E23 G	35.NO2-L/C	Α	0.0010	mg/L	<0.0010	0.0017	0.0018	
Nitrogen, total	7727-37-9 EC3	368/CG		0.050	mg/L	0.146	0.150	0.187	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E37	78-U/CG	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	
Phosphorus, total	7723-14-0 E37	72-U/CG	Α	0.0020	mg/L	0.0048	0.0050	0.0046	
Phosphorus, total dissolved	7723-14-0 E37		Α	0.0020	mg/L	<0.0020	<0.0020	<0.0020	
Silicate (as SiO2)	7631-86-9 E39	92/VA	В	0.50	mg/L	3.81	4.11	4.11	
Sulfate (as SO4)	14808-79-8 E23	35.SO4/CG	Α	0.30	mg/L	21.4	12.8	12.8	
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]		58-L/CG	Α	0.50	mg/L	3.93	3.29	3.19	
Carbon, total organic [TOC]	E35	55-L/CG	Α	0.50	mg/L	3.51	3.14	3.07	

Page : 4 of 4

Work Order : FJ2202622 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			C	lient sample ID	MD	PR3-A	PR3-B	
(Matrix: Water)								
			Client samp	oling date / time	20-Sep-2022 09:25	20-Sep-2022 10:35	20-Sep-2022 10:35	
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2202622-001	FJ2202622-002	FJ2202622-003	
					Result	Result	Result	
Ion Balance								
Anion sum		EC101/CG	0.10	meq/L	3.90	1.95	2.00	
Cation sum		EC101/CG	0.10	meq/L	3.74	1.80	1.79	
Ion balance (APHA)		EC101/CG	0.010	%	2.09	4.00	5.54	
Dissolved Metals								
Calcium, dissolved	7440-70-2	E421/CG A	0.050	mg/L	48.1	25.2	25.1	
Magnesium, dissolved	7439-95-4	E421/CG A	0.0050	mg/L	13.2	5.95	5.89	
Dissolved metals filtration location		EP421/CG	-	-	Laboratory	Laboratory	Laboratory	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202622** Page : 1 of 16

Amendment :1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

:1220 - 1175 Douglas Street Address :11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone :250 334 3042 Telephone :+1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 20-Sep-2022 11:40

 PO
 : 1200-25.03.02
 Issue Date
 : 06-Jun-2023 14:40

C-O-C number : 2022-sept-MON8/9-Day2

Sampler : PAT BEAUPRE

Site

Quote number : VA22-ECOF100-004

No. of samples received :3
No. of samples analysed :3

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

Key

Address

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

Page : 3 of 16

Matrix: Water

HDPE PR3-A

HDPE PR3-B

Analyte Group

Container / Client Sample ID(s)

Anions and Nutrients : Chloride in Water by IC

Anions and Nutrients : Chloride in Water by IC

Work Order : FJ2202622 Amendment 1
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Eval

1

✓

Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Analysis Date

21-Sep-2022

21-Sep-2022

28 days

28 days

1 days

1 days

Analysis

Holding Times

Rec Actual

Analysis Holding Time Compliance

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

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

Sampling Date

Method

E235.CI

E235.CI

Extraction / Preparation

Preparation

Date

21-Sep-2022

21-Sep-2022

Holding Times

Rec Actual

Eval

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

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

			Date	Nec	Actual		Nec	Actual	
Anions and Nutrients : Ammonia by Fluorescence									
Amber glass total (sulfuric acid) MD	E298	20-Sep-2022	22-Sep-2022			22-Sep-2022	28 days	2 days	√
Anions and Nutrients : Ammonia by Fluorescence									
Amber glass total (sulfuric acid) PR3-A	E298	20-Sep-2022	22-Sep-2022			22-Sep-2022	28 days	2 days	1
Anions and Nutrients : Ammonia by Fluorescence									
Amber glass total (sulfuric acid) PR3-B	E298	20-Sep-2022	22-Sep-2022			22-Sep-2022	28 days	2 days	1
Anions and Nutrients : Chloride in Water by IC									
HDPE MD	E235.CI	20-Sep-2022	21-Sep-2022			21-Sep-2022	28 days	1 days	✓

20-Sep-2022

20-Sep-2022

Page : 4 of 16

Work Order : FJ2202622 Amendment 1
Client : Ecofish Research Ltd



Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)		, ,	Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
nions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace	Level 0.001		Date	7100	Hotaur			7100	Hotaar	
HDPE MD	E378-U	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace	Level 0.001									
HDPE PR3-A	E378-U	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace	Level 0.001									
HDPE PR3-B	E378-U	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
MD	E235.F	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PR3-A	E235.F	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PR3-B	E235.F	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE MD	E235.NO3-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR3-A	E235.NO3-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓

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Matrix: Water					Ev	⁄aluation: ≭ =	Holding time exce	edance ; 🕥	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR3-B	E235.NO3-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE MD	E235.NO2-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR3-A	E235.NO2-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR3-B	E235.NO2-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE MD	E392	20-Sep-2022					22-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR3-A	E392	20-Sep-2022					22-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR3-B	E392	20-Sep-2022					22-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE MD	E235.SO4	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR3-A	E235.SO4	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓

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Matrix: Water					Εν	⁄aluation: ≍ =	Holding time exce	edance ; 🔻	/ = Within	Holding Tin
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	7 Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Sulfate in Water by IC			Date	1100	110000			11111	1 1000.01	
HDPE PR3-B	E235.SO4	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) MD	E375-T	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR3-A	E375-T	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR3-B	E375-T	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) MD	E318	20-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR3-A	E318	20-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR3-B	E318	20-Sep-2022	24-Sep-2022				24-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) MD	E372-U	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR3-A	E372-U	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓

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Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Tin
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR3-B	E372-U	20-Sep-2022	23-Sep-2022				26-Sep-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) MD	E421	20-Sep-2022	25-Sep-2022				25-Sep-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) PR3-A	E421	20-Sep-2022	25-Sep-2022				25-Sep-2022	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) PR3-B	E421	20-Sep-2022	25-Sep-2022				25-Sep-2022	180 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Amber glass dissolved (sulfuric acid) MD	E358-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	D.									
Amber glass dissolved (sulfuric acid) PR3-A	E358-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	D.									
Amber glass dissolved (sulfuric acid) PR3-B	E358-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) MD	E355-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PR3-A	E355-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓

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Matrix: Water						raluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding T
Analyte Group	Method	Sampling Date	Ext	raction / Pi	·			Analys		
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid) PR3-B	E355-L	20-Sep-2022	21-Sep-2022				21-Sep-2022	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
MD	E290	20-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PR3-A	E290	20-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PR3-B	E290	20-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	5 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
MD	E329	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PR3-A	E329	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PR3-B	E329	20-Sep-2022	21-Sep-2022				21-Sep-2022	3 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
MD	E100	20-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE PR3-A	E100	20-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	5 days	✓

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Matrix: Water						⁄aluation: ≭ =	Holding time exce			n Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pi				Analys		
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE PR3-B	E100	20-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
MD	E108	20-Sep-2022	25-Sep-2022				25-Sep-2022	0.25 hrs	0.26 hrs	# EHTR-FM
Physical Tests : pH by Meter										
HDPE PR3-A	E108	20-Sep-2022	25-Sep-2022				25-Sep-2022	0.25 hrs	0.26 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE PR3-B	E108	20-Sep-2022	25-Sep-2022				25-Sep-2022	0.25 hrs	0.26 hrs	# EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE MD	E162	20-Sep-2022					22-Sep-2022	7 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE PR3-A	E162	20-Sep-2022					22-Sep-2022	7 days	2 days	1
Physical Tests : TDS by Gravimetry										
HDPE PR3-B	E162	20-Sep-2022					22-Sep-2022	7 days	2 days	✓
Physical Tests : TSS by Gravimetry										
HDPE MD	E160	20-Sep-2022					23-Sep-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE PR3-A	E160	20-Sep-2022					23-Sep-2022	7 days	3 days	1

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Matrix. Water						valuation. • -	i lolding time excee	danoc , .	- *************************************	Holding Hille
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE										
PR3-B	E160	20-Sep-2022					23-Sep-2022	7 days	3 days	✓

Legend & Qualifier Definitions

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

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			Co	ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	664706	1	13	7.6	5.0	✓
Ammonia by Fluorescence	E298	660421	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	√
Conductivity in Water	E100	664705	1	14	7.1	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	664934	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	√
pH by Meter	E108	664704	1	19	5.2	5.0	√
Reactive Silica by Colourimetry	E392	660946	2	37	5.4	5.0	√
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	✓
TDS by Gravimetry	E162	658118	1	20	5.0	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	662375	1	20	5.0	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662642	1	20	5.0	5.0	<u>√</u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	662384	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	661507	1	15	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	664706	1	13	7.6	5.0	√
Ammonia by Fluorescence	E298	660421	1	20	5.0	5.0	√
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	<u>√</u>
Conductivity in Water	E100	664705	1	14	7.1	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	664934	1	18	5.5	5.0	<u>√</u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	<u>√</u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	<u> </u>
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	<u>√</u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	<u> </u>
pH by Meter	E108	664704	1	19	5.2	5.0	<u>√</u>
Reactive Silica by Colourimetry	E392	660946	2	37	5.4	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	<u> </u>
TDS by Gravimetry	E162	658118	1	20	5.0	5.0	

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Matrix: Water		Evaluati			ecification; ✓ = 0	= QC frequency within specificati			
Quality Control Sample Type				ount		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Control Samples (LCS) - Continued									
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	662375	1	20	5.0	5.0	✓		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662642	1	20	5.0	5.0	✓		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	✓		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	662384	1	20	5.0	5.0	✓		
TSS by Gravimetry	E160	661507	1	15	6.6	5.0	✓		
Method Blanks (MB)									
Alkalinity Species by Titration	E290	664706	1	13	7.6	5.0	1		
Ammonia by Fluorescence	E298	660421	1	20	5.0	5.0	1		
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0	1		
Colour (True) by Spectrometer (5 CU)	E329	658631	1	12	8.3	5.0	<u> </u>		
Conductivity in Water	E100	664705	1	14	7.1	5.0	<u>√</u>		
Dissolved Metals in Water by CRC ICPMS	E421	664934	1	18	5.5	5.0	<u> </u>		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0	√		
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	1		
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	√		
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	1		
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	√		
Reactive Silica by Colourimetry	E392	660946	2	37	5.4	5.0	1		
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	√		
TDS by Gravimetry	E162	658118	1	20	5.0	5.0	√		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	662375	1	20	5.0	5.0	√		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662642	1	20	5.0	5.0	√		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0	√		
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	662384	1	20	5.0	5.0	√		
TSS by Gravimetry	E160	661507	1	15	6.6	5.0	√		
Matrix Spikes (MS)									
Ammonia by Fluorescence	E298	660421	1	20	5.0	5.0	1		
Chloride in Water by IC	E235.CI	657793	1	11	9.0	5.0			
Dissolved Metals in Water by CRC ICPMS	E421	664934	1	18	5.5	5.0			
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	657267	1	11	9.0	5.0			
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	<u> </u>		
Fluoride in Water by IC	E235.F	657787	1	16	6.2	5.0	<u> </u>		
Nitrate in Water by IC (Low Level)	E235.NO3-L	657790	1	20	5.0	5.0	<u> </u>		
Nitrite in Water by IC (Low Level)	E235.NO2-L	657791	1	20	5.0	5.0	<u> </u>		
Reactive Silica by Colourimetry	E392	660946	2	37	5.4	5.0	<u> </u>		
Sulfate in Water by IC	E235.SO4	657792	1	16	6.2	5.0	<u> </u>		
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	662375	1	20	5.0	5.0	<u> </u>		
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662642	1	20	5.0	5.0	<u> </u>		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	657271	1	11	9.0	5.0			

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Matrix: Water		Evaluation	n: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	thin specification.
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Matrix Spikes (MS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	662384	1	20	5.0	5.0	1

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Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is
	Calgary - Environmental			measured by immersion of a conductivity cell with platinum electrodes into a water
pH by Meter	0 ,	Water	APHA 4500-H (mod)	sample. Conductivity measurements are temperature-compensated to 25°C.
pn by Metel	E108	vvalei	APHA 4500-H (IIIou)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Calgary - Environmental			pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
,	2.00		, ,	filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Calgary - Environmental			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
				brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
	Calgary - Environmental			filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
Chloride in Water by IC	0 ,	Water	EPA 300.1 (mod)	with gravimetric measurement of the residue.
Chloride in Water by IC	E235.CI	vvalei	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Calgary - Environmental			detection.
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
•				detection.
	Calgary - Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
	Colorani Environmental			detection.
Nitrate in Water by IC (Low Level)	Calgary - Environmental	Water	EPA 300.1 (mod)	
Militate III Water by IC (Low Lever)	E235.NO3-L	vvalei	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Calgary - Environmental			detection.
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
·			, ,	detection.
	Calgary - Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate,
				carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Calgary - Environmental	147.7		alkalinity values.
Ammonia by Fluorescence	E298	Water	Method Fialab 100,	Ammonia in water is determined by automated continuous flow analysis with membrane
	Calgary - Environmental		2018	diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
Total Kjeldahl Nitrogen by Fluorescence (Low	E318	Water	Method Fialab 100.	This method is approved under US EPA 40 CFR Part 136 (May 2021) TKN in water is determined by automated continuous flow analysis with membrane
Level)	L310	· · · · · · · · · · · · · · · · · · ·	2018	diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
	Calgary - Environmental			amazisi. and massacritical reaction with or re-

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Colour (True) by Spectrometer (5 CU)	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
lon Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order Page : 1 of 10 :FJ2202622

Amendment :1

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact ·Leah Hull **Account Manager** · Sneha Sansare

> : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

> > Fort St. John, British Columbia Canada V1J 6P3

Telephone Telephone :+1 250 261 5517 Date Samples Received Project : Surface Water MON8/9-No Metals :20-Sep-2022 11:40

PO **Date Analysis Commenced** :21-Sep-2022 : 1200-25.03.02 C-O-C number

:06-Jun-2023 14:40 : 2022-sept-MON8/9-Day2 Issue Date : PAT BEAUPRE 334 3042 Sampler

Site

Quote number :VA22-ECOF100-004

: 3 : 3 No. of samples analysed

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Victoria BC Canada V8W 2E1

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples received

Address

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

Signatories	Position	Laboratory Department	
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta	
Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta	
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Elke Tabora		Calgary Inorganics, Calgary, Alberta	
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta	
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia	
Naeun Kim	Analyst	Calgary Metals, Calgary, Alberta	
Parker Sgarbossa	Laboratory Analyst	Calgary Inorganics, Calgary, Alberta	
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta	
Vladka Stamenova	Analyst	Calgary Inorganics, Calgary, Alberta	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Case Number Case Number	Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Color Colo	Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit		1			Qualifier
Physical Tosts QC Lot 688631	Physical Tests (QC	Lot: 658118)										
Fazzardes-3-ord Anonymous Colour, frue Saze	CG2212867-007	Anonymous	Solids, total dissolved [TDS]		E162	10	mg/L	<10	<10	0	Diff <2x LOR	
Physical Tests (OC Lot: 661507) F12202609-001 Anonymous Solids, total suspended [TSS] E100 3.0 mg/L <3.0 <3.0 0 DIII <2x LOR Physical Tests (OC Lot: 664704) C02212025-001 Anonymous pH E108 0.10 pH units 7.66 7.67 0.130% 4% Physical Tests (OC Lot: 664705) C02212025-001 Anonymous Conductivity E100 2.0 µSkm 675 674 0.148% 10% Physical Tests (OC Lot: 664706) C02212025-001 Anonymous Conductivity E100 2.0 µSkm 675 674 0.148% 10% Physical Tests (OC Lot: 664706) C02212025-001 Anonymous Alkalintly, bicarbonate (as CaCO3) E200 1.0 mg/L 486 496 2.02% 2.0% Alkalintly, carbonate (as CaCO3) E200 1.0 mg/L <1.0 <1.0 0 DIII <2x LOR Alkalintly, phenolphthalein (as E200 1.0 mg/L <1.0 <1.0 0 DIII <2x LOR Alkalintly, phenolphthalein (as E200 1.0 mg/L <1.0 <1.0 0 DIII <2x LOR Alkalintly, phenolphthalein (as E200 1.0 mg/L <1.0 <1.0 0 DIII <2x LOR Alkalintly, phenolphthalein (as E200 1.0 mg/L <1.0 <1.0 0 DIII <2x LOR Alkalintly, clock (as CaCO3) E200 2.0 mg/L 0.169 0.171 0.01 DIII <2x LOR Anions and Nutrients (OC Lot: 65779) C02212850001 Anonymous Nitrale (as N) 14797-65-8 E235 NO2-L 0.0050 mg/L 12.3 12.4 0.439% 2.0% Anions and Nutrients (OC Lot: 65779) C02212850001 Anonymous Nitrale (as N) 14797-65-9 E235 NO2-L 0.0010 mg/L 0.0038 0.0038 0 DIII <2x LOR Anions and Nutrients (OC Lot: 65779) C02212860001 Anonymous Nitrale (as N) 14897-86-0 E235 NO2-L 0.0010 mg/L 0.003 0.0038 0 DIII <2x LOR Anions and Nutrients (OC Lot: 65779) C02212860001 Anonymous Nitrale (as N) 14897-86-0 E235 SO4 0.30 mg/L 0.50 0.50 0.00 DIII <2x LOR Anions and Nutrients (OC Lot: 65779) C02212869001 Anonymous Nitrale (as N) 14898	Physical Tests (QC	Lot: 658631)										
Fig. 2222808-001 Anonymous Solids, total suspended [TSS] E180 3.0 mgt. <3.0 <3.0 0 Diff <2x LOR Physical Tests (CC Lot: 664704) CG2212825-001 Anonymous pH E108 0.10 pH units 7.68 7.67 0.130% 4% Physical Tests (CC Lot: 664705) CG2212825-001 Anonymous Conductivity E100 2.0 µS/cm 675 674 0.148% 10% Physical Tests (CC Lot: 664705) CG2212825-001 Anonymous Alkalinity, bloarbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, carbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, hydroxide (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Alkalinity, toerbonate (as CaCO3) E280 1.0 mg/t. 41.0 41.0 0 Diff <2x LOR Anions and Nutrients (CC Lot: 657787) CG2212850-001 Anonymous Fluoride 16884-48-8 E235.FS 0.020 mg/t. 0.169 0.171 0.001 Diff <2x LOR Anions and Nutrients (CC Lot: 657791) CG2212850-001 Anonymous Nitrie (as N) 14797-55-8 E235.NO3-t. 0.005 mg/t. 0.005 0.008 0.008 0 Diff <2x LOR Anions and Nutrients (CC Lot: 657783) Fig. 22068-001 Anonymous Chloride 16887-00-6 E235.CI 0.50 mg/t. <0.50 <0.50 0.006 Diff <2x LOR Anions and Nutrients (CC Lot: 660746) Anions and Nutrients (CC Lot: 660746)	FJ2202603-001	Anonymous	Colour, true		E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	
Physical Tests (OC Lot: 664704)	Physical Tests (QC	Lot: 661507)										
CG21/2926-001	FJ2202608-001	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Physical Tosts (QC Lot: 664705) CG2212825-001 Anonymous Conductivity E100 2.0 µS/cm 675 674 0.148% 10%	Physical Tests (QC	Lot: 664704)										
Control Cont	CG2212925-001	Anonymous	pH		E108	0.10	pH units	7.66	7.67	0.130%	4%	
Control Cont	Physical Tests (QC	Lot: 664705)										
Alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L 486 496 2.02% 20% 20%			Conductivity		E100	2.0	μS/cm	675	674	0.148%	10%	
Alkalinity, bicarbonate (as CaCO3)	Physical Tests (QC	Lot: 664706)										
Alkalinity, hydroxide (as CaCO3)	•		Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	486	496	2.02%	20%	
Alkalinity, phenolphthalein (as CaCO3)			Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
CaCO3			Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
Alkalinity, total (as CaCO3)					E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
CG2212850-001			,		E290	2.0	mg/L	486	496	2.02%	20%	
CG2212850-001	Anions and Nutrien	ts (QC Lot: 657787)										
CG2212850-001 Anonymous Nitrate (as N) 14797-55-8 E235.NO3-L 0.0050 mg/L 12.3 12.4 0.438% 20% Anions and Nutrients (QC Lot: 657791) CG2212850-001 Anonymous Nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0038 0.0038 0 Diff <2x LOR Anions and Nutrients (QC Lot: 657792) CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.CI 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	CG2212850-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.169	0.171	0.001	Diff <2x LOR	
CG2212850-001 Anonymous Nitrate (as N) 14797-55-8 E235.NO3-L 0.0050 mg/L 12.3 12.4 0.438% 20% Anions and Nutrients (QC Lot: 657791) CG2212850-001 Anonymous Nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0038 0.0038 0 Diff <2x LOR Anions and Nutrients (QC Lot: 657792) CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.CI 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	Anions and Nutrien	ts (QC Lot: 657790)										
CG2212850-001 Anonymous Nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0038 0.0038 0 Diff <2x LOR Anions and Nutrients (QC Lot: 657792) CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.CI 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)			Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	12.3	12.4	0.438%	20%	
CG2212850-001 Anonymous Nitrite (as N) 14797-65-0 E235.NO2-L 0.0010 mg/L 0.0038 0.0038 0 Diff <2x LOR Anions and Nutrients (QC Lot: 657792) CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.CI 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	Anions and Nutrien	ts (QC Lot: 657791)										
CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)			Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0038	0.0038	0	Diff <2x LOR	
CG2212850-001 Anonymous Sulfate (as SO4) 14808-79-8 E235.SO4 0.30 mg/L 205 206 0.485% 20% Anions and Nutrients (QC Lot: 657793) FJ2202608-001 Anonymous Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	Anions and Nutrien	ts (QC Lot: 657792)										
FJ2202608-001 Anonymous Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)			Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	205	206	0.485%	20%	
FJ2202608-001 Anonymous Chloride 16887-00-6 E235.Cl 0.50 mg/L <0.50 <0.50 0 Diff <2x LOR Anions and Nutrients (QC Lot: 660421) CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	Anions and Nutrien	ts (QC Lot: 657793)										
CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)			Chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
CG2212919-001 Anonymous Ammonia, total (as N) 7664-41-7 E298 1.25 mg/L 4.66 4.58 0.0792 Diff <2x LOR Anions and Nutrients (QC Lot: 660946)	Anions and Nutrien	ts (QC Lot: 660421)										
			Ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	4.66	4.58	0.0792	Diff <2x LOR	
	Anions and Nutrien	ts (QC ot: 660946)										
			Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	11.6	11.5	0.618%	20%	
	EU2207790-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	11.6	11.5	0.618%	20%	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd



Sub-Matrix: Water	Gub-Matrix: Water						Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrien	ts (QC Lot: 660947)										
FJ2202622-003	PR3-B	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.11	4.11	0.0004	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 661541)										
CG2213023-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 662375)										
CG2212805-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0021	<0.0020	0.00008	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 662384)										
CG2212920-003	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0223	0.0263	16.3%	20%	
Anions and Nutrien	ts (QC Lot: 662642)										
CG2212865-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	0.200	mg/L	1.67	1.57	0.102	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 657267)									
FJ2202608-001	Anonymous	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.78	2.78	0.004	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 657271)									
FJ2202608-001	Anonymous	Carbon, total organic [TOC]		E355-L	0.50	mg/L	3.16	3.01	0.14	Diff <2x LOR	
Dissolved Metals (0	QC Lot: 664934)										
CG2213021-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.0	28.3	6.05%	20%	
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.2	15.0	1.17%	20%	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 658118)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 658631)					
Colour, true	E329	5	CU	<5.0	
hysical Tests (QCLot: 661507)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
hysical Tests (QCLot: 664705)					
Conductivity	E100	1	μS/cm	1.3	
hysical Tests (QCLot: 664706)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
nions and Nutrients (QCLot: 657787)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
nions and Nutrients (QCLot: 657790)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
nions and Nutrients (QCLot: 657791)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
nions and Nutrients (QCLot: 657792)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
nions and Nutrients (QCLot: 657793)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
nions and Nutrients (QCLot: 660421)					
Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
nions and Nutrients (QCLot: 660946)					
Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
nions and Nutrients (QCLot: 660947)					
Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
nions and Nutrients (QCLot: 661541)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
nions and Nutrients (QCLot: 662375)					

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 662375)	- continued					
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 662384)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 662642)						
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	<0.050	
Organic / Inorganic Carbon (QCLot: 65	7267)					
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 65	7271)					
Carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 664934)						
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water	Sub-Matrix: Water						ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 658118)									
Solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	97.9	85.0	115	
Physical Tests (QCLot: 658631)									
Colour, true		E329	5	CU	100 CU	101	85.0	115	
Physical Tests (QCLot: 661507)									
Solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	89.2	85.0	115	
Physical Tests (QCLot: 664704)									
pH		E108		pH units	7 pH units	100	98.6	101	
Physical Tests (QCLot: 664705)									
Conductivity		E100	1	μS/cm	146.9 μS/cm	102	90.0	110	
Physical Tests (QCLot: 664706)									
Alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	105	75.0	125	
Alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	104	85.0	115	
Anions and Nutrients (QCLot: 657787)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 657790)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 657791)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.8	90.0	110	
Anions and Nutrients (QCLot: 657792)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 657793)									
Chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	99.6	90.0	110	
Anions and Nutrients (QCLot: 660421)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	106	85.0	115	
Anions and Nutrients (QCLot: 660946)									
Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	106	85.0	115	
Anions and Nutrients (QCLot: 660947)									
Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	105	85.0	115	
Anions and Nutrients (QCLot: 661541)									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	87.8	80.0	120	
Anions and Nutrients (QCLot: 662375)									

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 662375) - co	ntinued								
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.03 mg/L	94.0	80.0	120	
Anions and Nutrients (QCLot: 662384)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	94.0	80.0	120	
Anions and Nutrients (QCLot: 662642)									
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	102	75.0	125	
Organic / Inorganic Carbon (QCLot: 657267	')								
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	93.7	80.0	120	
Organic / Inorganic Carbon (QCLot: 657271)								
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	
I									
Dissolved Metals (QCLot: 664934)									
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.8	80.0	120	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	92.3	80.0	120	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutr	ients (QCLot: 657787)									
CG2212854-001	Anonymous	Fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	
Anions and Nutr	ients (QCLot: 657790)									
CG2212854-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.53 mg/L	2.5 mg/L	101	75.0	125	
Anions and Nutr	ients (QCLot: 657791)									
CG2212854-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.513 mg/L	0.5 mg/L	103	75.0	125	
Anions and Nutr	ients (QCLot: 657792)									
CG2212854-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	100 mg/L	100 mg/L	100	75.0	125	
Anions and Nutr	ients (QCLot: 657793)									
FJ2202608-002	Anonymous	Chloride	16887-00-6	E235.CI	95.4 mg/L	100 mg/L	95.4	75.0	125	
Anions and Nutr	ients (QCLot: 660421)									
CG2212919-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	
Anions and Nutr	ients (QCLot: 660946)									
EO2207790-002	Anonymous	Silicate (as SiO2)	7631-86-9	E392	ND mg/L	10 mg/L	ND	75.0	125	
Anions and Nutr	ients (QCLot: 660947)									
FJ2202623-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	10.4 mg/L	10 mg/L	104	75.0	125	
Anions and Nutr	ients (QCLot: 661541)									
CG2213023-003	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0415 mg/L	0.05 mg/L	83.0	70.0	130	
Anions and Nutr	ients (QCLot: 662375)									
FJ2202622-001	MD	Phosphorus, total dissolved	7723-14-0	E375-T	0.0450 mg/L	0.05 mg/L	89.9	70.0	130	
Anions and Nutr	ients (QCLot: 662384)									
CG2212920-004	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0418 mg/L	0.05 mg/L	83.6	70.0	130	
Anions and Nutr	ients (QCLot: 662642)									
CG2212865-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.60 mg/L	2.5 mg/L	104	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 657	7267)								
FJ2202608-001	Anonymous	Carbon, dissolved organic [DOC]		E358-L	4.77 mg/L	5 mg/L	95.4	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 657	7271)								
FJ2202608-001	Anonymous	Carbon, total organic [TOC]		E355-L	4.92 mg/L	5 mg/L	98.4	70.0	130	

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Work Order: FJ2202622 Amendment 1
Client: Ecofish Research Ltd



Sub-Matrix: Water	Sub-Matrix: Water						Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 664934)									
CG2213021-002	Anonymous	Calcium, dissolved	7440-70-2	E421	35.0 mg/L	40 mg/L	87.5	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130	

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Page

Chain of Custody (COC) / Analytical Request Form

ALS) www.alsglobal.com

Canada Toll Free: 1 800 668 9878

SUSPECTED HAZARD (see notes) AFFIX ALS BARCODE LABEL HERE COOLING INITIATED EXTENDED STORAGE REQUIRED FINAL COOLER TEMPERATURES °C Time: ् NO SAMPLES ON HOLD For all tests with rush TATs requested, please contact your AM to confirm availability FINAL SHIPMENT RECEPTION (ALS use only) Sample Custody Seals Intact: Telephone: +1 250 261 5517 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below SAMPLE RECEIPT DETAILS (ALS use only Thone I Ice Tice Packs Troosen Submission Comments identified on Sample Receipt Notification. I day [E] if received by 3pm M-F - 100% rush surcharge minimum Same day [E2] if received by 10am M-S - 200% rush surcharge. Addition [fees may apply to rush requests on weekends, statutory holidays and non-Analysis Request 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum L1SS0Sess Date: TRoutine [R] if received by 3pm M-F - no surcharges apply Turnaround Time (TAT) Requested Fort St. John INITIAL COOLER TEMPERATURES *C Date and Time Required for all E&P TATS: 4 4 œ œ œ œ œ ONBALANCE-BC-CL инз, Total Kjeldahl, Nitrogen, Total 4, ТОС, Total P 4 Cooler Custody Seals Intact: 4 ď α œ α œ Received by 4 œ œ œ œ œ Cooling Method: œ α œ œ œ FP OC, Total dissolved P routine tests Alk., Ec, pH, TDS, TSS, Anions, diss ortho P, colour, pH 4 X œ œ œ œ ď 04.11 Time: NUMBER OF CONTAINERS Sample Type Date: 9-20-22 -Weter-Add. for report: csuzanne@ecofishresearch.com,kganshorn@ecofishresearch.com INITIAL SHIPMENT RECEPTION (ALS use only) Pat Beaupre Compare Results to Criteria on Report - provide details below if box checked Water Water Water Water Water Water EDD (DIGITAL) N/A Notes / Specify Limits for result evaluation by selecting from drop-down below waterqualitylabdata@ecofishresearch.com FĀ Email 1 or Fax accountspayable@ecofishresearch.com ξ Oil and Gas Required Fields (client use) Please send Azimuth a copy of the data in their EDD format: tkasubuchi@ecofishresearch.com Routing Code: (3) : EMAIL THAIL 25.20 Time (hh:mm) 12 St. 30 100 30 10:3 Sampler: MAIL 🖃 PDF 🔝 EXCEL Reports / Recipients S⊒ YES Invoice Recipients Ihull@ecofishresearch.com 2 #0d Merge QC/QCI Reports with COA Cerros Oc Sneha Sansare EMAIL CC 22-06 (dq-mmm-yy) (Excel COC only) Date Select Invoice Distribution: Select Report Format: Select Distribution; Email 1 or Fax Major/Minor Code: ALS Contact: AFE/Cost Center: Received by: Requisitioner ocation; Email 2 Email 3 Email gmann@azimuthgroup.ca Sample Identification and/or Coordinates (This description will appear on the report) name below will appear on the final report Company address below will appear on the final report <u>γ</u> 9 -VA22-ECOF100-004 SHIPMENT RELEASE (client use) YES YES accountspayable@ecofishresearch.com PR3-A Project Information Drinking Water (DW) Samples (client use) Surface water MON8/9- no metals re samples taken from a Regulated DW System? PR3-B Copy of Invoice with Report ALS Lab Work Order # (ALS use only): Are samples for human consumption/ use? Contact and company Ecofish Research Ltd. Ecofish Research Ltd Same as Report To 600 Comox Rd. Courtenay, BC 1200-25.03.02 250-334-3042 PD 294 B 2 ALS Account # / Quote #: PP 2 84 A Leah Hull V9N 3P6 HE HE PR2 P P ٦ þ TES TES YES ALS Sample # (ALS use only) City/Province: Released by: Postal Code: nvoice To Report To Sompany: PO / AFE: Company: Contact: Contact Phone: Street: Job #: S

Failure to complete all portions of this form may doley analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy, WHITE - LABORATORY COPY . If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION



CERTIFICATE OF ANALYSIS

Work Order : FJ2202642

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Sept-MON8/9-Day 4

Sampler : Pat Beaupre

Site

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 21-Sep-2022 09:44

Date Analysis Commenced : 23-Sep-2022

Issue Date : 28-Sep-2022 17:00

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta	
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Elke Tabora		Inorganics, Calgary, Alberta	
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta	
Kevin Baxter		Inorganics, Calgary, Alberta	
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta	
Sara Niroomand		Inorganics, Calgary, Alberta	
Summie Lo	Lab Assistant	Metals, Calgary, Alberta	
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta	

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Work Order : FJ2202642

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Description
No Unit
percent
Microsiemens per centimetre
colour units (1 CU = 1 mg/L Pt)
milliequivalents per litre
milligrams per litre
pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202642

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PD5	PD5-FB	 	
(Matrix: Water)								
			Client samp	ling date / time	20-Sep-2022 14:55	20-Sep-2022 14:55	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202642-001	FJ2202642-002	 	
					Result	Result	 	
Physical Tests								
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	86.9	<1.0	 	
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	 	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	86.9	<1.0	 	
colour, true		E329	5.0	CU	6.4	<5.0	 	
conductivity		E100	2.0	μS/cm	185	<2.0	 	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	98.4	<0.60	 	
рН		E108	0.10	pH units	8.10	5.18	 	
solids, total dissolved [TDS]		E162	10	mg/L	124	<10	 	
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	 	
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	 	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	 	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	<0.020	 	
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.102	<0.050	 	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0410	<0.0050	 	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0013	<0.0010	 	
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.144	<0.050	 	
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	 	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0083	<0.0020	 	
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	 	
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	3.82	<0.50	 	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.6	<0.30	 	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.45	<0.50	 	
carbon, total organic [TOC]		E355-L	0.50	mg/L	3.12	<0.50	 	
Ion Balance								
anion sum		EC101	0.10	meq/L	2.04	<0.10	 	
cation sum		EC101	0.10	meq/L	2.06	<0.10	 	
•	'		•			'		•

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Work Order : FJ2202642

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PD5	PD5-FB	 	
(Matrix: Water)								
			Client samp	oling date / time	20-Sep-2022 14:55	20-Sep-2022 14:55	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202642-001	FJ2202642-002	 	
					Result	Result	 	
Ion Balance								
ion balance (APHA)		EC101	0.010	%	0.488	<0.010	 	
Dissolved Metals								
calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.0	<0.050	 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.92	<0.0050	 	
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202642** Page : 1 of 12

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone : +1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 21-Sep-2022 09:44

 PO
 : 1200-25.03.02
 Issue Date
 : 28-Sep-2022 17:00

C-O-C number : 2022-Sept-MON8/9-Day 4

Sampler : Pat Beaupre

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	/aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding Times		Eval	Analysis Date		g Times	Eval
			Date	Rec	Rec Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD5	E298	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD5-FB	E298	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD5	E235.CI	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD5-FB	E235.CI	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
UDDE										
HDPE PD5	E378-U	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	1
FD3	2070-0	20-00p-2022	25-0ep-2022				25-0ep-2022	Juays	Juays	•
	.10001									
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vei 0.001									
HDPE										
PD5-FB	E378-U	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
							į .			
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PD5	E235.F	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

viatrix: water							noiding time excee			
Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec Actual				Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PD5-FB	E235.F	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD5	E235.NO3-L	20-Sep-2022	23-Sep-2022	3 days	3 days	✓	23-Sep-2022	3 days	0 days	✓
			•	_	_		·		-	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD5-FB	E235.NO3-L	20-Sep-2022	23-Sep-2022	3 days	3 days	✓	23-Sep-2022	3 days	0 days	✓
		·	·				·			
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD5	E235.NO2-L	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 davs	3 days	✓
							,		,	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD5-FB	E235.NO2-L	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
		· ·	,				,	,		
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PD5	E392	20-Sep-2022					25-Sep-2022	28 days	5 davs	✓
		· ·					'			
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PD5-FB	E392	20-Sep-2022					25-Sep-2022	28 days	5 days	✓
15015							20 000 2022		0 44,0	
Anions and Nutrionts - Sulfate in Water by IC										
Anions and Nutrients : Sulfate in Water by IC HDPE										
PD5	E235.SO4	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓
1 50	2200.004	20-00p-2022	20 00p 2022				20-00p-2022	20 days	Judys	•
Aniana and Nationala - Califata in Mater by IC										
Anions and Nutrients : Sulfate in Water by IC										
				1	1		I			
HDPE PD5-FB	E235.SO4	20-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	3 days	✓

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PD5

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date Holding Times Eval Rec Actual Rec Actual Date Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) PD5 E375-T 20-Sep-2022 25-Sep-2022 27-Sep-2022 28 days 7 days ✓ Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) E375-T ✓ PD5-FB 20-Sep-2022 25-Sep-2022 27-Sep-2022 28 days 7 days ----Anions and Nutrients: Total Kjeldahl Nitrogen by Fluorescence (Low Level) Amber glass total (sulfuric acid) PD5 E318 20-Sep-2022 23-Sep-2022 24-Sep-2022 28 days 4 days ✓ Anions and Nutrients: Total Kjeldahl Nitrogen by Fluorescence (Low Level) Amber glass total (sulfuric acid) E318 24-Sep-2022 PD5-FB 20-Sep-2022 23-Sep-2022 28 days 4 days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U 20-Sep-2022 27-Sep-2022 27-Sep-2022 ✓ PD5 28 days 7 days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) PD5-FB E372-U 20-Sep-2022 27-Sep-2022 27-Sep-2022 ✓ 28 days 7 davs Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) PD5 E421 20-Sep-2022 27-Sep-2022 27-Sep-2022 7 days ✓ 180 days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) ✓ PD5-FB E421 20-Sep-2022 27-Sep-2022 27-Sep-2022 180 7 days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid)

20-Sep-2022

23-Sep-2022

24-Sep-2022

28 days 4 days

✓

E358-L

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

Analyte Group	Method	Ext	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Eval Analysis Date		Times	Eval
			Date	Rec	Rec Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	l)									
Amber glass dissolved (sulfuric acid) PD5-FB	E358-L	20-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PD5	E355-L	20-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PD5-FB	E355-L	20-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PD5	E290	20-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PD5-FB	E290	20-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	5 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD5	E329	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD5-FB	E329	20-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	3 days	√
Physical Tests : Conductivity in Water										
HDPE PD5	E100	20-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE PD5-FB	E100	20-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	5 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water

Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

victini. Water						diddion.	Tiolding time exec	oudinoo ,	· · · · · · · · · · · · · · · · · · ·	Troiding Til
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analy	sis	
Container / Client Sample ID(s)			Preparation	Preparation Holding Times		Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE										
PD5	E108	20-Sep-2022	25-Sep-2022				25-Sep-2022	0.25	0.25	*
								hrs	hrs	EHTR-FN
Physical Tests : pH by Meter										
HDPE										
PD5-FB	E108	20-Sep-2022	25-Sep-2022				25-Sep-2022	0.25	0.25	×
								hrs	hrs	EHTR-FN
Physical Tests : TDS by Gravimetry										
HDPE										
PD5	E162	20-Sep-2022					26-Sep-2022	7 days	6 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
PD5-FB	E162	20-Sep-2022					26-Sep-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PD5	E160	20-Sep-2022					25-Sep-2022	7 days	5 days	✓
Physical Tests : TSS by Gravimetry				_					1	
HDPE										
PD5-FB	E160	20-Sep-2022					25-Sep-2022	7 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended Rec. HT: ALS recommended hold time (see units).

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type						Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)					<u> </u>			
Alkalinity Species by Titration	E290	664951	1	14	7.1	5.0	1	
Ammonia by Fluorescence	E298	662151	1	20	5.0	5.0	1	
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	√	
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	1	
Conductivity in Water	E100	664949	1	17	5.8	5.0	1	
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	1	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	✓	
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	1	
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	1	
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	1	
pH by Meter	E108	664950	1	20	5.0	5.0	✓	
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	1	
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	1	
TDS by Gravimetry	E162	663868	1	20	5.0	5.0	✓	
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	✓	
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	1	20	5.0	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	✓	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	✓	
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	✓	
Laboratory Control Samples (LCS)								
Alkalinity Species by Titration	E290	664951	1	14	7.1	5.0	1	
Ammonia by Fluorescence	E298	662151	1	20	5.0	5.0	✓	
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	✓	
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	✓	
Conductivity in Water	E100	664949	1	17	5.8	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	✓	
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	✓	
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	✓	
pH by Meter	E108	664950	1	20	5.0	5.0	✓	
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	✓	
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	✓	
TDS by Gravimetry	E162	663868	1	20	5.0	5.0	✓	
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	✓	

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Client : Ecofish Research Ltd



Matrix: Water		Evaluati	on: × = QC freau	encv outside spe	ecification: √ =	QC frequency wit	thin specification
Quality Control Sample Type				ount		Frequency (%)	<u> </u>
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	1	20	5.0	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	<u> </u>
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	
Method Blanks (MB)							-
Alkalinity Species by Titration	E290	664951	1	14	7.1	5.0	1
Ammonia by Fluorescence	E298	662151	1	20	5.0	5.0	1
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	1
Conductivity in Water	E100	664949	1	17	5.8	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	<u>√</u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	<u>-</u> ✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	1
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	663868	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	662151	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	661541	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	✓
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	1	20	5.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Colour (True) by Spectrometer (5 CU)	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	АРНА 3030В	Water samples are filtered (0.45 um), and preserved with HNO3.



QUALITY CONTROL REPORT

Work Order : FJ2202642

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Sept-MON8/9-Day 4

Sampler : Pat Beaupre

Site

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :+1 250 261 5517

Date Samples Received :21-Sep-2022 09:44

Date Analysis Commenced : 23-Sep-2022

Issue Date : 28-Sep-2022 17:00

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Kevin Baxter		Calgary Inorganics, Calgary, Alberta
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Vladka Stamenova	Analyst	Calgary Inorganics, Calgary, Alberta

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC												
FJ2202642-001	PD5	colour, true		E329	5.0	CU	6.4	6.6	0.3	Diff <2x LOR		
Physical Tests (QC	Lot: 663868)											
CG2213023-004	Anonymous	solids, total dissolved [TDS]		E162	20	mg/L	1620	1560	3.42%	20%		
Physical Tests (QC	Lot: 663878)											
CG2213018-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR		
Physical Tests (QC	Lot: 664949)											
CG2212977-021	Anonymous	conductivity		E100	2.0	μS/cm	1290	1260	2.43%	10%		
Physical Tests (QC	Lot: 664950)											
CG2212977-021	Anonymous	pH		E108	0.10	pH units	8.07	8.08	0.124%	4%		
Physical Tests (QC	Lot: 664951)											
CG2212977-021	Anonymous	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	330	320	3.23%	20%		
		alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		alkalinity, total (as CaCO3)		E290	1.0	mg/L	330	320	3.23%	20%		
	ts (QC Lot: 661541)											
CG2213023-002	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
	its (QC Lot: 661934)											
CG2212978-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.113	0.122	0.009	Diff <2x LOR		
Anions and Nutrien	its (QC Lot: 661935)											
CG2212978-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	786	792	0.749%	20%		
Anions and Nutrien	ts (QC Lot: 661938)											
CG2212978-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.76	2.80	1.49%	20%		
Anions and Nutrien	ts (QC Lot: 661939)											
CG2212978-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	0.0057	0.0007	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 661940)											
-J2202642-001	PD5	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 662149)											
CG2212959-001	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.356	0.326	0.030	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 662151)											
CG2212959-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0077	0.0074	0.0003	Diff <2x LOR		

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Client : Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	ts (QC Lot: 664739)										
CG2212884-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0360	0.0354	1.47%	20%	
Anions and Nutrient	ts (QC Lot: 664768)										
CG2213013-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrients (QC Lot: 665683)											
CG2213023-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 662389)									
FJ2202642-001	PD5	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.45	3.58	0.14	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 662390)									
FJ2202642-001	PD5	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.12	3.59	0.46	Diff <2x LOR	
Dissolved Metals (C	Dissolved Metals (QC Lot: 668260)										
FJ2202642-001	PD5	calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.0	27.7	0.879%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.92	6.72	2.91%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 662028)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 663868)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 663878)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 664949)					
conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 664951)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Anions and Nutrients (QCLot: 661541)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 661934)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 661935)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 661938)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 661939)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 661940)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 662149)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 662151)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 664739)					
phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 664768)					
silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier		
Anions and Nutrients (QCLot: 665683)								
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020			
Organic / Inorganic Carbon (QCLot: 662389)								
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50			
Organic / Inorganic Carbon (QCLot: 662	2390)							
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50			
Dissolved Metals (QCLot: 668260)								
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050			
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050			

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water				Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 662028)									
colour, true		E329	5	CU	100 CU	100	85.0	115	
Physical Tests (QCLot: 663868)									
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	94.7	85.0	115	
Physical Tests (QCLot: 663878)									
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	90.7	85.0	115	
Physical Tests (QCLot: 664949)									
conductivity		E100	1	μS/cm	146.9 µS/cm	99.4	90.0	110	
Physical Tests (QCLot: 664950)									
рН		E108		pH units	7 pH units	100	98.6	101	
Physical Tests (QCLot: 664951)									
alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	92.2	75.0	125	
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	100	85.0	115	
Anions and Nutrients (QCLot: 661541)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	87.8	80.0	120	
Anions and Nutrients (QCLot: 661934)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110	
Anions and Nutrients (QCLot: 661935)									
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	
Anions and Nutrients (QCLot: 661938)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	
Anions and Nutrients (QCLot: 661939)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110	
Anions and Nutrients (QCLot: 661940)									
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 662149)									
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	104	75.0	125	
Anions and Nutrients (QCLot: 662151)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.3	85.0	115	
Anions and Nutrients (QCLot: 664739)									
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.03 mg/L	100	80.0	120	
Anions and Nutrients (QCLot: 664768)									1
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	97.7	85.0	115	
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Client : Ecofish Research Ltd



Sub-Matrix: Water			Report						
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 665683)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	94.2	80.0	120	
Organic / Inorganic Carbon (QCLot: 66238									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	94.0	80.0	120	
Organic / Inorganic Carbon (QCLot: 66239	0)								
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	93.2	80.0	120	
Dissolved Metals (QCLot: 668260)									
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.7	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.9	80.0	120	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water								e (MS) Report		
					Spi		Recovery (%)	Recovery	Limits (%)	
.aboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie
Anions and Nutri	ents (QCLot: 661541)									
CG2213023-003	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0415 mg/L	0.05 mg/L	83.0	70.0	130	
Anions and Nutri	ents (QCLot: 661934)									
CG2213003-013	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	
Anions and Nutri	ents (QCLot: 661935)									
CG2213003-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 661938)									
CG2213003-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	
Anions and Nutri	ents (QCLot: 661939)									
CG2213003-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.518 mg/L	0.5 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 661940)									
FJ2202642-002	PD5-FB	chloride	16887-00-6	E235.CI	97.9 mg/L	100 mg/L	97.9	75.0	125	
Anions and Nutri	ents (QCLot: 662149)								1	
CG2212959-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.64 mg/L	2.5 mg/L	106	70.0	130	
Anions and Nutri	ents (QCLot: 662151)									
CG2212959-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 664739)									
CG2212884-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0437 mg/L	0.05 mg/L	87.5	70.0	130	
Anions and Nutri	ents (QCLot: 664768)									
CG2213014-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	10.2 mg/L	10 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 665683)									
CG2213023-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0450 mg/L	0.05 mg/L	90.1	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 66	2389)								
FJ2202642-001	PD5	carbon, dissolved organic [DOC]		E358-L	5.18 mg/L	5 mg/L	104	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 66	2390)								
FJ2202642-001	PD5	carbon, total organic [TOC]		E355-L	5.32 mg/L	5 mg/L	106	70.0	130	
Dissolved Metals	(QCLot: 668260)									
FJ2202642-002	PD5-FB	calcium, dissolved	7440-70-2	E421	40.6 mg/L	40 mg/L	102	70.0	130	
		magnesium, dissolved	7439-95-4	E421	10.5 mg/L	10 mg/L	105	70.0	130	

Page : 10 of 10 Work Order : FJ2202642

Client : Ecofish Research Ltd





www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 2022-Sept-MON8/9- Day 4

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Phone	Contact:	Leah Huli		4														4			ACMAN TO		
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Released by: Sept 20, 23.22 Time: Received by: Date: Aug/120/121753 Received by: Date: Time: Received by: Time: Received by: Date: Aug/120/121753 Received by:									yeyd Luisi	1000	91 (30 mg) (31) 	Inc.	FI	NAL S	HIPMI	ENTRI	ECEP1	ION (A	L LS üs	e only\	10000		
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CERTIFICATE OF ANALYSIS

Work Order : FJ2202647

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Sept-MON8/9-Day 2

Sampler : Pat Beaupre

Site

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare
Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 21-Sep-2022 11:40

Date Analysis Commenced : 23-Sep-2022

Issue Date : 28-Sep-2022 17:28

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dwayne Bennett	Technical Specialist	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Summie Lo	Lab Assistant	Metals, Calgary, Alberta
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

Page : 2 of 4 Work Order : FJ2202647

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
CU	colour units (1 CU = 1 mg/L Pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

Page : 3 of 4 Work Order : FJ2202647

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

(Matrix: Water)									
			Client samp	ling date / time	21-Sep-2022 07:20	21-Sep-2022 08:00	21-Sep-2022 09:25	21-Sep-2022 10:00	21-Sep-2022 10:00
Analyte	CAS Number	Method	LOR	Unit	FJ2202647-001	FJ2202647-002	FJ2202647-003	FJ2202647-004	FJ2202647-005
					Result	Result	Result	Result	Result
Physical Tests									
alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	81.6	80.8	81.6	181	179
alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	15.6	15.8
alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
alkalinity, phenolphthalein (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	<1.0	7.8	7.9
alkalinity, total (as CaCO3)		E290	1.0	mg/L	81.6	80.8	81.6	197	195
colour, true		E329	5.0	CU	6.8	6.3	6.4	<5.0	<5.0
conductivity		E100	2.0	μS/cm	173	169	170	427	424
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	89.4	89.0	89.8	243	240
рН		E108	0.10	pH units	7.99	8.03	8.05	8.48	8.48
solids, total dissolved [TDS]		E162	10	mg/L	121	112	118	268	270
solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0097	0.0087	<0.0050	<0.0050	<0.0050
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
fluoride	16984-48-8	E235.F	0.020	mg/L	0.034	0.032	0.032	0.093	0.095
Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.094	0.189	0.104	0.102	0.080
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0641	0.0607	0.0583	<0.0050	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0024	0.0021	0.0015	<0.0010	<0.0010
nitrogen, total	7727-37-9	EC368	0.050	mg/L	0.160	0.252	0.164	0.102	0.080
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0013	0.0013	0.0010	0.0011	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0041	0.0046	0.0053	0.0104	0.0094
phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.34	4.35	4.16	3.46	3.44
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	12.2	12.1	12.3	52.5	54.0
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.12	3.02	3.20	3.44	2.79
carbon, total organic [TOC]		E355-L	0.50	mg/L	2.90	3.09	2.73	3.43	2.99
Ion Balance									
anion sum		EC101	0.10	meq/L			1.89	5.03	5.03
cation sum		EC101	0.10	meq/L			1.85	5.00	4.94

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PC1	PR1	PR2	HD-A	HD-B
(Matrix: Water)									
				ling date / time	21-Sep-2022 07:20	21-Sep-2022 08:00	21-Sep-2022 09:25	21-Sep-2022 10:00	21-Sep-2022 10:00
Analyte	CAS Number	Method	LOR	Unit	FJ2202647-001	FJ2202647-002	FJ2202647-003	FJ2202647-004	FJ2202647-005
					Result	Result	Result	Result	Result
Ion Balance									
ion balance (APHA)		EC101	0.010	%			1.07	0.299	0.903
Dissolved Metals									
calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.7	25.6	25.8	65.0	64.5
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.12	6.08	6.17	19.5	19.1
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	Laboratory

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202647** Page : 1 of 19

Client : Ecofish Research Ltd Laboratory : Fort St. John - Environmental

Contact : Leah Hull Account Manager : Sneha Sansare

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1

Fort St. John. British Columbia Canada V1J 6P3

Telephone : 250 334 3042 Telephone :+1 250 261 5517

 Project
 : Surface Water MON8/9-No Metals
 Date Samples Received
 : 21-Sep-2022 11:40

 PO
 : 1200-25.03.02
 Issue Date
 : 28-Sep-2022 17:28

C-O-C number : 2022-Sept-MON8/9-Day 2

Sampler : Pat Beaupre

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

No Quality Control Sample Frequency Outliers occur.



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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					E	/aluation: 🗴 =	Holding time exce	edance ; 🔻	= Within	Holding Tim	
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	Analysis		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid)											
HD-A	E298	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Ammonia by Fluorescence									'		
Amber glass total (sulfuric acid)											
HD-B	E298	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid)											
PC1	E298	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid)											
PR1	E298	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid)											
PR2	E298	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Chloride in Water by IC											
HDPE											
HD-A	E235.CI	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	
Anions and Nutrients : Chloride in Water by IC											
HDPE											
HD-B	E235.CI	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓	

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Client : Ecofish Research Ltd



Matrix: Water					Ev	/aluation: × =	Holding time exce	edance ; •	= Within	Holding Ti
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE PC1	E235.Cl	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PR1	E235.Cl	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PR2	E235.CI	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	4
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trac	e Level 0.001									
HDPE HD-A	E378-U	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trac	e Level 0.001									
HDPE										
HD-B	E378-U	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trac	e Level 0.001									
HDPE	E378-U	04.0 0000	00.0 0000				00.0 0000	0.1	0.1	✓
PC1	E378-U	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	,
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trac	e Level 0.001									
HDPE										
PR1	E378-U	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	√
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trac	e Level 0.001									
HDPE										
PR2	E378-U	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



	Evaluation: A - Holding time									
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
HD-A	E235.F	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC							<u> </u>			
HDPE							I			
HD-B	E235.F	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	√
П Ј- Б	L200.1	21-0ep-2022	23-3 c p-2022				23-3ep-2022	20 days	2 uays	,
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PC1	E235.F	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PR1	E235.F	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PR2	E235.F	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
I IVZ		21 COP 2022	20-00p-2022				20-00p-2022	20 days	2 days	,
Anions and Nutrients : Nitrate in Water by IC (Low Level)					ı					
HDPE	E005 NO0 1	04.0	00.0			,				
HD-A	E235.NO3-L	21-Sep-2022	23-Sep-2022	3 days	2 days	✓	23-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
HD-B	E235.NO3-L	21-Sep-2022	23-Sep-2022	3 days	2 days	✓	23-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)							'	1		
HDPE										
PC1	E235.NO3-L	21-Sep-2022	23-Sep-2022	3 days	2 days	✓	23-Sep-2022	3 days	0 days	✓
		_ : p L	P	,				2 22,5	,-	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE	E005 NO0 1	04.00000	00.00000	0 4	0 4	,	00.0 0000	2 7	0 4	
PR1	E235.NO3-L	21-Sep-2022	23-Sep-2022	3 days	2 days	✓	23-Sep-2022	3 days	0 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
PR2	E235.NO3-L	21-Sep-2022	23-Sep-2022	3 days	2 days	✓	23-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HD-A	E235.NO2-L	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HD-B	E235.NO2-L	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PC1	E235.NO2-L	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR1	E235.NO2-L	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
PR2	E235.NO2-L	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HD-A	E392	21-Sep-2022					25-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HD-B	E392	21-Sep-2022					25-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PC1	E392	21-Sep-2022					25-Sep-2022	28 days	4 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	ate Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR1	E392	21-Sep-2022					25-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE PR2	E392	21-Sep-2022					25-Sep-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE HD-A	E235.SO4	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC									1	
HDPE HD-B	E235.SO4	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PC1	E235.SO4	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR1	E235.SO4	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR2	E235.SO4	21-Sep-2022	23-Sep-2022				23-Sep-2022	28 days	2 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) HD-A	E375-T	21-Sep-2022	25-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) HD-B	E375-T	21-Sep-2022	25-Sep-2022				27-Sep-2022	28 days	6 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PC1	E375-T	21-Sep-2022	25-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR1	E375-T	21-Sep-2022	25-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) PR2	E375-T	21-Sep-2022	25-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) HD-A	E318	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) HD-B	E318	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PC1	E318	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)										
Amber glass total (sulfuric acid) PR1	E318	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)								1		
Amber glass total (sulfuric acid) PR2	E318	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) HD-A	E372-U	21-Sep-2022	27-Sep-2022				27-Sep-2022	28 days	6 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix: Water						aluation. ^ –	Holding time excee	euance , •	- vvitiiiii	nolaing Time
Analyte Group	Method		Analys	is						
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) HD-B	E372-U	21-Sep-2022	27-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PC1	E372-U	21-Sep-2022	27-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR1	E372-U	21-Sep-2022	27-Sep-2022				27-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PR2	E372-U	21-Sep-2022	27-Sep-2022				27-Sep-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) HD-A	E421	21-Sep-2022	27-Sep-2022				27-Sep-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) HD-B	E421	21-Sep-2022	27-Sep-2022				27-Sep-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) PC1	E421	21-Sep-2022	27-Sep-2022				27-Sep-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) PR1	E421	21-Sep-2022	27-Sep-2022				27-Sep-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) PR2	E421	21-Sep-2022	27-Sep-2022				27-Sep-2022	180 days	6 days	✓

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PC1

PR1

Amber glass total (sulfuric acid)

Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



✓

✓

28 days 3 days

28 days 3 days

24-Sep-2022

24-Sep-2022

Matrix: Water Evaluation: x = Holding time exceedance; ✓ = Within Holding Time Analyte Group Method Sampling Date Extraction / Preparation Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Actual Rec Actual Date Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 21-Sep-2022 23-Sep-2022 24-Sep-2022 28 days 3 days ✓ HD-A Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L ✓ HD-B 21-Sep-2022 23-Sep-2022 24-Sep-2022 28 days 3 days ----Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) PC1 E358-L 21-Sep-2022 24-Sep-2022 28 days 3 days ✓ 23-Sep-2022 Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L PR1 21-Sep-2022 23-Sep-2022 24-Sep-2022 28 days 3 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 21-Sep-2022 23-Sep-2022 24-Sep-2022 PR2 28 days 3 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 21-Sep-2022 24-Sep-2022 ✓ HD-A 23-Sep-2022 28 days 3 davs Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) HD-B E355-L 21-Sep-2022 23-Sep-2022 24-Sep-2022 28 days 3 days ✓ Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid)

21-Sep-2022

21-Sep-2022

23-Sep-2022

23-Sep-2022

E355-L

E355-L

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustio	n (Low Level)									
Amber glass total (sulfuric acid) PR2	E355-L	21-Sep-2022	23-Sep-2022				24-Sep-2022	28 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE HD-A	E290	21-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	4 days	√
Physical Tests : Alkalinity Species by Titration										
HDPE HD-B	E290	21-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PC1	E290	21-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PR1	E290	21-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE PR2	E290	21-Sep-2022	25-Sep-2022				25-Sep-2022	14 days	4 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE HD-A	E329	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HD-B	E329	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PC1	E329	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓

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Client : Ecofish Research Ltd

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Matrix: water						aldation. • -	noiding time exce	cuarice, .	- vvicini	Tioluling Tilli		
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation		Analysis					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval		
			Date	Rec	Actual			Rec	Actual			
Physical Tests : Colour (True) by Spectrometer (5 CU)												
HDPE												
PR1	E329	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓		
Physical Tests : Colour (True) by Spectrometer (5 CU)												
HDPE												
PR2	E329	21-Sep-2022	23-Sep-2022				23-Sep-2022	3 days	2 days	✓		
Physical Tests : Conductivity in Water												
HDPE												
HD-A	E100	21-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	4 days	✓		
Physical Tests : Conductivity in Water												
HDPE	E400	04.0	05.0				05.0	00.1				
HD-B	E100	21-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	4 days	✓		
Physical Tests : Conductivity in Water												
HDPE PC1	E100	21-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	1 days	✓		
PCI	E100	21-3ep-2022	25-Sep-2022				25-Sep-2022	20 days	4 days	Y		
Not divide A of the William												
Physical Tests : Conductivity in Water HDPE							I	1				
PR1	E100	21-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	4 days	✓		
	2.00	21 000 2022	20 000 2022				20 000 2022	20 44,0	,			
Physical Tests : Conductivity in Water												
HDPE												
PR2	E100	21-Sep-2022	25-Sep-2022				25-Sep-2022	28 days	4 days	✓		
		·	·				·					
Physical Tests : pH by Meter												
HDPE												
HD-A	E108	21-Sep-2022	25-Sep-2022				25-Sep-2022	0.25	0.25	×		
								hrs	hrs	EHTR-FM		
Physical Tests : pH by Meter									1			
HDPE												
HD-B	E108	21-Sep-2022	25-Sep-2022				25-Sep-2022	0.25	0.25	se .		
								hrs	hrs	EHTR-FM		

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Physical Tests: TDS by Gravimetry

Physical Tests: TSS by Gravimetry

HDPE

HDPE

HD-A

PR2

Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



5 days

4 days

7 days

7 days

✓

1

26-Sep-2022

25-Sep-2022

Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Analyte Group Extraction / Preparation Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date Holding Times Eval Rec Rec Actual Actual Date Physical Tests : pH by Meter HDPE PC1 E108 21-Sep-2022 25-Sep-2022 25-Sep-2022 × 0.25 0.25 EHTR-FM hrs hrs Physical Tests : pH by Meter HDPE PR1 E108 21-Sep-2022 25-Sep-2022 25-Sep-2022 0.25 0.25 × --------EHTR-FM hrs hrs Physical Tests : pH by Meter HDPE PR2 E108 21-Sep-2022 25-Sep-2022 25-Sep-2022 0.25 0.25 × hrs hrs EHTR-FM **Physical Tests: TDS by Gravimetry** HDPE E162 21-Sep-2022 26-Sep-2022 7 days 5 days ✓ HD-A **Physical Tests: TDS by Gravimetry** HDPE HD-B E162 21-Sep-2022 26-Sep-2022 7 days 5 days ✓ **Physical Tests: TDS by Gravimetry** HDPE PC1 E162 21-Sep-2022 26-Sep-2022 7 days ✓ 5 days **Physical Tests: TDS by Gravimetry** HDPE PR1 E162 21-Sep-2022 26-Sep-2022 7 days 5 days 1

21-Sep-2022

21-Sep-2022

E162

E160

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



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

							Tronumny units ontoo.	,,		rioidinig riiii	
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Physical Tests : TSS by Gravimetry											
HDPE											
HD-B	E160	21-Sep-2022					25-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PC1	E160	21-Sep-2022					25-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PR1	E160	21-Sep-2022					25-Sep-2022	7 days	4 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE											
PR2	E160	21-Sep-2022					25-Sep-2022	7 days	4 days	✓	

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended Rec. HT: ALS recommended hold time (see units).

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Quality Control Parameter Frequency Compliance

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

Matrix: Water		Evaluat	tion: × = QC frequ	<u> </u>	ecification; $\checkmark = 0$		<u> </u>
Quality Control Sample Type		001.4#		ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	664968	1	11	9.0	5.0	✓
Ammonia by Fluorescence	E298	662151	2	37	5.4	5.0	✓
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	✓
Conductivity in Water	E100	664967	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	662043	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	✓
pH by Meter	E108	664966	1	19	5.2	5.0	✓
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	1
TDS by Gravimetry	E162	663869	1	6	16.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	1
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	1
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	1
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	664968	1	11	9.0	5.0	1
Ammonia by Fluorescence	E298	662151	2	37	5.4	5.0	1
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	1
Conductivity in Water	E100	664967	1	16	6.2	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	662043	1	20	5.0	5.0	1
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	√
pH by Meter	E108	664966	1	19	5.2	5.0	√
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	1
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	✓
TDS by Gravimetry	E162	663869	1	6	16.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	1

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Client : Ecofish Research Ltd



Matrix: Water		Evaluati	on: × = <i>QC frequ</i>	encv outside spe	ecification: √ =	QC frequency wit	thin specification
Quality Control Sample Type				ount		Frequency (%)	<u> </u>
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	2	37	5.4	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	
Method Blanks (MB)							-
Alkalinity Species by Titration	E290	664968	1	11	9.0	5.0	1
Ammonia by Fluorescence	E298	662151	2	37	5.4	5.0	
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	
Colour (True) by Spectrometer (5 CU)	E329	662028	1	18	5.5	5.0	
Conductivity in Water	E100	664967	1	16	6.2	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	662043	1	20	5.0	5.0	
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	<u>√</u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	√
TDS by Gravimetry	E162	663869	1	6	16.6	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	663878	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	662151	2	37	5.4	5.0	✓
Chloride in Water by IC	E235.CI	661940	1	7	14.2	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	668260	1	12	8.3	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	662389	1	16	6.2	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	662043	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	661934	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	661938	1	19	5.2	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	661939	1	18	5.5	5.0	√
Reactive Silica by Colourimetry	E392	664768	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	661935	1	15	6.6	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	664739	1	19	5.2	5.0	√
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	662149	2	37	5.4	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	662390	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	665683	1	20	5.0	5.0	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 Calgary - Environmental	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 Calgary - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 Calgary - Environmental	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 Calgary - Environmental	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Fluoride in Water by IC	E235.F Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Sulfate in Water by IC	E235.SO4 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
Alkalinity Species by Titration	E290 Calgary - Environmental	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 Calgary - Environmental	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Colour (True) by Spectrometer (5 CU)	E329 Calgary - Environmental	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Calgary - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Calgary - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
Reactive Silica by Colourimetry	E392 Vancouver - Environmental	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Dissolved Metals in Water by CRC ICPMS	E421 Calgary - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Hardness (Calculated)	EC100 Calgary - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ion Balance using Dissolved Metals	EC101 Calgary - Environmental	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Total Nitrogen (calculation)	EC368 Calgary - Environmental	Water	BC MOE LABORATORY MANUAL (2005)	Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for TKN in water	EP318 Calgary - Environmental	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.
Preparation for Total Organic Carbon by Combustion	EP355 Calgary - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Calgary - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Calgary - Environmental	Water	АРНА 3030В	Water samples are filtered (0.45 um), and preserved with HNO3.



QUALITY CONTROL REPORT

Work Order : FJ2202647

Client : Ecofish Research Ltd

Contact : Leah Hull

Address : 1220 - 1175 Douglas Street

Victoria BC Canada V8W 2E1

Telephone : 250 334 3042

Project : Surface Water MON8/9-No Metals

PO : 1200-25.03.02

C-O-C number : 2022-Sept-MON8/9-Day 2

Sampler : Pat Beaupre

Site

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 10

Laboratani Danartmant

Laboratory : Fort St. John - Environmental

Account Manager : Sneha Sansare

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 21-Sep-2022 11:40

Date Analysis Commenced 23-Sep-2022

Issue Date : 28-Sep-2022 17:28

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Donition

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Cianatarias

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

Signatories	Position	Laboratory Department	
Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta	
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Dwayne Bennett	Technical Specialist	Calgary Inorganics, Calgary, Alberta	
Elke Tabora		Calgary Inorganics, Calgary, Alberta	
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta	
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta	
Sara Niroomand		Calgary Inorganics, Calgary, Alberta	
Summie Lo	Lab Assistant	Calgary Metals, Calgary, Alberta	
Vladka Stamenova	Analyst	Calgary Inorganics, Calgary, Alberta	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Duplicate (DUP) Report

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

						Labora	ntory Duplicate (D	UP) Report		
Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Lot: 662028)										
Anonymous	colour, true		E329	5.0	CU	6.4	6.6	0.3	Diff <2x LOR	
Lot: 663869)										
Anonymous	solids, total dissolved [TDS]		E162	20	mg/L	277	277	0.00%	20%	
Lot: 663878)										
Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Lot: 664966)										
Anonymous	pH		E108	0.10	pH units	8.45	8.48	0.354%	4%	
Lot: 664967)										
Anonymous	conductivity		E100	2.0	μS/cm	422	422	0.00%	10%	
Lot: 664968)										
PC1	alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	81.6	82.0	0.489%	20%	
	alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
	alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
	alkalinity, phenolphthalein (as		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
	CaCO3)		F200	1.0	m a /I	94.6	92.0	0.4900/	200/	
	alkalinity, total (as CaCO3)		E290	1.0	mg/L	81.0	82.0	0.489%	20%	
		10001 10 0		0.400	,,	0.440	0.400		D:# 0 10D	
Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.113	0.122	0.009	Diff <2x LOR	
Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	786	792	0.749%	20%	
ts (QC Lot: 661938)										
Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	2.76	2.80	1.49%	20%	
ts (QC Lot: 661939)										
Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	0.0057	0.0007	Diff <2x LOR	
ts (QC Lot: 661940)										
Anonymous	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
ts (QC Lot: 662043)										
Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
ts (QC Lot: 662149)										
Anonymous	Kjeldahl nitrogen, total [TKN]		E318	0.050	mg/L	0.356	0.326	0.030	Diff <2x LOR	
ts (QC Lot: 662150)										
- (
	E Lot: 662028) Anonymous E Lot: 663869) Anonymous E Lot: 663878) Anonymous E Lot: 664966) Anonymous E Lot: 664967) Anonymous E Lot: 664968) PC1 ts (QC Lot: 661934) Anonymous ts (QC Lot: 661935) Anonymous ts (QC Lot: 661939) Anonymous ts (QC Lot: 661940) Anonymous ts (QC Lot: 661940) Anonymous ts (QC Lot: 662043) Anonymous ts (QC Lot: 662043) Anonymous ts (QC Lot: 662149)	Lot: 662028) Anonymous colour, true Lot: 663869) Anonymous solids, total dissolved [TDS] Lot: 663878) Anonymous solids, total suspended [TSS] Lot: 664966) Anonymous pH Lot: 664967) Anonymous conductivity Lot: 664968) PC1 alkalinity, bicarbonate (as CaCO3) alkalinity, phenolphthalein (as CaCO3) alkalinity, phenolphthalein (as CaCO3) alkalinity, total (as CaCO3) alkalinity, total (as CaCO3) ts (QC Lot: 661934) Anonymous fluoride ts (QC Lot: 661935) Anonymous nitrate (as N) ts (QC Lot: 661939) Anonymous chloride ts (QC Lot: 661940) Anonymous phosphate, ortho-, dissolved (as P) ts (QC Lot: 662149) Anonymous Kjeldahl nitrogen, total [TKN]	Lot: 662028 Anonymous Colour, true	Lot: 662028 Anonymous Colour, true E329	Lot: 662028 Anonymous colour, true E329 5.0	Lot: 662028 Anonymous colour, true E329 5.0 CU Lot: 663869 Anonymous solids, total dissolved [TDS] E162 20 mg/L Lot: 663878 Anonymous solids, total suspended [TSS] E160 3.0 mg/L Lot: 664966 Anonymous pH E108 0.10 pH units Lot: 664967 Anonymous conductivity E100 2.0 µS/cm Lot: 664968 PC1 alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, carbonate (as CaCO3) E290 1.0 mg/L alkalinity, phenolphthalein (as E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L alkalinity, bicarbonate (as CaCO3) E290 1.0 mg/L ts (QC Lot: 661934) Anonymous fluoride 16984-48-8 E235.F 0.100 mg/L ts (QC Lot: 661938) Anonymous sulfate (as SO4) 14797-55-8 E235.NO3-L 0.0250 mg/L ts (QC Lot: 661939) Anonymous nitrate (as N) 14797-55-0 E235.NO3-L 0.050 mg/L ts (QC Lot: 661940) Anonymous chloride 16887-00-6 E235.Cl 0.50 mg/L ts (QC Lot: 662043) Anonymous phosphate, orthor, dissolved (as P) 14265-44-2 E378-U 0.0010 mg/L ts (QC Lot: 662149) Anonymous Nitrogen, total [TKN] E318 0.050 mg/L	Client sample ID	Client sample ID	Cot GS2028 Colour, true Cot GS29 S.0 CU G.4 G.6 G.3	Client sample ID

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Client : Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrien	ts (QC Lot: 662151)										
CG2212959-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0077	0.0074	0.0003	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 662152)										
FJ2202647-003	PR2	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 664739)										
CG2212884-001	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0360	0.0354	1.47%	20%	
Anions and Nutrien	ts (QC Lot: 664768)										
CG2213013-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 665683)										
CG2213023-007	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 66238	9)									
FJ2202642-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.45	3.58	0.14	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 66239	0)									
FJ2202642-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	3.12	3.59	0.46	Diff <2x LOR	
Dissolved Metals (QC Lot: 668260)										
FJ2202642-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	28.0	27.7	0.879%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.92	6.72	2.91%	20%	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 662028)					
colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 663869)					
solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 663878)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 664967)					
conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 664968)					
alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, phenolphthalein (as CaCO3)	E290	1	mg/L	<1.0	
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Anions and Nutrients (QCLot: 661934)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 661935)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 661938)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 661939)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 661940)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 662043)					
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 662149)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 662150)					
Kjeldahl nitrogen, total [TKN]	E318	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 662151)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 662152)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals

ALS

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 664739)						
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 664768)						
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 665683)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	
Organic / Inorganic Carbon (QCLot: 66	2389)					
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 66	2390)					
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 668260)						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water						Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery (%) Recovery					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Physical Tests (QCLot: 662028)												
colour, true		E329	5	CU	100 CU	100	85.0	115				
Physical Tests (QCLot: 663869)												
solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	94.3	85.0	115				
Physical Tests (QCLot: 663878)												
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	90.7	85.0	115				
Physical Tests (QCLot: 664966)												
рН		E108		pH units	7 pH units	101	98.6	101				
Physical Tests (QCLot: 664967)												
conductivity		E100	1	μS/cm	146.9 μS/cm	99.3	90.0	110				
Physical Tests (QCLot: 664968)												
alkalinity, phenolphthalein (as CaCO3)		E290	1	mg/L	229 mg/L	90.7	75.0	125				
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	103	85.0	115				
Anions and Nutrients (QCLot: 661934)												
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	105	90.0	110				
Anions and Nutrients (QCLot: 661935)												
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110				
Anions and Nutrients (QCLot: 661938)												
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110				
Anions and Nutrients (QCLot: 661939)												
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.4	90.0	110				
Anions and Nutrients (QCLot: 661940)												
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	102	90.0	110				
Anions and Nutrients (QCLot: 662043)												
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	91.9	80.0	120				
Anions and Nutrients (QCLot: 662149)												
Kjeldahl nitrogen, total [TKN]		E318	0.05	mg/L	4 mg/L	104	75.0	125				
Anions and Nutrients (QCLot: 662150)												
		E318	0.05	mg/L	4 mg/L	102	75.0	125				
Kjeldahl nitrogen, total [TKN]												
Anions and Nutrients (QCLot: 662151) ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.3	85.0	115				
Anions and Nutrients (QCLot: 662151)		E298	0.005	mg/L	0.2 mg/L	97.3	85.0	115				

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 Work Order
 : FJ2202647

Client : Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Recovery Limits (%)				
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Anions and Nutrients (QCLot: 664739)												
phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.03 mg/L	100	80.0	120				
Anions and Nutrients (QCLot: 664768)												
silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	97.7	85.0	115				
Anions and Nutrients (QCLot: 665683)												
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	94.2	80.0	120				
Organic / Inorganic Carbon (QCLot: 662389)												
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	94.0	80.0	120				
Organic / Inorganic Carbon (QCLot: 662390)												
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	93.2	80.0	120				
Dissolved Metals (QCLot: 668260)												
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.7	80.0	120				
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	96.9	80.0	120				

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report						
					Spike		Recovery (%)	Recovery Limits (%)			
aboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
	ents (QCLot: 661934)										
CG2213003-013	Anonymous	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125		
Anions and Nutri	ents (QCLot: 661935)										
CG2213003-013	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125		
Anions and Nutri	ents (QCLot: 661938)										
CG2213003-013	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125		
Anions and Nutri	ents (QCLot: 661939)										
CG2213003-013	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.518 mg/L	0.5 mg/L	104	75.0	125		
nions and Nutri	ents (QCLot: 661940)										
FJ2202642-002	Anonymous	chloride	16887-00-6	E235.CI	97.9 mg/L	100 mg/L	97.9	75.0	125		
Anions and Nutri	ents (QCLot: 662043)										
CG2213003-026	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0408 mg/L	0.05 mg/L	81.7	70.0	130		
nions and Nutri	ents (QCLot: 662149)										
CG2212959-002	Anonymous	Kjeldahl nitrogen, total [TKN]		E318	2.64 mg/L	2.5 mg/L	106	70.0	130		
Anions and Nutri	ents (QCLot: 662150)										
FJ2202647-004	HD-A	Kjeldahl nitrogen, total [TKN]		E318	2.58 mg/L	2.5 mg/L	103	70.0	130		
Anions and Nutri	ents (QCLot: 662151)										
CG2212959-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125		
Anions and Nutri	ents (QCLot: 662152)										
FJ2202647-004	HD-A	ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125		
Anions and Nutri	ents (QCLot: 664739)										
CG2212884-002	Anonymous	phosphorus, total dissolved	7723-14-0	E375-T	0.0437 mg/L	0.05 mg/L	87.5	70.0	130		
Anions and Nutri	ents (QCLot: 664768)										
CG2213014-001	Anonymous	silicate (as SiO2)	7631-86-9	E392	10.2 mg/L	10 mg/L	102	75.0	125		
Inions and Nutri	ents (QCLot: 665683)										
CG2213023-008	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0450 mg/L	0.05 mg/L	90.1	70.0	130		
Organic / Inorgan	ic Carbon (QCLot: 662	2389)									
FJ2202642-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	5.18 mg/L	5 mg/L	104	70.0	130		

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-No Metals



Sub-Matrix: Water				Matrix Spike (MS) Report									
			Spi	ke	Recovery (%)	Recovery	Limits (%)						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Organic / Inorganic Carbon (QCLot: 662390) - continued													
FJ2202642-001	Anonymous	carbon, total organic [TOC]		E355-L	5.32 mg/L	5 mg/L	106	70.0	130				
Dissolved Metals	(QCLot: 668260)												
FJ2202642-002	Anonymous	calcium, dissolved	7440-70-2	E421	40.6 mg/L	40 mg/L	102	70.0	130				
		magnesium, dissolved	7439-95-4	E421	10.5 mg/L	10 mg/L	105	70.0	130				





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Page

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COC Number: 2022-Sept-MON8/9- Day 4

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COC Number: 2022-Sept-MON8/9- Day 1

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

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

AUG 2020 FRONT

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2202949** Page : 1 of 8

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang
Address : 600 Comox Road Address : 11007 Alask

: 600 Comox Road Address : 11007 Alaska Road
Courtenay BC Canada V9N3P6 Fort St. John BC Canada V1J 6P3

Courtenay BC Canada V9N3P6 Fort St. John BC ---- Telephone : +1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received : 17-Oct-2022 18:50

C-O-C number : 2022-OCT-MON8/9-Day 3 Issue Date : 25-Aug-2023 17:57

Sampler : Pat Beaupre

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

Telephone

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

Signatories	Position	Laboratory Department
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Erin Sanchez		Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Parnian Sane	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia

Page : 2 of 8

Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

>: greater than.

Page : 3 of 8

Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Qualifiers

Qualifier	Description
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical
	Conductivity.
DLIS	Detection Limit Adjusted due to insufficient sample.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.

Page : 4 of 8

Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water				CI	ient sample ID	BEA-A	BEA-B	POUCE	PD4	KR
(Matrix: Water)										
				Client samp	ling date / time	17-Oct-2022 17:00	17-Oct-2022 17:00	17-Oct-2022 11:45	17-Oct-2022 13:10	17-Oct-2022 14:55
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Alkalinity, bicarbonate (as CaCO3)		90/VA	A	1.0	mg/L	185	184	186	77.3	200
Alkalinity, carbonate (as CaCO3)	E29		A	1.0	mg/L	10.2	10.4	6.4	<1.0	11.8
Alkalinity, hydroxide (as CaCO3)	E29		Α	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	E29		Α	1.0	mg/L	195	194	192	77.3	212
Colour, true	E32		Α	5.0	CU	76.3	70.4	14.7	6.0	8.3
Conductivity	E10		Α	2.0	μS/cm	561	562	1530	181	504
Hardness (as CaCO3), dissolved	EC	C100/VA		0.50	mg/L	195	208	536	88.9	222
Hardness (as CaCO3), from total Ca/Mg	EC	C100A/VA		0.50	mg/L	210	210	576	97.0	235
рН	E10	08/VA	Α	0.10	pH units	8.46	8.46	8.33	8.12	8.46
Solids, total dissolved [TDS]	E16	62/VA	Α	10	mg/L	406	385	1120	106	317
Solids, total suspended [TSS]	E16	60/VA	Α	3.0	mg/L	<3.0	<3.0	4.4	7.0	<3.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7 E29	98/VA	Α	0.0050	mg/L	0.0074	0.0082	0.0112	<0.0050	0.0104
Chloride	16887-00-6 E23	235.CI/VA	Α	0.50	mg/L	3.83	3.80	36.0	<0.50	1.84
Fluoride	16984-48-8 E23	235.F/VA	Α	0.020	mg/L	0.172	0.170	0.252	0.041	0.122
Kjeldahl nitrogen, total [TKN]	EC	C318/VA		0.050	mg/L	0.573	0.568	0.650	0.109	0.270
Nitrate (as N)	14797-55-8 E23	235.NO3-L/V	Α	0.0050	mg/L	<0.0050	<0.0050	<0.0250 DLDS	0.0526	0.0915
Nitrite (as N)	14797-65-0 E23	235.NO2-L/V	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0050 DLDS	<0.0010	0.0030
Nitrogen, total	7727-37-9 E36	866/VA	Α	0.030	mg/L	0.573	0.568	0.650	0.162	0.364
Phosphate, ortho-, dissolved (as P)	14265-44-2 E37		Α	0.0010	mg/L	0.0016	0.0022	<0.0010	<0.0010	<0.0010
Phosphorus, total	7723-14-0 E37		Α	0.0020	mg/L	0.0220	0.0219	0.0176	0.0260	0.0034
Phosphorus, total dissolved	7723-14-0 E37		Α	0.0020	mg/L	0.0042	0.0048	0.0047	<0.0020	0.0092
Silicate (as SiO2)	7631-86-9 E39		Α	0.50	mg/L	0.85	0.84	0.82	4.08	<0.50
Sulfate (as SO4)	14808-79-8 E23		Α	0.30	mg/L	105	106	625	13.7	66.5
Nitrate + Nitrite (as N)		C235.N+N/V	•	0.0032	mg/L	<0.0051	<0.0051	<0.0255	0.0526	0.0945
	Δ	7200.IN ! IN/ V		0.0002	g, =	0.000.	0.000.	0.0200	0.0020	0.00.0

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Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	BEA-A	BEA-B	POUCE	PD4	KR
(Matrix: Water)									
			Client samp	ling date / time	17-Oct-2022 17:00	17-Oct-2022 17:00	17-Oct-2022 11:45	17-Oct-2022 13:10	17-Oct-2022 14:55
Analyte	CAS Number Method/L	.ab	LOR	Unit	FJ2202949-001	FJ2202949-002	FJ2202949-003	FJ2202949-004	FJ2202949-005
					Result	Result	Result	Result	Result
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	E358-L/VA	Α	0.50	mg/L	21.0	22.5	14.2	2.93	6.88
Carbon, total organic [TOC]	E355-L/VA	Α	0.50	mg/L	22.0	23.3	15.0	2.94	6.91
Ion Balance									
Anion sum	EC101/VA		0.10	meq/L	6.20	6.20	17.9	1.84	5.69
Cation sum	EC101/VA		0.10	meq/L	6.30	6.60	17.6	1.84	5.87
Ion balance (APHA)	EC101/VA		0.010	%	0.800	3.12	0.845	<0.010	1.56
Total Metals									
Aluminum, total	7429-90-5 E420/VA	Α	0.0030	mg/L	0.110	0.105	0.152	0.230	0.0508
Antimony, total	7440-36-0 E420/VA	Α	0.00010	mg/L	0.00014	0.00014	0.00017	<0.00010	0.00015
Arsenic, total	7440-38-2 E420/VA	Α	0.00010	mg/L	0.00085	0.00082	0.00071	0.00039	0.00059
Barium, total	7440-39-3 E420/VA	Α	0.00010	mg/L	0.0972	0.0978	0.0743	0.0424	0.157
Beryllium, total	7440-41-7 E420/VA	Α	0.000020	mg/L	<0.000020	0.000022	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9 E420/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8 E420/VA	Α	0.010	mg/L	0.054	0.054	0.162	<0.010	0.032
Cadmium, total	7440-43-9 E420/VA	Α	0.0000050	mg/L	0.0000285	0.0000312	0.0000109	0.0000294	<0.0000050
Calcium, total	7440-70-2 E420/VA	Α	0.050	mg/L	55.8	56.9	136	28.0	55.3
Cesium, total	7440-46-2 E420/VA	Α	0.000010	mg/L	0.000018	0.000017	0.000030	0.000053	0.000012
Chromium, total	7440-47-3 E420/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4 E420/VA	Α	0.00010	mg/L	0.00028	0.00028	0.00034	0.00018	<0.00010
Copper, total	7440-50-8 E420/VA	Α	0.00050	mg/L	0.00202	0.00197	0.00190	0.00106	0.00142
Iron, total	7439-89-6 E420/VA	Α	0.010	mg/L	0.749	0.701	0.237	0.443	0.063
Lead, total	7439-92-1 E420/VA	Α	0.000050	mg/L	0.000160	0.000156	0.000117	0.000199	<0.000050
Lithium, total	7439-93-2 E420/VA	Α	0.0010	mg/L	0.0089	0.0090	0.0310	0.0015	0.0076
Magnesium, total	7439-95-4 E420/VA	Α	0.0050	mg/L	17.1	16.5	57.5	6.57	23.5
Manganese, total	7439-96-5 E420/VA	Α	0.00010	mg/L	0.0577	0.0562	0.109	0.0105	0.00518
Mercury, total	7439-97-6 E508-L/VA	Α	0.50	ng/L	3.53	3.26	1.88	2.58	1.36
Molybdenum, total	7439-98-7 E420/VA	Α	0.000050	mg/L	0.00112	0.00114	0.00153	0.000827	0.00139
Nickel, total	7440-02-0 E420/VA	Α	0.00050	mg/L	0.00406	0.00401	0.00644	0.00125	0.00165
Phosphorus, total	7723-14-0 E420/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7 E420/VA	Α	0.050	mg/L	2.39	2.35	10.7	0.539	2.26
1	7710 00 7		1	9/-		l			

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Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	BEA-A	BEA-B	POUCE	PD4	KR
(Matrix: Water)									
			Client samp	ling date / time	17-Oct-2022 17:00	17-Oct-2022 17:00	17-Oct-2022 11:45	17-Oct-2022 13:10	17-Oct-2022 14:55
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2202949-001	FJ2202949-002	FJ2202949-003	FJ2202949-004	FJ2202949-005
					Result	Result	Result	Result	Result
Total Metals									
Rubidium, total	7440-17-7 E420/VA	Α	0.00020	mg/L	0.00108	0.00111	0.00243	0.00083	0.00068
Selenium, total	7782-49-2 E420/VA	Α	0.000050	mg/L	0.000369	0.000314	0.000582	0.000305	0.000178
Silicon, total	7440-21-3 E420/VA	Α	0.10	mg/L	0.55	0.57	0.80	2.36	0.18
Silver, total	7440-22-4 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5 E420/VA	Α	0.050	mg/L	53.4	52.8	158	1.27	31.6
Strontium, total	7440-24-6 E420/VA	Α	0.00020	mg/L	0.227	0.229	0.660	0.108	0.332
Sulfur, total	7704-34-9 E420/VA	Α	0.50	mg/L	38.0	38.1	242	4.69	24.5
Tellurium, total	13494-80-9 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	0.000015	<0.000010	<0.000010
Thorium, total	7440-29-1 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6 E420/VA	Α	0.00030	mg/L	0.00527	0.00528	<0.00390 DLM	0.00403	0.00145
Tungsten, total	7440-33-7 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1 E420/VA	Α	0.000010	mg/L	0.00166	0.00167	0.00303	0.000436	0.00123
Vanadium, total	7440-62-2 E420/VA	Α	0.00050	mg/L	0.00074	0.00067	0.00062	0.00147	<0.00050
Zinc, total	7440-66-6 E420/VA	Α	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium, total	7440-67-7 E420/VA	Α	0.00020	mg/L	0.00043	<0.00060 DLM	0.00028	<0.00020	<0.00020
Dissolved Metals									
Aluminum, dissolved	7429-90-5 E421/VA	Α	0.0010	mg/L	0.0065	0.0069	0.0025	0.0040	0.0017
Antimony, dissolved	7440-36-0 E421/VA	Α	0.00010	mg/L	0.00013	0.00014	0.00017	<0.00010	0.00015
Arsenic, dissolved	7440-38-2 E421/VA	Α	0.00010	mg/L	0.00054	0.00056	0.00058	0.00020	0.00051
Barium, dissolved	7440-39-3 E421/VA	Α	0.00010	mg/L	0.0883	0.0893	0.0679	0.0349	0.149
Beryllium, dissolved	7440-41-7 E421/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, dissolved	7440-69-9 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8 E421/VA	Α	0.010	mg/L	0.046	0.048	0.139	<0.010	0.027
Cadmium, dissolved	7440-43-9 E421/VA	Α	0.0000050	mg/L	0.0000080	0.0000119	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2 E421/VA	Α	0.050	mg/L	52.2	57.3	126	25.8	51.6
Cesium, dissolved	7440-46-2 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4 E421/VA	Α	0.00010	mg/L	0.00021	0.00023	0.00023	<0.00010	<0.00010
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Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	BEA-A	BEA-B	POUCE	PD4	KR
(Matrix: Water)									
			Client samp	ling date / time	17-Oct-2022 17:00	17-Oct-2022 17:00	17-Oct-2022 11:45	17-Oct-2022 13:10	17-Oct-2022 14:55
Analyte	CAS Number Method/L	ab	LOR	Unit	FJ2202949-001	FJ2202949-002	FJ2202949-003	FJ2202949-004	FJ2202949-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Copper, dissolved	7440-50-8 E421/VA	Α	0.00020	mg/L	0.00161	0.00165	0.00153	0.00058	0.00119
Iron, dissolved	7439-89-6 E421/VA	Α	0.010	mg/L	0.046	0.066	<0.010	<0.010	<0.010
Lead, dissolved	7439-92-1 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2 E421/VA	Α	0.0010	mg/L	0.0085	0.0091	0.0291	0.0012	0.0069
Magnesium, dissolved	7439-95-4 E421/VA	Α	0.0050	mg/L	15.8	15.9	53.9	5.95	22.7
Manganese, dissolved	7439-96-5 E421/VA	Α	0.00010	mg/L	0.0150	0.0159	0.0180	0.00094	0.00283
Mercury, dissolved	7439-97-6 E509-L/VA	Α	0.50	ng/L	2.12	2.79	2.49	1.41	0.80
Molybdenum, dissolved	7439-98-7 E421/VA	Α	0.000050	mg/L	0.00106	0.00106	0.00146	0.000796	0.00128
Nickel, dissolved	7440-02-0 E421/VA	Α	0.00050	mg/L	0.00352	0.00366	0.00571	0.00067	0.00146
Phosphorus, dissolved	7723-14-0 E421/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7 E421/VA	Α	0.050	mg/L	2.28	2.43	9.82	0.435	2.21
Rubidium, dissolved	7440-17-7 E421/VA	Α	0.00020	mg/L	0.00090	0.00102	0.00218	0.00029	0.00061
Selenium, dissolved	7782-49-2 E421/VA	Α	0.000050	mg/L	0.000323	0.000347	0.000582	0.000263	0.000243
Silicon, dissolved	7440-21-3 E421/VA	Α	0.050	mg/L	0.312	0.331	0.351	1.80	<0.050
Silver, dissolved	7440-22-4 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5 E421/VA	Α	0.050	mg/L	53.7	54.4	153	1.18	31.5
Strontium, dissolved	7440-24-6 E421/VA	Α	0.00020	mg/L	0.229	0.220	0.596	0.110	0.323
Sulfur, dissolved	7704-34-9 E421/VA	Α	0.50	mg/L	36.3	35.9	225	4.27	23.2
Tellurium, dissolved	13494-80-9 E421/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	0.000012	<0.000010	<0.000010
Thorium, dissolved	7440-29-1 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	7440-32-6 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1 E421/VA	Α	0.000010	mg/L	0.00172	0.00165	0.00298	0.000402	0.00115
Vanadium, dissolved	7440-62-2 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6 E421/VA	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium, dissolved	7440-67-7 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
Dissolved MeHg filtration location	EP537/VA		-	-	Field	Field	Field	Field	Field
Dissolved mercury filtration location	EP509-L/VA		-	_	Field	Field	Field	Field	Field
	1 1		I	1 1		I	l	I	

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Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

Sub-Matrix: Water			C	ient sample ID	BEA-A	BEA-B	POUCE	PD4	KR
(Matrix: Water)									
			Client samp	ling date / time	17-Oct-2022 17:00	17-Oct-2022 17:00	17-Oct-2022 11:45	17-Oct-2022 13:10	17-Oct-2022 14:55
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2202949-001	FJ2202949-002	FJ2202949-003	FJ2202949-004	FJ2202949-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Dissolved metals filtration location		EP421/VA	-	-	Field	Field	Field	Field	Field
Speciated Metals									
Methylmercury (as MeHg), total	22967-92-6	E536/VA	A 0.00000002 0	mg/L	0.000000074 ^{dTC}	0.000000130	0.000000038	<0.00000002 0	<0.00000008 DLIS
Iron, ferrous [Fe II], dissolved	15438-31-0	E541/VA	A 0.020	mg/L	0.046	0.061	<0.020	<0.020	<0.020
Methylmercury (as MeHg), dissolved	22967-92-6	E537/VA	A 0.00000002 0	mg/L	0.000000125 ^{dTC}	0.000000132	<0.000000020	<0.00000002 0	<0.00000004 DLIS

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202949** Page : 1 of 25

Amendment :2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address :600 Comox Road Address :11007 Alaska Road

Courtenay BC Canada V9N3P6 Fort St. John, British Columbia Canada V1J 6P3

Telephone :---- :+1 250 261 5517

 Project
 : Surface Water MON8/9-With Metals
 Date Samples Received
 : 17-Oct-2022 18:50

 PO
 : 1200-25.03.02
 Issue Date
 : 25-Aug-2023 17:57

C-O-C number : 2022-OCT-MON8/9-Day 3

Sampler ; Pat Beaupre

Site

Quote number : VA22-ECOF100-004

No. of samples received :5
No. of samples analysed :5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

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

Page : 3 of 25

Work Order : FJ2202949 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analysis Holding Time Compliance

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

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

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

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

latrix: Water					Ev	aluation: 🗴 =	Holding time excee	edance ; 🛚	= Within	Holding 7
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
nions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)	5000	47.0 4.0000	00 0 1 0000			,	04.0.4.0000	00.1		,
BEA-A	E298	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
nions and Nutrients : Ammonia by Fluorescence									, ,	
Amber glass total (sulfuric acid)	5000	47.0.4.0000	00 0 1 0000			,	04.0.4.0000	00.1		,
BEA-B	E298	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
nions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)	5000	47.0 4.0000				,				
KR	E298	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
nions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
PD4	E298	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
nions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
POUCE	E298	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
nions and Nutrients : Chloride in Water by IC										
HDPE										
BEA-A	E235.CI	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
nions and Nutrients : Chloride in Water by IC										
HDPE										
BEA-B	E235.CI	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						

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atrix: Water					Εv	aluation: 🗴 =	Holding time exce	edance ; 🛚	✓ = Within	Holding Tin
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE										
KR	E235.Cl	17-Oct-2022	19-Oct-2022	28 days	2 days	✓	19-Oct-2022	28 days	2 days	✓
				uays						
Anions and Nutrients : Chloride in Water by IC										
HDPE	E005 OI	47.0.4.0000	40.0.4.0000		0.1		40.0.4.0000	00 1	0.1	,
PD4	E235.Cl	17-Oct-2022	19-Oct-2022	28 days	2 days	✓	19-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
POUCE	E235.CI	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0 001									
anono ana manonio i Biodonio a Oranophiosphaio by Coloannicaly (Chia mato Et	701 0.00 1									
HDPE										
BEA-A	E378-U	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
				,	,				1	
Unions and Nutrients - Disselved Outbanks substants by Colourington / Ultus Tussella	vol 0 004									
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vei 0.001									
HDPE		1								
BEA-B	E378-U	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	√
BEAG		00. 2022	10 000 2022	o dayo	2 days		10 000 2022	o dayo	2 days	
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE	<u> </u>	<u> </u>					I		<u> </u>	
KR	E378-U	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
NN .	L370-0	17-001-2022	19-061-2022	3 days	2 uays	•	19-061-2022	3 days	2 days	•
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
		<u> </u>		1			1	1	 	
HDPE	E070 II	47.0-1.0000	10.0 0000		0.1	,	40.0.1.0005			,
PD4	E378-U	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE										
POUCE	E378-U	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
		1		1	1		I			

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

Matrix: Water				/aluation. 🔻 –	: × = Holding time exceedance ; ✓ = Within F					
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
BEA-A	E235.F	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
BEA-B	E235.F	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
KR	E235.F	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PD4	E235.F	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days					-	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
POUCE	E235.F	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days					-	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
BEA-A	E235.NO3-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
					-					
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
BEA-B	E235.NO3-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
KR	E235.NO3-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
								1		
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE							I			
PD4	E235.NO3-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
, · - ·				, 6	, 5			,-	, 5	

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

Matrix: Water						raidation.	Holding time excee	oudinoo , ·	***********	Troiding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
POUCE	E235.NO3-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
BEA-A	E235.NO2-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
BEA-B	E235.NO2-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
KR	E235.NO2-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
									,	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD4	E235.NO2-L	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
				,-	, -			,-	, -	
Anisma and Nutrianta - Nituita in Water hu IC (Lave Lavel)										
Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE										
POUCE	E235.NO2-L	17-Oct-2022	19-Oct-2022	3 days	2 days	√	19-Oct-2022	3 days	2 days	✓
10002		00. 2022	10 001 2022	o dayo	2 dayo	·	10 000 2022	o dayo	2 dayo	
Anima and Nutricota - Paratico Cilias Inc. Calcustrator										
Anions and Nutrients : Reactive Silica by Colourimetry HDPE										
BEA-A	E392	17-Oct-2022					19-Oct-2022	28 days	2 dave	✓
DLA'A	L002	17-001-2022					13-001-2022	20 days	2 days	•
Anions and Nutrients : Reactive Silica by Colourimetry					I					
HDPE BEA-B	E392	17-Oct-2022					19-Oct-2022	28 days	2 days	✓
DEA-D	ESSZ	17-UGI-2022					19-001-2022	20 days	∠ uays	•
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE	F200	47.0-4.0000					40.0.4.0000	00.1	0.1	
KR	E392	17-Oct-2022					19-Oct-2022	28 days	2 days	✓

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

Matrix: Water						/aluation. ^ =	Holding time excee			Holding Time
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PD4	E392	17-Oct-2022					19-Oct-2022	28 days	2 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
POUCE	E392	17-Oct-2022					19-Oct-2022	28 days	2 days	✓
1 0002	2002	17 000 2022					10 001 2022	20 dayo	2 dayo	
Anions and Nutrients : Sulfate in Water by IC				1	I			1		-
HDPE	E235.SO4	17-Oct-2022	19-Oct-2022		2 days	√	19-Oct-2022	28 days	2 days	√
BEA-A	E235.5U4	17-UCI-2022	19-UCI-2022	28	2 days	•	19-Oct-2022	28 days	2 days	•
				days						
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
BEA-B	E235.SO4	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
KR	E235.SO4	17-Oct-2022	19-Oct-2022	28	2 days	✓	19-Oct-2022	28 days	2 days	✓
				days						
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD4	E235.SO4	17-Oct-2022	19-Oct-2022	28	2 days	√	19-Oct-2022	28 days	2 days	✓
		00.2022	10 001 2022	days	2 days		10 000 2022	20 dayo	2 dayo	
				days						
Anions and Nutrients : Sulfate in Water by IC										
HDPE	E005 004	47.0-4.0000	40.0-4.0000		0 4	√	40.0-4.0000	00 4	0 -1	✓
POUCE	E235.SO4	17-Oct-2022	19-Oct-2022	28	2 days	•	19-Oct-2022	28 days	2 days	•
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
BEA-A	E375-T	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
BEA-B	E375-T	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days					,	
				,-						

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

Matrix: Water					Lv	/aluation. ^ – i	Holding time excee	tuance, •	- vviti iii i	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
KR	E375-T	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)	F075 T	47.0 / 0000	00.0.1.0000				00.0.1.0005	00.1	0.1	,
PD4	E375-T	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid) POUCE	E375-T	17-Oct-2022	20-Oct-2022	00	3 days	1	20-Oct-2022	28 days	3 days	√
FOUCE	E3/3-1	17-061-2022	20-001-2022	28 days	3 uays	•	20-001-2022	20 uays	5 uays	▼
				uays						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) BEA-A	E366	17-Oct-2022	20-Oct-2022	28	3 days	1	21-Oct-2022	28 days	4 days	1
DEATA	2300	11 031-2022	20-001-2022	days	Juays		21-001-2022	20 days	+ days	•
Aniana and Nutrianta - Total Nitrograp by Calcurimetry				days						
Anions and Nutrients : Total Nitrogen by Colourimetry Amber glass total (sulfuric acid)										
BEA-B	E366	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days					,	
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
KR	E366	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
PD4	E366	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
POUCE	E366	17-Oct-2022	20-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	4 days	✓
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										_
BEA-A	E372-U	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U 17-Oct-2022 20-Oct-2022 1 BEA-B 3 days 20-Oct-2022 28 days 28 3 days days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) KR E372-U 17-Oct-2022 20-Oct-2022 28 3 days 1 20-Oct-2022 28 days 3 days ✓ days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) PD4 E372-U 17-Oct-2022 20-Oct-2022 3 days 1 20-Oct-2022 28 days 3 days 28 davs Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U POUCE 17-Oct-2022 20-Oct-2022 28 3 days ✓ 20-Oct-2022 28 days 3 days 1 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 17-Oct-2022 25-Oct-2022 1 25-Oct-2022 ✓ BEA-A 8 days 28 days 8 days 28 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 17-Oct-2022 1 28 days BEA-B 25-Oct-2022 28 8 days 25-Oct-2022 8 days 1 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) KR E509-L 17-Oct-2022 25-Oct-2022 25-Oct-2022 8 days 28 days 8 days 28 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) PD4 E509-L 17-Oct-2022 25-Oct-2022 28 8 days 1 25-Oct-2022 28 days 8 days ✓ days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 17-Oct-2022 25-Oct-2022 8 days 1 25-Oct-2022 28 days 8 days 1 POUCE 28 days

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

	1						Holding time exce			
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
BEA-A	E421	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days				days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
BEA-B	E421	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days				days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
KR	E421	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days	-			days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS				,						
HDPE - dissolved (lab preserved)										
PD4	E421	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days	, -			days	J, -	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS				aayo						
HDPE - dissolved (lab preserved)							<u> </u>			
POUCE	E421	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
1 0002		00.2022	20 001 2022	days	o days	·	20 001 2022	days	o days	
	D			dayo				dayo		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	l) I						I			
Amber glass dissolved (sulfuric acid) BEA-A	E358-L	17-Oct-2022	20-Oct-2022	28	3 days	√	20-Oct-2022	28 days	3 days	✓
DLA-A	_000-L	17-000-2022	20-001-2022	days	Juays		20-001-2022	20 days	Juays	*
				uays						
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Amber glass dissolved (sulfuric acid)	E358-L	17 Oct 2022	20 Oct 2022	60	2 days	√	20 04 2022	20 4515	2 days	✓
BEA-B	±308-L	17-Oct-2022	20-Oct-2022	28	3 days	,	20-Oct-2022	28 days	3 days	•
				days	_					
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	1)									
Amber glass dissolved (sulfuric acid)	E055.	47.0 :	00.0 :				00.0			,
KR	E358-L	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	l)									
Amber glass dissolved (sulfuric acid)										
PD4	E358-L	17-Oct-2022	20-Oct-2022	28	3 days	✓	20-Oct-2022	28 days	3 days	✓
				days						

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) 17-Oct-2022 E358-L 20-Oct-2022 1 POUCE 3 days 20-Oct-2022 28 days 3 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) BFA-A E355-L 17-Oct-2022 20-Oct-2022 28 3 days 1 20-Oct-2022 28 days 3 days ✓ days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) BEA-B E355-L 17-Oct-2022 20-Oct-2022 3 days 1 20-Oct-2022 28 days 3 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 17-Oct-2022 ✓ KR 20-Oct-2022 28 3 days 20-Oct-2022 28 days 3 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PD4 E355-L 17-Oct-2022 20-Oct-2022 1 20-Oct-2022 ✓ 3 days 28 days 3 days 28 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 17-Oct-2022 1 POUCE 20-Oct-2022 28 3 days 20-Oct-2022 28 days 3 days 1 days Physical Tests : Alkalinity Species by Titration HDPE BEA-A E290 17-Oct-2022 19-Oct-2022 22-Oct-2022 2 days 14 days 5 days 14 days Physical Tests: Alkalinity Species by Titration HDPE BEA-B E290 17-Oct-2022 19-Oct-2022 2 days 1 22-Oct-2022 14 days 5 days ✓ 14 days Physical Tests: Alkalinity Species by Titration HDPE E290 17-Oct-2022 19-Oct-2022 1 22-Oct-2022 1 KR 2 days 14 days 5 days 14 days

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Project : Surface Water MON8/9-With Metals



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

							* - Holding time exceedance , * - within HC			
Analyte Group	Method	Sampling Date						Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD4	E290	17-Oct-2022	19-Oct-2022	14	2 days	✓	22-Oct-2022	14 days	5 days	✓
				days						
Physical Tests : Alkalinity Species by Titration										
HDPE										
POUCE	E290	17-Oct-2022	19-Oct-2022	14	2 days	✓	22-Oct-2022	14 days	5 days	✓
				days					,	
Dhysical Tests (Calaur (Tuya) by Spectrometer (F CII)				, -						
Physical Tests : Colour (True) by Spectrometer (5 CU) HDPE							I			
BEA-A	E329	17-Oct-2022	19-Oct-2022	3 days	2 days	√	19-Oct-2022	3 days	2 days	✓
DELVI	2020	17-001-2022	10-001-2022	Judys	_ days	,	10-001-2022	Judys	_ uuys	•
Physical Tests : Colour (True) by Spectrometer (5 CU)				1						
HDPE	F000	47.0 4.0000				,				,
BEA-B	E329	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
KR	E329	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PD4	E329	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
POUCE	E329	17-Oct-2022	19-Oct-2022	3 days	2 days	✓	19-Oct-2022	3 days	2 days	✓
				,					,	
Dhysical Tests - Candysticity in Water										
Physical Tests : Conductivity in Water	l	I I					I			
HDPE BEA-A	E100	17-Oct-2022	19-Oct-2022	28	2 days	√	22-Oct-2022	28 days	5 days	√
שבתית	L 100	17-000-2022	19-001-2022		2 days	,	22-001-2022	20 days	Juays	•
				days						
Physical Tests : Conductivity in Water										
HDPE	E400	17.0								,
BEA-B	E100	17-Oct-2022	19-Oct-2022	28	2 days	✓	22-Oct-2022	28 days	5 days	✓
				days						

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

Preparation Preparation	Matrix: Water						valuation. * -	Holding Time			
Part Part	Analyte Group	Method	Sampling Date						Analys	is	
Date Rec Actual	Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
Fig. Fig.				Date	Rec	Actual			Rec	Actual	
RF E100	Physical Tests : Conductivity in Water										
Hope	HDPE										
### Process : Conductivity in Water #### HOPE #### POUCE ##### E100 17-Oct-2022 19-Oct-2022 28 2 days 7 22-Oct-2022 28 days 5 days 7 #################################	KR	E100	17-Oct-2022	19-Oct-2022	28	2 days	✓	22-Oct-2022	28 days	5 days	✓
HOPE					days						
HOPE	Physical Tests : Conductivity in Water										
Hope	HDPE										
## POUCE E100 17-Oct-2022 19-Oct-2022 28 2 days ✓ 22-Oct-2022 28 days 5 days ✓ 22-Oct-2022 28 days ✓ 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days ✓ 28 days ✓ 22-Oct-2022 28 days ✓ 22-Oct-2022 28 days	PD4	E100	17-Oct-2022	19-Oct-2022	28	2 days	✓	22-Oct-2022	28 days	5 days	✓
HOPE POUCE E 100 17-Oct-2022 19-Oct-2022 28 2 days 2 days 2 days 2 2 days 2 2 days 2 2 days 2 2 days 3 days 4 22-Oct-2022 28 days 5 days 4 22-Oct-2022 20 25 days 6 d					days						
HOPE POUCE E 100 17-Oct-2022 19-Oct-2022 28 2 days 2 days 2 days 2 2 days 2 2 days 2 2 days 2 2 days 3 days 4 22-Oct-2022 28 days 5 days 4 22-Oct-2022 20 25 days 6 d	Physical Tests : Conductivity in Water										
POUCE E100 17-Oct-2022 19-Oct-2022 28 days	HDPE										
## Process of the pro		E100	17-Oct-2022	19-Oct-2022	28	2 days	✓	22-Oct-2022	28 days	5 days	✓
## BEAA					days						
## BEAA	Physical Tosts : nH by Motor										
BEA-A E 108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM 22-Oct-2022 0.25 hrs									T .		
hrs EHTR-FM hrs EH		E108	17-Oct-2022	19-Oct-2022	0.25	52 hrs	*	22-Oct-2022	0.25	118 hrs	3c
hysical Tests : pH by Meter HDPE BEA-B E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE KR E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : DS by Gravimetry HDPE POUCE							EHTR-FM				EHTR-FM
HDPE BEA-B E108 17-Oct-2022 19-Oct-2022 0,25 52 hrs	Physical Tests and by Meter								12		
BEA-B E108 17-Oct-2022 19-Oct-2022 0.25 hrs 52 hrs EHTR-FM 22-Oct-2022 0.25 hrs 18 hrs EHTR-FM Post-2022 0.25 hrs EHTR-FM 22-Oct-2022 0.25 hrs EHTR-FM EHTR-F								<u> </u>	1		
hysical Tests : pH by Meter HDPE KR E108 17-Oct-2022 19-Oct-2022 0.25 54 hrs EHTR-FM Thysical Tests : pH by Meter HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 hrs E108 17-Oct-2022 0.25 Frs EHTR-FM Thysical Tests : pH by Meter HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 Frs EHTR-FM Thysical Tests : pH by Meter EHTR-FM Thysical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 Frs EHTR-FM Thysical Tests : pH by Meter EHTR-FM Thysical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 Frs EHTR-FM Thysical Tests : TDS by Gravimetry Thysical Tests : TDS by Gravimetry Thysical Tests : TDS by Gravimetry Thysical Tests : TDS by Gravimetry Thysical Tests : TDS by Gravimetry		E108	17-Oct-2022	19-Oct-2022	0.25	52 hrs	*	22-Oct-2022	0.25	118 hrs	3c
Hope Hope	52.15						FHTR-FM				FHTR-FM
HDPE KR E108 17-Oct-2022 19-Oct-2022 0.25 hrs 54 hrs EHTR-FM 22-Oct-2022 0.25 hrs 120 hrs EHTR-FM PD4 E108 17-Oct-2022 19-Oct-2022 0.25 hrs 56 hrs EHTR-FM 22-Oct-2022 0.25 hrs EHTR-FM EHTR-FM POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM EHTR-FM	Discript Tests will be Mater				1110				1110		
E108 17-Oct-2022 19-Oct-2022 0.25 14 hrs								<u> </u>			
hrs EHTR-FM hrs EH		F108	17-Oct-2022	19-Oct-2022	0.25	54 hrs	5 2	22-Oct-2022	0.25	120 hrs	*
#HDPE PD4 E108 17-Oct-2022 19-Oct-2022 0.25 56 hrs # 22-Oct-2022 0.25 hrs EHTR-FM 22-Oct-2022 0.25 hrs EHTR-FM	TUT	2.00	17 000 2022	10-001-2022		041113		22-001-2022		120 1113	
#HDPE					1113		ZIIII TI		1113		
## PD4 ## PD4 ## PD4 ## PD5								I			
hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM hrs EHTR-FM		E108	17 Oct 2022	10 Oct 2022	0.05	56 bre		22 Oct 2022	0.05	122 hrs	
Physical Tests : pH by Meter HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs EHTR-FM Physical Tests : TDS by Gravimetry HDPE HDPE	FD4	L 100	17-061-2022	19-001-2022		30 1113		22-001-2022		122 1113	
#HDPE POUCE E108 17-Oct-2022 19-Oct-2022 0.25 hrs ##################################					1115		LITTETIM		1115		LITTIC-I W
POUCE E108 17-Oct-2022 19-Oct-2022 0.25 57 hrs	<u> </u>				I				I		
hrs EHTR-FM hrs EHTR-FM Chysical Tests: TDS by Gravimetry HDPE		E100	17 Oct 2022	10 Oct 2022	0.05	57 hrs	. .	22 Oct 2022	0.05	122 hrs	
Physical Tests: TDS by Gravimetry HDPE	POUCE	E100	17-001-2022	19-001-2022		37 1115		22-061-2022		1231115	
HDPE					nrs		EHIK-FM		nrs		EHIK-FM
	Physical Tests : TDS by Gravimetry										
BEA-A E162 17-Uct-2U22 19-Oct-2022 7 days 2 days ✓		F400	17.0.1.0000					40.0.4.00==			
	BEA-A	E162	17-Oct-2022					19-Oct-2022	7 days	2 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Sampling Date Analysis Analyte Group Method Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date **Physical Tests: TDS by Gravimetry** HDPE E162 17-Oct-2022 19-Oct-2022 1 BEA-B 7 days 2 days Physical Tests : TDS by Gravimetry HDPE 19-Oct-2022 KR E162 17-Oct-2022 7 days 2 days 1 **Physical Tests: TDS by Gravimetry** HDPE PD4 E162 17-Oct-2022 19-Oct-2022 2 days 1 7 days Physical Tests : TDS by Gravimetry HDPE E162 17-Oct-2022 1 POUCE 19-Oct-2022 7 days 2 days **Physical Tests: TSS by Gravimetry** HDPE BEA-A E160 17-Oct-2022 19-Oct-2022 1 7 days 2 days Physical Tests : TSS by Gravimetry HDPE E160 17-Oct-2022 1 BEA-B 19-Oct-2022 7 days 2 days ----**Physical Tests: TSS by Gravimetry** HDPE KR E160 17-Oct-2022 19-Oct-2022 2 days 7 days **Physical Tests: TSS by Gravimetry** HDPE PD4 17-Oct-2022 19-Oct-2022 ✓ E160 7 days 2 days **Physical Tests: TSS by Gravimetry** HDPE E160 17-Oct-2022 POUCE 19-Oct-2022 2 days 1 7 days

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Matrix: Water

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Project Surface Water MON8/9-With Metals



Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Analyte Group Sampling Date Extraction / Preparation Analysis Method Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date

			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Ferrous Iron in Water by Colour										
Amber glass dissolved (hydrochloric acid) BEA-A	E541	17-Oct-2022	24-Nov-2022	7 days	38 days	* EHT	24-Nov-2022	7 days	38 days	* EHT
Speciated Metals : Dissolved Ferrous Iron in Water by Colour										
Amber glass dissolved (hydrochloric acid) BEA-B	E541	17-Oct-2022	24-Nov-2022	7 days	38 days	* EHT	24-Nov-2022	7 days	38 days	* EHT
Speciated Metals : Dissolved Ferrous Iron in Water by Colour										
Amber glass dissolved (hydrochloric acid) KR	E541	17-Oct-2022	24-Nov-2022	7 days	38 days	* EHT	24-Nov-2022	7 days	38 days	* EHT
Speciated Metals : Dissolved Ferrous Iron in Water by Colour										
Amber glass dissolved (hydrochloric acid) PD4	E541	17-Oct-2022	24-Nov-2022	7 days	38 days	* EHT	24-Nov-2022	7 days	38 days	⊭ EHT
Speciated Metals : Dissolved Ferrous Iron in Water by Colour										
Amber glass dissolved (hydrochloric acid) POUCE	E541	17-Oct-2022	24-Nov-2022	7 days	38 days	* EHT	24-Nov-2022	7 days	38 days	* EHT
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) BEA-A	E537	17-Oct-2022	04-Nov-2022	180 days	18 days	✓	10-Nov-2022	180 days	6 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) BEA-B	E537	17-Oct-2022	04-Nov-2022	180 days	18 days	✓	10-Nov-2022	180 days	6 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) KR	E537	17-Oct-2022	04-Nov-2022	180 days	18 days	✓	10-Nov-2022	180 days	6 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid) PD4	E537	17-Oct-2022	04-Nov-2022	180 days	18 days	✓	10-Nov-2022	180 days	6 days	✓

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

Analyte Group	Method	Sampling Date	Ext			Analys	sis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
POUCE	E537	17-Oct-2022	04-Nov-2022	180	18	✓	10-Nov-2022	180	6 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
BEA-A	E536	17-Oct-2022	03-Nov-2022	180	17	✓	07-Nov-2022	180	21 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
BEA-B	E536	17-Oct-2022	03-Nov-2022	180	17	✓	07-Nov-2022	180	21 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS				,	,			,		
Amber glass total (hydrochloric acid)							<u> </u>			
KR	E536	17-Oct-2022	03-Nov-2022	180	17	√	07-Nov-2022	180	21 days	✓
TWY		05(2022	00 1107 2022	days	days		07 1107 2022	days	2 r dayo	
0				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS	l						I			
Amber glass total (hydrochloric acid) PD4	E536	17-Oct-2022	03-Nov-2022	180	17	√	07-Nov-2022	180	21 days	✓
FD4	L330	17-061-2022	03-1100-2022			,	07-1100-2022	days	21 days	•
				days	days			uays		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)	F520	47.0-4.0000	00 N 0000			1	07.110000		04 1	✓
POUCE	E536	17-Oct-2022	03-Nov-2022	180	17	•	07-Nov-2022	180	21 days	▼
				days	days			days		
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)		47.0 :	0.5 0 : 5555			,	05.0			,
BEA-A	E508-L	17-Oct-2022	25-Oct-2022	28	8 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
BEA-B	E508-L	17-Oct-2022	25-Oct-2022	28	8 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
KR	E508-L	17-Oct-2022	25-Oct-2022	28	8 days	✓	25-Oct-2022	28 days	0 days	✓
				days						

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Matrix: Water Evaluation: × = Holding time exceedance: ✓ = Within Holding Time

Matrix: Water					E	/aluation: × =	Holding time exce	edance; v	= vvitnin	Holding Tim
Analyte Group	Method	Sampling Date	Ext	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD4	E508-L	17-Oct-2022	25-Oct-2022	28	8 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
POUCE	E508-L	17-Oct-2022	25-Oct-2022	28	8 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
BEA-A	E420	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)	E400	47.0 4.0000								,
BEA-B	E420	17-Oct-2022	20-Oct-2022	180	3 days	✓	20-Oct-2022	180	3 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS					<u> </u>					
HDPE - total (lab preserved)	E420	17-Oct-2022	20-Oct-2022		0 -1	√	20-Oct-2022		0 4	✓
KR	E420	17-Oct-2022	20-Oct-2022	180	3 days	•	20-Oct-2022	180	3 days	•
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) PD4	E420	17-Oct-2022	20-Oct-2022	180	3 days	√	20-Oct-2022	180	3 days	√
FD 4	L420	17-06-2022	20-061-2022	days	Juays	•	20-061-2022	days	Juays	•
				uays				uays		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) POUCE	E420	17-Oct-2022	20-Oct-2022	180	3 days	√	20-Oct-2022	100	3 days	✓
FOUCE	E420	17-061-2022	20-061-2022	180 days	Juays	•	20-061-2022	180 days	Juays	•
				uays				uays		

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type	Co	ount)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%, Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	704570	1	18	5.5	5.0	1
Ammonia by Fluorescence	E298	705240	1	9	11.1	5.0	<u> </u>
Chloride in Water by IC	E235.CI	704574	1	18	5.5	5.0	
Colour (True) by Spectrometer (5 CU)	E329	704580	1	13	7.6	5.0	<u> </u>
Conductivity in Water	E100	704571	1	18	5.5	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	<u> </u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	704058	1	14	7.1	5.0	<u>√</u>
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	705235	1	20	5.0	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704579	1	10	10.0	5.0	<u> </u>
Fluoride in Water by IC	E235.F	704573	1	18	5.5	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	704575	1	19	5.2	5.0	<u> </u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	704576	1	18	5.5	5.0	✓
pH by Meter	E108	704569	1	18	5.5	5.0	√
Reactive Silica by Colourimetry	E392	704461	2	20	10.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	704577	1	18	5.5	5.0	√
TDS by Gravimetry	E162	704380	1	20	5.0	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	705239	1	9	11.1	5.0	√
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	√
Total Metals in Water by CRC ICPMS	E420	704100	1	20	5.0	5.0	√
Total Methylmercury in Water by GCAFS	E536	726346	2	50	4.0	5.0	×
Total Nitrogen by Colourimetry	E366	705237	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	705236	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	705238	1	9	11.1	5.0	√
TSS by Gravimetry	E160	704394	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	704570	1	18	5.5	5.0	1
Ammonia by Fluorescence	E298	705240	1	9	11.1	5.0	<u> </u>
Chloride in Water by IC	E235.CI	704574	1	18	5.5	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	704580	1	13	7.6	5.0	<u> </u>
Conductivity in Water	E100	704571	1	18	5.5	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	<u> </u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	704058	1	14	7.1	5.0	<u> </u>
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	

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Matrix: Water		Evaluati	on: × = QC freque	<u> </u>	ecification; $\checkmark = 0$		
Quality Control Sample Type		001.11		ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	705235	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704579	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	704573	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704575	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704576	1	18	5.5	5.0	✓
pH by Meter	E108	704569	1	18	5.5	5.0	✓
Reactive Silica by Colourimetry	E392	704461	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	704577	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	704380	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	705239	1	9	11.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	704100	1	20	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	726346	3	50	6.0	5.0	✓
Total Nitrogen by Colourimetry	E366	705237	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	705236	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	705238	1	9	11.1	5.0	✓
TSS by Gravimetry	E160	704394	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	704570	1	18	5.5	5.0	✓
Ammonia by Fluorescence	E298	705240	1	9	11.1	5.0	√
Chloride in Water by IC	E235.CI	704574	1	18	5.5	5.0	✓
Colour (True) by Spectrometer (5 CU)	E329	704580	1	13	7.6	5.0	√
Conductivity in Water	E100	704571	1	18	5.5	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	704058	1	14	7.1	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	705235	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704579	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	704573	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704575	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704576	1	18	5.5	5.0	√
Reactive Silica by Colourimetry	E392	704461	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	704577	1	18	5.5	5.0	<u>√</u>
TDS by Gravimetry	E162	704380	1	20	5.0	5.0	<u> </u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	705239	1	9	11.1	5.0	<u> </u>
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	<u>√</u>
Total Metals in Water by CRC ICPMS	E420	704100	1	20	5.0	5.0	<u> </u>
Total Methylmercury in Water by GCAFS	E536	726346	3	50	6.0	5.0	

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Matrix: Water		Evaluat	ion: × = QC frequ	• •	ecitication; $\checkmark = 0$	C trequency with Frequency (%)	<u> </u>
Quality Control Sample Type				ount			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Nitrogen by Colourimetry	E366	705237	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	705236	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	705238	1	9	11.1	5.0	✓
TSS by Gravimetry	E160	704394	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	705240	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.CI	704574	1	18	5.5	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	704058	1	14	7.1	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	705235	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	704579	1	10	10.0	5.0	✓
Fluoride in Water by IC	E235.F	704573	1	18	5.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	704575	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	704576	1	18	5.5	5.0	✓
Reactive Silica by Colourimetry	E392	704461	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	704577	1	18	5.5	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	705239	1	9	11.1	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	704100	1	20	5.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	726346	2	50	4.0	5.0	×
Total Nitrogen by Colourimetry	E366	705237	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	705236	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	705238	1	9	11.1	5.0	1

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Vancouver			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	ALS Environmental -			pH should be measured in the field within the recommended 15 minute hold time.
T001 0 1 1	Vancouver	107.1	4 DU 14 O 5 40 D (1)	
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	ALS Environmental -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Vancouver			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
				filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	ALS Environmental -			with gravimetric measurement of the residue.
	Vancouver			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			dotoston.
	Vancouver			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			300000000000000000000000000000000000000
	Vancouver			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			dotoston.
	Vancouver			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			detection.
	Vancouver			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			actionics.
	Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental -	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
	Vancouver			
Ammonia by Fluorescence	E298	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
	ALS Environmental - Vancouver			This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric
	ALS Environmental - Vancouver			method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental -	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
	Vancouver			Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 ALS Environmental -	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
	Vancouver			
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	E541 ALS Environmental - Vancouver	Water	APHA 3500-Fe B/James Ball et al (1999)	This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Vancouver	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Kjeldahl Nitrogen (Calculation)	EC318 ALS Environmental - Vancouver	Water	BC MOE LABORATORY MANUAL (2005)	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Dissolved Mercury Water Filtration (Low Level)	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)	ALS Environmental -			
	Vancouver			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
			B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver			sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
				method.

ALS Canada Ltd.



QUALITY CONTROL REPORT

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Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 600 Comox Road Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project :Surface Water MON8/9-With Metals Date Samples Received :17-Oct-2022 18:50

PO : 1200-25.03.02 Date Analysis Commenced : 19-Oct-2022

 C-O-C number
 : 2022-OCT-MON8/9-Day 3
 Issue Date
 : 25-Aug-2023 17:57

 Sampler
 : Pat Beaupre

Site ·

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Courtenay BC Canada V9N3P6

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department	
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Vancouver Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia	
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia	
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 704380)										
FJ2202949-001	BEA-A	Solids, total dissolved [TDS]		E162	20	mg/L	406	410	0.858%	20%	
Physical Tests (QC	Lot: 704394)										
FJ2202949-001	BEA-A	Solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 704569)										
FJ2202949-003	POUCE	pH		E108	0.10	pH units	8.33	8.34	0.120%	4%	
Physical Tests (QC	Lot: 704570)										
FJ2202949-003	POUCE	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	186	186	0.269%	20%	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	6.4	6.6	0.2	Diff <2x LOR	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	192	192	0.156%	20%	
Physical Tests (QC	Lot: 704571)										
FJ2202949-003	POUCE	Conductivity		E100	2.0	μS/cm	1530	1510	1.31%	10%	
Physical Tests (QC	Lot: 704580)										
FJ2202949-001	BEA-A	Colour, true		E329	5.0	CU	76.3	75.3	1.27%	20%	
Anions and Nutrien	ts (QC Lot: 704461)										
CG2213996-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	8.01	7.98	0.328%	20%	
CG2213996-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	8.01	8.02	0.126%	20%	
Anions and Nutrien	ts (QC Lot: 704573)										
FJ2202968-004	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.215	0.216	0.0003	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 704574)										
FJ2202968-004	Anonymous	Chloride	16887-00-6	E235.CI	2.50	mg/L	<2.50	<2.50	0	Diff <2x LOR	
Anions and Nutrion	ts (QC Lot: 704575)										
FJ2202968-004	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.0648	0.0634	0.0014	Diff <2x LOR	
Anione and Nutrien	ts (QC Lot: 704576)	,									
FJ2202968-004	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0085	0.0095	0.0010	Diff <2x LOR	
	,	That's (do 11)				3					
Anions and Nutrien FJ2202968-004	ts (QC Lot: 704577) Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	537	536	0.00925%	20%	
		Sunate (as 504)	1-1000-10-0		1.50	11/9/1	007	300	0.0002070	2070	
Anions and Nutrien EJ2202949-001	ts (QC Lot: 704579)	Dhoonhote ortho discolved (as D)	14265-44-2	E378-U	0.0010	mg/L	0.0016	0.0016	0.000001	Diff <2x LOR	
		Phosphate, ortho-, dissolved (as P)	14200-44-2	L376-U	0.0010	IIIg/L	0.0010	0.0010	0.000001	Dill \ZX LUR	
Anions and Nutrien	ts (QC Lot: 705237)										

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Client: Ecofish Research Ltd



Sub-Matrix: Water			Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	ts (QC Lot: 705237) - co	ntinued									
FJ2202949-001	BEA-A	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.573	0.576	0.663%	20%	
Anions and Nutrient	ts (QC Lot: 705238)										
FJ2202949-001	BEA-A	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0220	0.0221	0.726%	20%	
Anions and Nutrient	ts (QC Lot: 705239)										
FJ2202949-001	BEA-A	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0042	0.0045	0.0003	Diff <2x LOR	
Anions and Nutrient	ts (QC Lot: 705240)										
FJ2202949-001	BEA-A	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0074	0.0076	0.0002	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 705235	5)									
FJ2202949-001	BEA-A	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	21.0	22.4	6.17%	20%	
Organic / Inorganic	Carbon (QC Lot: 705236	3)								1	
FJ2202949-001	BEA-A	Carbon, total organic [TOC]		E355-L	0.50	mg/L	22.0	23.2	5.29%	20%	
Total Metals (QC Lo	ot: 704100)										
FJ2202949-001	BEA-A	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.110	0.111	1.08%	20%	
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00014	0.0000007	Diff <2x LOR	
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00085	0.00088	0.00004	Diff <2x LOR	
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0972	0.105	7.73%	20%	
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, total	7440-42-8	E420	0.010	mg/L	0.054	0.055	0.0010	Diff <2x LOR	
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000285	0.0000241	0.0000044	Diff <2x LOR	
		Calcium, total	7440-70-2	E420	0.050	mg/L	55.8	57.3	2.64%	20%	
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000018	0.000016	0.000002	Diff <2x LOR	
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00028	0.00029	0.000010	Diff <2x LOR	
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00202	0.00195	0.00007	Diff <2x LOR	
		Iron, total	7439-89-6	E420	0.010	mg/L	0.749	0.737	1.63%	20%	
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000160	0.000159	0.000001	Diff <2x LOR	
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0089	0.0091	0.0002	Diff <2x LOR	
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	17.1	16.0	6.68%	20%	
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0577	0.0569	1.38%	20%	
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00112	0.00114	1.71%	20%	
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00406	0.00411	0.00005	Diff <2x LOR	
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Potassium, total	7440-09-7	E420	0.050	mg/L	2.39	2.37	0.740%	20%	

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						Laborat	tory Duplicate (D	UP) Report		
Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
ot: 704100) - continued										
BEA-A	Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00108	0.00107	0.000004	Diff <2x LOR	
	Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000369	0.000293	0.000076	Diff <2x LOR	
	Silicon, total	7440-21-3	E420	0.10	mg/L	0.55	0.61	0.06	Diff <2x LOR	
	Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
	Sodium, total	7440-23-5	E420	0.050	mg/L	53.4	52.8	1.10%	20%	
	Strontium, total	7440-24-6	E420	0.00020	mg/L	0.227	0.233	2.57%	20%	
	Sulfur, total	7704-34-9	E420	0.50	mg/L	38.0	39.3	3.43%	20%	
	Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
	Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
	Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
	Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
	Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00527	0.00481	9.10%	20%	
	Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
	Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00166	0.00167	0.803%	20%	
	Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00074	0.00070	0.00004	Diff <2x LOR	
	Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	
	Zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00043	0.00048	0.00005	Diff <2x LOR	
ot: 712785)										
Anonymous	Mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	
QC Lot: 704058)										
BEA-A	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0065	0.0064	0.0001	Diff <2x LOR	
	Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00013	0.00014	0.000003	Diff <2x LOR	
	Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00054	0.00057	0.00003	Diff <2x LOR	
	Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0883	0.0892	0.919%	20%	
				0.000000	/1	<0.000020	<0.000020	0	Diff <2x LOR	
	Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	~0.0000Z0	0		
	Beryllium, dissolved Bismuth, dissolved	7440-41-7 7440-69-9	E421	0.000020	mg/L mg/L	<0.000020	<0.000050	0	Diff <2x LOR	
					•					
	Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
	Bismuth, dissolved Boron, dissolved	7440-69-9 7440-42-8	E421 E421	0.000050 0.010	mg/L mg/L	<0.000050 0.046	<0.000050 0.043	0.003	Diff <2x LOR	
	Bismuth, dissolved Boron, dissolved Cadmium, dissolved	7440-69-9 7440-42-8 7440-43-9	E421 E421 E421	0.000050 0.010 0.0000050	mg/L mg/L mg/L	<0.000050 0.046 0.0000080	<0.000050 0.043 0.0000115	0 0.003 0.0000034	Diff <2x LOR Diff <2x LOR Diff <2x LOR	
	Bismuth, dissolved Boron, dissolved Cadmium, dissolved Calcium, dissolved	7440-69-9 7440-42-8 7440-43-9 7440-70-2	E421 E421 E421 E421	0.000050 0.010 0.0000050 0.050	mg/L mg/L mg/L mg/L	<0.000050 0.046 0.0000080 52.2	<0.000050 0.043 0.0000115 50.4	0 0.003 0.0000034 3.59%	Diff <2x LOR Diff <2x LOR Diff <2x LOR 20%	
	Bismuth, dissolved Boron, dissolved Cadmium, dissolved Calcium, dissolved Cesium, dissolved	7440-69-9 7440-42-8 7440-43-9 7440-70-2 7440-46-2	E421 E421 E421 E421 E421	0.000050 0.010 0.0000050 0.050 0.000010	mg/L mg/L mg/L mg/L mg/L	<0.000050 0.046 0.0000080 52.2 <0.000010	<0.000050 0.043 0.0000115 50.4 <0.000010	0 0.003 0.0000034 3.59%	Diff <2x LOR Diff <2x LOR Diff <2x LOR 20% Diff <2x LOR	
	Bismuth, dissolved Boron, dissolved Cadmium, dissolved Calcium, dissolved Cesium, dissolved Chromium, dissolved	7440-69-9 7440-42-8 7440-43-9 7440-70-2 7440-46-2 7440-47-3	E421 E421 E421 E421 E421 E421	0.000050 0.010 0.0000050 0.050 0.000010 0.00050	mg/L mg/L mg/L mg/L mg/L	<0.000050 0.046 0.0000080 52.2 <0.000010 <0.00050	<0.000050 0.043 0.0000115 50.4 <0.000010 <0.00050	0 0.003 0.0000034 3.59% 0	Diff <2x LOR Diff <2x LOR Diff <2x LOR 20% Diff <2x LOR Diff <2x LOR	
	ot: 704100) - continued BEA-A ot: 712785) Anonymous QC Lot: 704058)	Dt: 704100) - continued BEA-A Rubidium, total Selenium, total Silicon, total Silver, total Sodium, total Strontium, total Suffur, total Tellurium, total Thallium, total Tin, total Tin, total Titanium, total Uranium, total Vanadium, total Zinc, total Zirconium, total Zirconium, total Ot: 712785) Anonymous Mercury, total QC Lot: 704058) BEA-A Aluminum, dissolved Arsenic, dissolved Barium, dissolved	Det: 704100) - continued BEA-A Rubidium, total Selenium, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total Silicon, total T440-21-3 Silicon, total T440-23-5 Strontium, total T440-24-6 Sulfur, total T704-34-9 Tellurium, total Titalium, total Thorium, total Tin	BEA.A Rubidium, total 7440-17-7 E420 Selenium, total 7782-49-2 E420 Silicon, total 7440-21-3 E420 Silicon, total 7440-22-4 E420 Siliver, total 7440-22-4 E420 Sodium, total 7440-23-5 E420 Strontium, total 7440-24-6 E420 Sulfur, total 770-34-9 E420 Tellurium, total 13494-80-9 E420 Thallium, total 7440-29-1 E420 Thorium, total 7440-29-1 E420 Tin, total 7440-31-5 E420 Tin, total 7440-31-5 E420 Tin, total 7440-31-5 E420 Tingsten, total 7440-33-7 E420 Uranium, total 7440-61-1 E420 Vanadium, total 7440-61-1 E420 Vanadium, total 7440-62-2 E420 Zinc, total 7440-66-6 E420 Zirconium, total 7440-66-6 E420 Tirconium, total 7440-66-6 E420 Tirconium, total 7440-61-7 E420 Dot: 712785) Anonymous Mercury, total 7429-90-5 E421 Antimony, dissolved 7440-36-0 E421 Arsenic, dissolved 7440-36-0 E421 Arsenic, dissolved 7440-38-2 E421 Barium, dissolved 7440-39-3 E421	BEA-A	BEA-A Rubidium, total 7440-17-7 E420 0.00020 mg/L	Cilent sample ID Analyte CAS Number Method LOR Unit Original Result	Client sample ID	Search Part	Clent sample ID

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Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 704058) - con	tinued									
J2202949-001	BEA-A	Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0085	0.0080	0.0005	Diff <2x LOR	
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	15.8	15.7	1.20%	20%	
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0150	0.0153	1.61%	20%	
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00106	0.00110	3.91%	20%	
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00352	0.00350	0.00001	Diff <2x LOR	
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.28	2.29	0.241%	20%	
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00090	0.00084	0.00006	Diff <2x LOR	
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000323	0.000309	0.000014	Diff <2x LOR	
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.312	0.311	0.0007	Diff <2x LOR	
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	53.7	52.5	2.29%	20%	
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.229	0.224	2.54%	20%	
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	36.3	36.0	1.03%	20%	
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00172	0.00164	4.82%	20%	
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
Dissolved Metals (QC Lot: 713015)										
-J2202949-001	BEA-A	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	2.12	2.73	0.60	Diff <2x LOR	
peciated Metals(QC Lot: 726346)										
FJ2202949-001	BEA-A	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000000074 mg/L	0.000095	0.000021	Diff <2x LOR	
Speciated Metals(QC Lot: 728312)						, ,				
- -J2202949-005	KR	Methylmercury (as MeHg), total	22967-92-6	E536	0.000080	μg/L	<0.00000080 mg/L	<0.000080	0	Diff <2x LOR	
Speciated Metals(QC Lot: 730526)						, <u>,</u>				
FJ2202949-001	BEA-A	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000000125 mg/L	0.000149	17.0%	30%	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Speciated Metals (C	QC Lot: 756854)										
FJ2202949-001	BEA-A	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	0.046	0.046	0.0002	Diff <2x LOR	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 704380)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 704394)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 704570)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 704571)					
Conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 704580)					
Colour, true	E329	5	CU	<5.0	
Anions and Nutrients (QCLot: 704461)					
Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 704573)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 704574)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 704575)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 704576)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 704577)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 704579)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 705237)					
Nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 705238)					
Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 705239)					
Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd

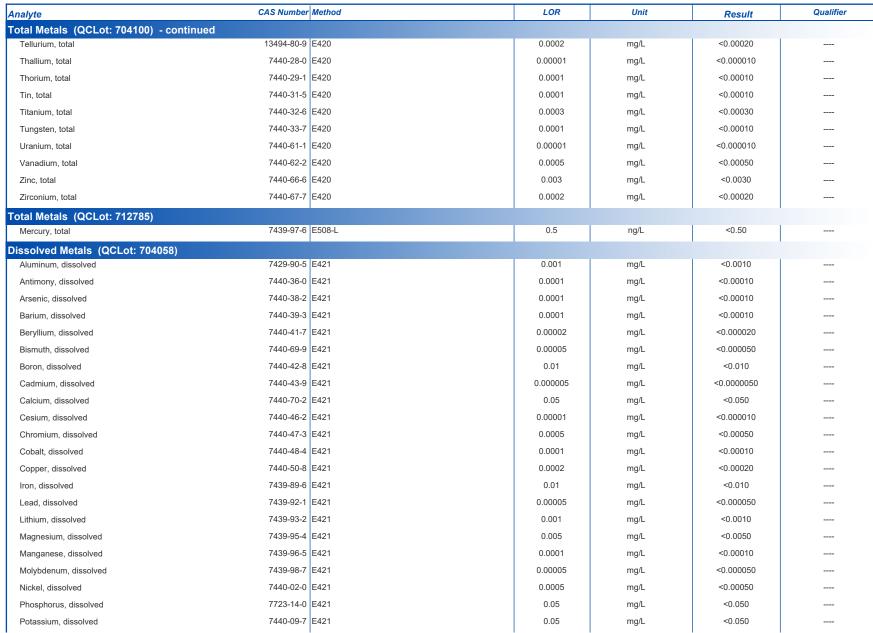


nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
nions and Nutrients (QCLot: 705240)					
Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
rganic / Inorganic Carbon (QCLot: 70	95235)				
Carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
rganic / Inorganic Carbon (QCLot: 70)5236)				
Carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
otal Metals (QCLot: 704100)					
Aluminum, total	7429-90-5 E420	0.003	mg/L	<0.0030	
Antimony, total	7440-36-0 E420	0.0001	mg/L	<0.00010	
Arsenic, total	7440-38-2 E420	0.0001	mg/L	<0.00010	
Barium, total	7440-39-3 E420	0.0001	mg/L	<0.00010	
Beryllium, total	7440-41-7 E420	0.00002	mg/L	<0.000020	
Bismuth, total	7440-69-9 E420	0.00005	mg/L	<0.000050	
Boron, total	7440-42-8 E420	0.01	mg/L	<0.010	
Cadmium, total	7440-43-9 E420	0.000005	mg/L	<0.0000050	
Calcium, total	7440-70-2 E420	0.05	mg/L	<0.050	
Cesium, total	7440-46-2 E420	0.00001	mg/L	<0.000010	
Chromium, total	7440-47-3 E420	0.0005	mg/L	<0.00050	
Cobalt, total	7440-48-4 E420	0.0001	mg/L	<0.00010	
Copper, total	7440-50-8 E420	0.0005	mg/L	<0.00050	
Iron, total	7439-89-6 E420	0.01	mg/L	<0.010	
Lead, total	7439-92-1 E420	0.00005	mg/L	<0.000050	
Lithium, total	7439-93-2 E420	0.001	mg/L	<0.0010	
Magnesium, total	7439-95-4 E420	0.005	mg/L	<0.0050	
Manganese, total	7439-96-5 E420	0.0001	mg/L	<0.00010	
Molybdenum, total	7439-98-7 E420	0.00005	mg/L	<0.000050	
Nickel, total	7440-02-0 E420	0.0005	mg/L	<0.00050	
Phosphorus, total	7723-14-0 E420	0.05	mg/L	<0.050	
Potassium, total	7440-09-7 E420	0.05	mg/L	<0.050	
Rubidium, total	7440-17-7 E420	0.0002	mg/L	<0.00020	
Selenium, total	7782-49-2 E420	0.00005	mg/L	<0.000050	
Silicon, total	7440-21-3 E420	0.1	mg/L	<0.10	
Silver, total	7440-22-4 E420	0.00001	mg/L	<0.000010	
Sodium, total	7440-23-5 E420	0.05	mg/L	<0.050	
Strontium, total	7440-24-6 E420	0.0002	mg/L	<0.00020	
Sulfur, total	7704-34-9 E420	0.5	mg/L	<0.50	

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Work Order: FJ2202949 Amendment 2
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Project : Surface Water MON8/9-With Metals

Sub-Matrix: Water



nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
ssolved Metals (QCLot: 704058) - conti	nued				
Rubidium, dissolved	7440-17-7 E421	0.0002	mg/L	<0.00020	
Selenium, dissolved	7782-49-2 E421	0.00005	mg/L	<0.000050	
Silicon, dissolved	7440-21-3 E421	0.05	mg/L	<0.050	
Silver, dissolved	7440-22-4 E421	0.00001	mg/L	<0.000010	
Sodium, dissolved	7440-23-5 E421	0.05	mg/L	<0.050	
Strontium, dissolved	7440-24-6 E421	0.0002	mg/L	<0.00020	
Sulfur, dissolved	7704-34-9 E421	0.5	mg/L	<0.50	
Tellurium, dissolved	13494-80-9 E421	0.0002	mg/L	<0.00020	
Thallium, dissolved	7440-28-0 E421	0.00001	mg/L	<0.000010	
Thorium, dissolved	7440-29-1 E421	0.0001	mg/L	<0.00010	
Tin, dissolved	7440-31-5 E421	0.0001	mg/L	<0.00010	
Titanium, dissolved	7440-32-6 E421	0.0003	mg/L	<0.00030	
Tungsten, dissolved	7440-33-7 E421	0.0001	mg/L	<0.00010	
Uranium, dissolved	7440-61-1 E421	0.00001	mg/L	<0.000010	
Vanadium, dissolved	7440-62-2 E421	0.0005	mg/L	<0.00050	
Zinc, dissolved	7440-66-6 E421	0.001	mg/L	<0.0010	
Zirconium, dissolved	7440-67-7 E421	0.0002	mg/L	<0.00020	
ssolved Metals (QCLot: 713015)					
Mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
peciated Metals (QCLot: 726346)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 728312)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 730526)					
Methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 740379)			<u></u>		
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 756854)					
Iron, ferrous [Fe II], dissolved	15438-31-0 E541	0.02	mg/L	<0.020	

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte CAS N	umber Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 704380)								
Solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	102	85.0	115	
Physical Tests (QCLot: 704394)								
Solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	97.3	85.0	115	
Physical Tests (QCLot: 704569)								
pH	E108		pH units	7 pH units	99.8	98.0	102	
Physical Tests (QCLot: 704570)								
Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	103	85.0	115	
Physical Tests (QCLot: 704571)								
Conductivity	E100	1	μS/cm	146.9 μS/cm	99.2	90.0	110	
Physical Tests (QCLot: 704580)								
Colour, true	E329	5	CU	100 CU	100	85.0	115	
Anions and Nutrients (QCLot: 704461)	4 00 0 5000	0.5				05.0	445	ı
Silicate (as SiO2) 763	1-86-9 E392	0.5	mg/L	10 mg/L	103	85.0	115	
Anions and Nutrients (QCLot: 704573)	4 40 0 5005 5	0.00				00.0	440	ı
Fluoride 1698	4-48-8 E235.F	0.02	mg/L	1 mg/L	97.8	90.0	110	
Anions and Nutrients (QCLot: 704574)	7 00 0 5005 01	0.5				00.0	440	ı
	7-00-6 E235.CI	0.5	mg/L	100 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 704575)	7 55 0 5005 NOO I	0.005		"		00.0	440	ı
Nitrate (as N) 1479	7-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	
Anions and Nutrients (QCLot: 704576)	7 05 0 5005 NO0 1	0.004		"		00.0	440	ı
	7-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	98.7	90.0	110	
Anions and Nutrients (QCLot: 704577)	0.70.0 5005.004	0.0		400 "	105	00.0	440	ı
	8-79-8 E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110	
Anions and Nutrients (QCLot: 704579)	F 44 2 F270 II	0.004	ma = //	0.00 "	07.0	90.0	100	
	5-44-2 E378-U	0.001	mg/L	0.03 mg/L	97.3	80.0	120	
Anions and Nutrients (QCLot: 705237)	7 07 0 5000	0.00		"		75.0	405	ı
3 /	7-37-9 E366	0.03	mg/L	0.5 mg/L	103	75.0	125	
Anions and Nutrients (QCLot: 705238)	0.44.0 5070.11	0.000				20.0	400	ı
	3-14-0 E372-U	0.002	mg/L	0.05 mg/L	92.8	80.0	120	
Anions and Nutrients (QCLot: 705239)		0.000						
Phosphorus, total dissolved 772	3-14-0 E375-T	0.002	mg/L	0.05 mg/L	90.7	80.0	120	

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Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Anions and Nutrients (QCLot: 705240)									
Ammonia, total (as N)	7664-41-7 E	E298	0.005	mg/L	0.2 mg/L	97.7	85.0	115	
Organic / Inorganic Carbon (QCLot: 705235	5)					1			
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	103	80.0	120	
Organic / Inorganic Carbon (QCLot: 705236	6)								
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	103	80.0	120	
					-				
Total Metals (QCLot: 704100)									
Aluminum, total	7429-90-5 E	E420	0.003	mg/L	2 mg/L	97.7	80.0	120	
Antimony, total	7440-36-0 E	E420	0.0001	mg/L	1 mg/L	103	80.0	120	
Arsenic, total	7440-38-2 E	E420	0.0001	mg/L	1 mg/L	100	80.0	120	
Barium, total	7440-39-3 E	E420	0.0001	mg/L	0.25 mg/L	98.3	80.0	120	
Beryllium, total	7440-41-7 E	E420	0.00002	mg/L	0.1 mg/L	99.0	80.0	120	
Bismuth, total	7440-69-9 E	E420	0.00005	mg/L	1 mg/L	97.1	80.0	120	
Boron, total	7440-42-8 E	E420	0.01	mg/L	1 mg/L	94.8	80.0	120	
Cadmium, total	7440-43-9 E	E420	0.000005	mg/L	0.1 mg/L	97.0	80.0	120	
Calcium, total	7440-70-2 E	E420	0.05	mg/L	50 mg/L	100	80.0	120	
Cesium, total	7440-46-2 E	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	
Chromium, total	7440-47-3 E	E420	0.0005	mg/L	0.25 mg/L	95.2	80.0	120	
Cobalt, total	7440-48-4 E	E420	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	
Copper, total	7440-50-8 E	E420	0.0005	mg/L	0.25 mg/L	94.3	80.0	120	
Iron, total	7439-89-6 E	E420	0.01	mg/L	1 mg/L	106	80.0	120	
Lead, total	7439-92-1 E	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	
Lithium, total	7439-93-2 E	E420	0.001	mg/L	0.25 mg/L	95.3	80.0	120	
Magnesium, total	7439-95-4 E	E420	0.005	mg/L	50 mg/L	97.2	80.0	120	
Manganese, total	7439-96-5 E		0.0001	mg/L	0.25 mg/L	95.8	80.0	120	
Molybdenum, total	7439-98-7 E		0.00005	mg/L	0.25 mg/L	103	80.0	120	
Nickel, total	7440-02-0 E		0.0005	mg/L	0.5 mg/L	97.0	80.0	120	
Phosphorus, total	7723-14-0 E		0.05	mg/L	10 mg/L	96.2	80.0	120	
Potassium, total	7440-09-7 E		0.05	mg/L	50 mg/L	99.2	80.0	120	
Rubidium, total	7440-17-7 E		0.0002	mg/L	0.1 mg/L	97.0	80.0	120	
Selenium, total	7782-49-2 E		0.00005	mg/L	1 mg/L	98.0	80.0	120	
Silicon, total	7440-21-3 E		0.1	mg/L	10 mg/L	97.1	80.0	120	
Silver, total	7440-22-4 E		0.00001	mg/L	0.1 mg/L	96.1	80.0	120	
Sodium, total	7440-23-5 E		0.05	mg/L	50 mg/L	97.8	80.0	120	
Strontium, total	7440-24-6 E		0.0002	mg/L	0.25 mg/L	106	80.0	120	
		-	0.0002		0.20 mg/L	130		1	

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Sub-Matrix: Water	Matrix: Water						entrol Sample (LCS)	Report	rt							
					Spike	Recovery (%)	Recovery	Limits (%)								
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier							
Total Metals (QCLot: 704100) - continue	d															
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	88.7	80.0	120								
Tellurium, total	13494-80-9 I	E420	0.0002	mg/L	0.1 mg/L	96.1	80.0	120								
Thallium, total	7440-28-0 I	E420	0.00001	mg/L	1 mg/L	106	80.0	120								
Thorium, total	7440-29-1 I	E420	0.0001	mg/L	0.1 mg/L	91.4	80.0	120								
Tin, total	7440-31-5 I	E420	0.0001	mg/L	0.5 mg/L	98.6	80.0	120								
Titanium, total	7440-32-6 I	E420	0.0003	mg/L	0.25 mg/L	90.8	80.0	120								
Tungsten, total	7440-33-7 I	E420	0.0001	mg/L	0.1 mg/L	101	80.0	120								
Uranium, total	7440-61-1 I	E420	0.00001	mg/L	0.005 mg/L	96.6	80.0	120								
Vanadium, total	7440-62-2 I	E420	0.0005	mg/L	0.5 mg/L	96.6	80.0	120								
Zinc, total	7440-66-6 I	E420	0.003	mg/L	0.5 mg/L	97.4	80.0	120								
Zirconium, total	7440-67-7 I	E420	0.0002	mg/L	0.1 mg/L	104	80.0	120								
Total Metals (QCLot: 712785)								1	I							
Mercury, total	7439-97-6 I	E508-L	0.5	ng/L	5 ng/L	112	80.0	120								
,					, <u>0</u> ,											
Dissolved Metals (QCLot: 704058)																
Aluminum, dissolved	7429-90-5 I	E421	0.001	mg/L	2 mg/L	102	80.0	120								
Antimony, dissolved	7440-36-0 I	E421	0.0001	mg/L	1 mg/L	99.4	80.0	120								
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120								
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.1	80.0	120								
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.9	80.0	120								
Bismuth, dissolved	7440-69-9		0.00005	mg/L	1 mg/L	98.1	80.0	120								
Boron, dissolved	7440-42-8		0.01	mg/L	1 mg/L	81.4	80.0	120								
Cadmium, dissolved	7440-43-9		0.000005	mg/L	0.1 mg/L	97.5	80.0	120								
Calcium, dissolved	7440-70-2		0.05	mg/L	50 mg/L	100	80.0	120								
Cesium, dissolved	7440-46-2		0.00001	mg/L	0.05 mg/L	97.3	80.0	120								
Chromium, dissolved	7440-47-3		0.0005	mg/L	0.25 mg/L	96.8	80.0	120								
Cobalt, dissolved		E421	0.0001	mg/L	0.25 mg/L	94.6	80.0	120								
Copper, dissolved	7440-50-8		0.0002	mg/L	0.25 mg/L	93.1	80.0	120								
Iron, dissolved	7439-89-6		0.01	mg/L	1 mg/L	104	80.0	120								
Lead, dissolved	7439-92-1		0.00005	mg/L	0.5 mg/L	98.2	80.0	120								
Lithium, dissolved	7439-93-2		0.001	mg/L	0.25 mg/L	91.1	80.0	120								
Magnesium, dissolved		E421	0.005	mg/L	50 mg/L	100	80.0	120								
Manganese, dissolved	7439-96-5		0.0001	mg/L	0.25 mg/L	99.2	80.0	120								
Molybdenum, dissolved	7439-98-7		0.0001		, and the second		80.0	120								
Nickel, dissolved	7440-02-0		0.0005	mg/L	0.25 mg/L	99.4	80.0	120								
· ·			0.0005	mg/L	0.5 mg/L	95.4	80.0	120								
Phosphorus, dissolved	7723-14-0	E42	0.05	mg/L	10 mg/L	87.5	00.0	120								

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Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte CAS No.	mber Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 704058) - continued								
Potassium, dissolved 7440	09-7 E421	0.05	mg/L	50 mg/L	99.9	80.0	120	
Rubidium, dissolved 7440	17-7 E421	0.0002	mg/L	0.1 mg/L	94.0	80.0	120	
Selenium, dissolved 7782	49-2 E421	0.00005	mg/L	1 mg/L	102	80.0	120	
Silicon, dissolved 7440	21-3 E421	0.05	mg/L	10 mg/L	99.6	80.0	120	
Silver, dissolved 7440	22-4 E421	0.00001	mg/L	0.1 mg/L	92.7	80.0	120	
Sodium, dissolved 7440	23-5 E421	0.05	mg/L	50 mg/L	98.4	80.0	120	
Strontium, dissolved 7440	24-6 E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	
Sulfur, dissolved 7704	34-9 E421	0.5	mg/L	50 mg/L	85.2	80.0	120	
Tellurium, dissolved 13494	80-9 E421	0.0002	mg/L	0.1 mg/L	92.9	80.0	120	
Thallium, dissolved 7440	28-0 E421	0.00001	mg/L	1 mg/L	103	80.0	120	
Thorium, dissolved 7440	29-1 E421	0.0001	mg/L	0.1 mg/L	91.3	80.0	120	
Tin, dissolved 7440	31-5 E421	0.0001	mg/L	0.5 mg/L	98.1	80.0	120	
Titanium, dissolved 7440	32-6 E421	0.0003	mg/L	0.25 mg/L	92.2	80.0	120	
Tungsten, dissolved 7440	33-7 E421	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	
Uranium, dissolved 7440	61-1 E421	0.00001	mg/L	0.005 mg/L	98.9	80.0	120	
Vanadium, dissolved 7440	62-2 E421	0.0005	mg/L	0.5 mg/L	96.1	80.0	120	
Zinc, dissolved 7440	66-6 E421	0.001	mg/L	0.5 mg/L	94.3	80.0	120	
Zirconium, dissolved 7440	67-7 E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	
Mercury, dissolved 7438	97-6 E509-L	0.5	ng/L	5 ng/L	102	80.0	120	
Speciated Metals (QCLot: 726346)								
Methylmercury (as MeHg), total 22967	92-6 E536	0.00002	μg/L	0.0025 μg/L	85.7	70.0	130	
Speciated Metals (QCLot: 728312)								
Methylmercury (as MeHg), total 2296	92-6 E536	0.00002	μg/L	0.0025 μg/L	76.3	70.0	130	
Speciated Metals (QCLot: 730526)								
Methylmercury (as MeHg), dissolved 2296	92-6 E537	0.00002	μg/L	0.0025 μg/L	79.4	70.0	130	
Speciated Metals (QCLot: 740379)								
Methylmercury (as MeHg), total 2296	92-6 E536	0.00002	μg/L	0.0025 μg/L	81.8	70.0	130	
Speciated Metals (QCLot: 756854)								
Iron, ferrous [Fe II], dissolved 15438	31-0 E541	0.02	mg/L	0.5 mg/L	103	80.0	120	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

				_								
Sub-Matrix: Water					Matrix Spike (MS) Report							
					Spi		Recovery (%)	Recovery	Limits (%)			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier		
Anions and Nutr	ients (QCLot: 704461)											
CG2214293-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	10.2 mg/L	10 mg/L	102	75.0	125			
Anions and Nutr	ients (QCLot: 704573)											
FJ2202969-001	Anonymous	Fluoride	16984-48-8	E235.F	4.95 mg/L	5 mg/L	98.9	75.0	125			
Anions and Nutr	rients (QCLot: 704574)											
FJ2202969-001	Anonymous	Chloride	16887-00-6	E235.CI	515 mg/L	500 mg/L	103	75.0	125			
Anions and Nutr	rients (QCLot: 704575)											
FJ2202969-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	13.2 mg/L	12.5 mg/L	105	75.0	125			
Anions and Nutr	rients (QCLot: 704576)											
FJ2202969-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	2.49 mg/L	2.5 mg/L	99.6	75.0	125			
Anions and Nutr	rients (QCLot: 704577)											
FJ2202969-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	500 mg/L	ND	75.0	125			
Anions and Nutr	rients (QCLot: 704579)											
FJ2202949-002	BEA-B	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0353 mg/L	0.03 mg/L	118	70.0	130			
Anions and Nutr	ients (QCLot: 705237)											
FJ2202949-002	BEA-B	Nitrogen, total	7727-37-9	E366	ND mg/L	0.4 mg/L	ND	70.0	130			
Anions and Nutr	ients (QCLot: 705238)											
FJ2202949-002	BEA-B	Phosphorus, total	7723-14-0	E372-U	0.0487 mg/L	0.05 mg/L	97.4	70.0	130			
Anions and Nutr	rients (QCLot: 705239)											
FJ2202949-002	BEA-B	Phosphorus, total dissolved	7723-14-0	E375-T	0.0485 mg/L	0.05 mg/L	97.1	70.0	130			
Anions and Nutr	ients (QCLot: 705240)											
FJ2202949-002	BEA-B	Ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125			
Organic / Inorga	nic Carbon (QCLot: 705	235)										
FJ2202949-002	BEA-B	Carbon, dissolved organic [DOC]		E358-L	ND mg/L	5 mg/L	ND	70.0	130			
Organic / Inorga	nic Carbon (QCLot: 705	236)										
FJ2202949-002	BEA-B	Carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130			
Total Metals (QC	CLot: 704100)											
FJ2202949-002	BEA-B	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130			

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spi					
					Spi	ke	Recovery (%)	Recovery	Limits (%)			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie		
	Lot: 704100) - cont	inued										
FJ2202949-002	BEA-B	Antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130			
		Arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130			
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130			
		Beryllium, total	7440-41-7	E420	0.0435 mg/L	0.04 mg/L	109	70.0	130			
		Bismuth, total	7440-69-9	E420	0.00834 mg/L	0.01 mg/L	83.4	70.0	130			
		Boron, total	7440-42-8	E420	0.105 mg/L	0.1 mg/L	105	70.0	130			
		Cadmium, total	7440-43-9	E420	0.00388 mg/L	0.004 mg/L	97.1	70.0	130			
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130			
		Cesium, total	7440-46-2	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130			
		Chromium, total	7440-47-3	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130			
		Cobalt, total	7440-48-4	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130			
		Copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130			
		Iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	97.9	70.0	130			
		Lead, total	7439-92-1	E420	0.0172 mg/L	0.02 mg/L	86.0	70.0	130			
		Lithium, total	7439-93-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130			
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130			
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130			
		Molybdenum, total	7439-98-7	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130			
		Nickel, total	7440-02-0	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130			
		Phosphorus, total	7723-14-0	E420	10.00 mg/L	10 mg/L	100.0	70.0	130			
		Potassium, total	7440-09-7	E420	4.10 mg/L	4 mg/L	102	70.0	130			
		Rubidium, total	7440-17-7	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130			
		Selenium, total	7782-49-2	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130			
		Silicon, total	7440-21-3	E420	9.84 mg/L	10 mg/L	98.4	70.0	130			
		Silver, total	7440-22-4	E420	0.00412 mg/L	0.004 mg/L	103	70.0	130			
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130			
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130			
		Sulfur, total	7704-34-9	E420	ND mg/L	20 mg/L	ND	70.0	130			
		Tellurium, total	13494-80-9	E420	0.0371 mg/L	0.04 mg/L	92.8	70.0	130			
		Thallium, total	7440-28-0	E420	0.00354 mg/L	0.004 mg/L	88.4	70.0	130			
		Thorium, total	7440-29-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130			
		Tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130			
		Titanium, total	7440-32-6	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130			
		Tungsten, total	7440-33-7	E420	0.0186 mg/L	0.02 mg/L	93.0	70.0	130			
	1	Uranium, total	7440-61-1	E420	0.00372 mg/L	0.004 mg/L	93.1	70.0	130			

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spi	ke (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QC	Lot: 704100) - conti	nued								
FJ2202949-002	BEA-B	Vanadium, total	7440-62-2	E420	0.0997 mg/L	0.1 mg/L	99.7	70.0	130	
		Zinc, total	7440-66-6	E420	0.364 mg/L	0.4 mg/L	90.9	70.0	130	
		Zirconium, total	7440-67-7	E420	0.0449 mg/L	0.04 mg/L	112	70.0	130	
Total Metals (QC	Lot: 712785)									
CG2214545-001	Anonymous	Mercury, total	7439-97-6	E508-L	6.41 ng/L	5 ng/L	128	70.0	130	
Dissolved Metals	(QCLot: 704058)									
FJ2202949-002	BEA-B	Aluminum, dissolved	7429-90-5	E421	0.197 mg/L	0.2 mg/L	98.7	70.0	130	
		Antimony, dissolved	7440-36-0	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, dissolved	7440-41-7	E421	0.0391 mg/L	0.04 mg/L	97.8	70.0	130	
		Bismuth, dissolved	7440-69-9	E421	0.00866 mg/L	0.01 mg/L	86.6	70.0	130	
		Boron, dissolved	7440-42-8	E421	0.077 mg/L	0.1 mg/L	76.8	70.0	130	
		Cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, dissolved	7440-46-2	E421	0.0102 mg/L	0.01 mg/L	102	70.0	130	
		Chromium, dissolved	7440-47-3	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	
		Cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	
		Copper, dissolved	7440-50-8	E421	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	
		Iron, dissolved	7439-89-6	E421	1.94 mg/L	2 mg/L	97.0	70.0	130	
		Lead, dissolved	7439-92-1	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	
		Lithium, dissolved	7439-93-2	E421	0.0926 mg/L	0.1 mg/L	92.6	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, dissolved	7439-96-5	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	
		Molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	
		Nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	
		Phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	
		Potassium, dissolved	7440-09-7	E421	4.01 mg/L	4 mg/L	100	70.0	130	
		Rubidium, dissolved	7440-17-7	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	
		Selenium, dissolved	7782-49-2	E421	0.0448 mg/L	0.04 mg/L	112	70.0	130	
		Silicon, dissolved	7440-21-3	E421	9.96 mg/L	10 mg/L	99.6	70.0	130	
		Silver, dissolved	7440-22-4	E421	0.00342 mg/L	0.004 mg/L	85.5	70.0	130	
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
	T	Sulfur, dissolved	7704-34-9	 E421	ND mg/L	20 mg/L	ND	70.0	130	

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Work Order: FJ2202949 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water	b-Matrix: Water						Matrix Spil	ke (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 704058) - cc	ontinued								
FJ2202949-002	BEA-B	Tellurium, dissolved	13494-80-9	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	
		Thallium, dissolved	7440-28-0	E421	0.00388 mg/L	0.004 mg/L	97.0	70.0	130	
		Thorium, dissolved	7440-29-1	E421	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	
		Tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	
		Titanium, dissolved	7440-32-6	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	
		Tungsten, dissolved	7440-33-7	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	
		Uranium, dissolved	7440-61-1	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	
		Vanadium, dissolved	7440-62-2	E421	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	
		Zinc, dissolved	7440-66-6	E421	0.384 mg/L	0.4 mg/L	95.9	70.0	130	
		Zirconium, dissolved	7440-67-7	E421	0.0441 mg/L	0.04 mg/L	110	70.0	130	
Dissolved Metals	(QCLot: 713015)									
FJ2202949-002	BEA-B	Mercury, dissolved	7439-97-6	E509-L	5.55 ng/L	5 ng/L	111	70.0	130	
Speciated Metals	(QCLot: 726346)									
FJ2202949-002	BEA-B	Methylmercury (as MeHg), total	22967-92-6	E536	0.00186 µg/L	0.0025 μg/L	74.6	60.0	140	
Speciated Metals	(QCLot: 728312)									
FJ2202978-001	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00178 μg/L	0.0025 μg/L	71.1	60.0	140	
Speciated Metals	(QCLot: 730526)									
FJ2202949-002	BEA-B	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00417 μg/L	0.0025 μg/L	83.5	60.0	140	
Speciated Metals	(QCLot: 756854)								'	•
FJ2202949-002	BEA-B	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.355 mg/L	0.5 mg/L	71.1	70.0	130	



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COC Number: 2022-Oct-MON8/9- Day 3

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ALS Lab Wor	k Order# (ALS use only):		tact:	Sean Zhang	Sampler:	Pat Beaupre	NUMBER	pH, TI diss or	Total dissolved P Total Kjeldahl Nitrogen, T	V, TOC, Total P	ethyl Hg	ouoz mg/L) ed Methyl Hg by GCAF 0002 mg/L)	Metals by	Dissolved Metals by Aardness	ercury in Water wel 0.0000005 r	(Low L	البير		_	PLES	EXTENDED	SUSPECTED HAZARD (see notes)
ALS Sample #	Sample Identi			Date	Time	Sample Type	1≅ :	Alk., Ec, Silicate,		A TOO	Ž į	Salve Salve	i i i	l se p	i α α Ω	AFS A				SAMP	ĮΫ	S
(ALS use only)	(This descripti			(dd-mmm-yy)	(hh:mm)	Sample Type	ĮŻ	¥ ÿ	DOC,	z S	<u> </u>		PE	: <u> 25 </u>	<u>5</u> 2	중	7			<u>S</u>	ŭ	3
1 1	BEA-A		<u> </u>	1700tw22	17:00	Water	ے	R	R	₹ F	₹ F	R	R	R	R	R	Ĕ			<u> </u>		
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13 a j	PD3-8 (4	4 ====================================				Water	9-		-R	₹	7	R.	R	R	R		2	Expedit Priority	Air Ground			
1 1	PINE	က် ဆေ	<u> </u>			Water	9-	-R-	R	₹ -	7	R	R	1	R	R	9 1	יב ב	₽ 9	i		\mathbf{T}
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363 87	<u> </u>									ł	_ _	.					×	 		<u>) </u>		
Drinking	Water (DW) Samples ¹ (client use)	Notes / Specify L		evaluation by selectin	ng from drop-dow	n below	Cooli	ng Me	thod:	☐ NO		MPLE		IPT D	ETAILS	S (ALS] coouin	ig innt	IATED	31.
Are samples tal	en from a Regulated DW System?						Subn	nission	n Comm	ents ic	lentific	d on S	ample	e Reco	eipt No	tification	on:		; <u> </u>	_No	94	T.
□ Y	ES 🖸 NO.	Please se	end Azimuth a	copy of the data in	their EDD forma	at:	Cool	er Cus	tody Se	als Inta	act:	∏YĒ	s [N/A	Samp	ole Cu	stody	Seals 1	ntact:	YE	s 🔲	V A
Are samples for	human consumption/ use?	gmann@azimuthgroup.c	<u>ca</u>	imcivor@azimutho	roup.ca			IN	IITIAL CO	OLER T	EMPE	RATURE	S ℃			FI	NAL CO	OLER T	TEMPER.	ATURES	°C y	
Y	ES 🗹 NO	csuzanne@ecofishresea	arch.com	kganshorn@ecofis	shresearch.com		6	/			91	× 1	÷19			31	5.	. 81		48		
	SHIPMENT RELEASE (client us	e)		INITIADSHIPMENT		LS use only)	Ψ.			94	·	FINAL	SHIF	-	T REC	EPTIC	N (AL	S use	only)	36.	Ter -	7
Released by:	BM 170ct	7022 Time: 18:45	Received by:)	Date Oct 1	1/22	18	50	Receiv	ed by:	- 14 1 - 14		5 1 <u>.</u>	Dat	e: क	F .	1	0 1	8	Time	614	150
REFER TO BAC	K PAGE FOR ALS LOCATIONS AND SAMPLE			WHI	TE - LABORATOR	Y COPY YEL			T COPY		<u>-</u>										AUG 2	Dan Eboya

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202956 Page : 1 of 8

Amendment : 4

Client Laboratory : Ecofish Research Ltd : ALS Environmental - Fort St. John

: Sarah Kennedy **Account Manager** Contact : Sean Zhang Address

Address : 600 Comox Road : 11007 Alaska Road

Courtenay BC Canada V9N3P6 Fort St. John BC Canada V1J 6P3 Telephone : +1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received : 18-Oct-2022 16:30

PO : 1200-25.03.02 **Date Analysis Commenced** : 21-Oct-2022

C-O-C number : 2022-Oct-MON8/9-Day4 Issue Date : 25-Aug-2023 17:57

Sampler : PB Site

Quote number : VA22-ECOF100-004

No. of samples received : 3 No. of samples analysed : 3

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

Telephone

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

Signatories	Position	Laboratory Department	
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia	
Parnian Sane	Analyst	Metals, Burnaby, British Columbia	
Sukhman Khosa	Lab Assistant	Metals, Burnaby, British Columbia	

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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (6/6/2023): This report has been amended as a result of a request to change sample identification numbers (IDs) received by ALS from Sarah Kennedy on 6/6/2023. All analysis results are as per the previous report.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Qualifiers

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.
RRV	Reported result verified by repeat analysis.

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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water				Cli	ent sample ID	PR3	MD	MD-FB	
(Matrix: Water)									
				Client samp	ling date / time	18-Oct-2022 08:20	18-Oct-2022 11:05	18-Oct-2022 08:20	
Analyte	CAS Number	Method/Lab)	LOR	Unit	FJ2202956-001	FJ2202956-002	FJ2202956-003	
						Result	Result	Result	
Sample Preparation									
Dissolved Fe2 filtration location	EP5	41/VA		-	-	Field	Field	Field	
Physical Tests									
Alkalinity, bicarbonate (as CaCO3)		0/VA	Α	1.0	mg/L	74.7	188	<1.0	
Alkalinity, carbonate (as CaCO3)	E290		Α	1.0	mg/L	<1.0	15.6	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290		Α	1.0	mg/L	<1.0	<1.0	<1.0	
Alkalinity, total (as CaCO3)	E290	0/VA	Α	1.0	mg/L	74.7	203	<1.0	
Colour, true	E329		Α	5.0	CU	6.4	6.2	<5.0	
Conductivity	E100	0/VA	Α	2.0	μS/cm	174	424	<2.0	
Hardness (as CaCO3), dissolved	EC1	00/VA		0.50	mg/L	90.2	222	<0.50	
Hardness (as CaCO3), from total Ca/Mg	EC1	00A/VA		0.50	mg/L	92.5	216	<0.50	
pH	E108	8/VA	Α	0.10	pH units	8.14	8.54	5.58	
Solids, total dissolved [TDS]	E162	2/VA	Α	10	mg/L	114	275	<10	
Solids, total suspended [TSS]	E160	0/VA	Α	3.0	mg/L	6.6	<3.0	<3.0	
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7 E298	8/VA	Α	0.0050	mg/L	0.0146	<0.0050	0.0116 RRV	
Chloride	16887-00-6 E235	5.CI/VA	Α	0.50	mg/L	<0.50	0.69	<0.50	
Fluoride	16984-48-8 E235	5.F/VA	Α	0.020	mg/L	0.032	0.094	<0.020	
Kjeldahl nitrogen, total [TKN]	EC3	318/VA		0.050	mg/L	0.109	0.082	<0.050	
Nitrate (as N)	14797-55-8 E235	5.NO3-L/V	Α	0.0050	mg/L	0.0602	0.0053	<0.0050	
Nitrite (as N)	14797-65-0 E238	5.NO2-L/V	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	
Nitrogen, total	7727-37-9 E366	6/VA	Α	0.030	mg/L	0.169	0.087	<0.030	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378		Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	
Phosphorus, total	7723-14-0 E372		Α	0.0020	mg/L	0.0093	0.0049	<0.0020	
Phosphorus, total dissolved	7723-14-0 E375		Α	0.0020	mg/L	<0.0020	0.0023	<0.0020	
Silicate (as SiO2)	7631-86-9 E392		Α	0.50	mg/L	4.16	4.69	<0.50	
Sulfate (as SO4)	14808-79-8 E235		Α	0.30	mg/L	12.3	31.5	<0.30	
Nitrate + Nitrite (as N)		235.N+N/V		0.0032	mg/L	0.0602	0.0053	<0.0051	
	LG2	V			⊴, ⊏		2.5000	2.000.	

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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PR3	MD	MD-FB	
(Matrix: Water)								
			Client samp	ling date / time	18-Oct-2022 08:20	18-Oct-2022 11:05	18-Oct-2022 08:20	
Analyte	CAS Number Method/L	.ab	LOR	Unit	FJ2202956-001	FJ2202956-002	FJ2202956-003	
					Result	Result	Result	
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]	E358-L/VA	Α	0.50	mg/L	3.77	3.97	1.22 RRV	
Carbon, total organic [TOC]	E355-L/VA	Α	0.50	mg/L	2.83	3.21	1.27 RRV	
Ion Balance								
Anion sum	EC101/VA		0.10	meq/L	1.75	4.74	<0.10	
Cation sum	EC101/VA		0.10	meq/L	1.86	4.85	<0.10	
Ion balance (APHA)	EC101/VA		0.010	%	3.05	1.15	<0.010	
Total Metals								
Aluminum, total	7429-90-5 E420/VA	Α	0.0030	mg/L	0.0809	0.0447	<0.0030	
Antimony, total	7440-36-0 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Arsenic, total	7440-38-2 E420/VA	Α	0.00010	mg/L	0.00023	0.00030	<0.00010	
Barium, total	7440-39-3 E420/VA	Α	0.00010	mg/L	0.0325	0.197	<0.00010	
Beryllium, total	7440-41-7 E420/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	
Bismuth, total	7440-69-9 E420/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	
Boron, total	7440-42-8 E420/VA	Α	0.010	mg/L	<0.010	0.013	<0.010	
Cadmium, total	7440-43-9 E420/VA	Α	0.0000050	mg/L	0.0000169	0.0000111	<0.0000050	
Calcium, total	7440-70-2 E420/VA	Α	0.050	mg/L	27.1	60.3	<0.050	
Cesium, total	7440-46-2 E420/VA	Α	0.000010	mg/L	0.000016	<0.000010	<0.000010	
Chromium, total	7440-47-3 E420/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	
Cobalt, total	7440-48-4 E420/VA	Α	0.00010	mg/L	<0.00010	0.00018	<0.00010	
Copper, total	7440-50-8 E420/VA	Α	0.00050	mg/L	0.00078	0.00058	<0.00050	
Iron, total	7439-89-6 E420/VA	Α	0.010	mg/L	0.115	0.183	<0.010	
Lead, total	7439-92-1 E420/VA	Α	0.000050	mg/L	0.000065	<0.000050	<0.000050	
Lithium, total	7439-93-2 E420/VA	Α	0.0010	mg/L	0.0011	0.0059	<0.0010	
Magnesium, total	7439-95-4 E420/VA	Α	0.0050	mg/L	6.04	16.0	<0.0050	
Manganese, total	7439-96-5 E420/VA	Α	0.00010	mg/L	0.00397	0.0342	<0.00010	
Mercury, total	7439-97-6 E508-L/VA	Α	0.50	ng/L	0.83	1.12	<0.50 DTC	
Molybdenum, total	7439-98-7 E420/VA	Α	0.000050	mg/L	0.000767	0.000929	<0.000050	
Nickel, total	7440-02-0 E420/VA	Α	0.00050	mg/L	0.00083	0.00130	<0.00050	
Phosphorus, total	7723-14-0 E420/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	
Potassium, total	7440-09-7 E420/VA	Α	0.050	mg/L	0.445	1.14	<0.050	
1	7440-00-1 - 1-37 77		1	9, =		I		

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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PR3	MD	MD-FB	
(Matrix: Water)								
			Client samp	ling date / time	18-Oct-2022 08:20	18-Oct-2022 11:05	18-Oct-2022 08:20	
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2202956-001	FJ2202956-002	FJ2202956-003	
					Result	Result	Result	
Total Metals								
Rubidium, total	7440-17-7 E420/VA	Α	0.00020	mg/L	0.00046	0.00045	<0.00020	
Selenium, total	7782-49-2 E420/VA	Α	0.000050	mg/L	0.000284	0.000202	<0.000050	
Silicon, total	7440-21-3 E420/VA	Α	0.10	mg/L	2.13	2.34	<0.10	
Silver, total	7440-22-4 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	
Sodium, total	7440-23-5 E420/VA	Α	0.050	mg/L	1.11	9.26	<0.050	
Strontium, total	7440-24-6 E420/VA	Α	0.00020	mg/L	0.104	0.177	<0.00020	
Sulfur, total	7704-34-9 E420/VA	Α	0.50	mg/L	4.72	11.8	<0.50	
Tellurium, total	13494-80-9 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	
Thallium, total	7440-28-0 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	
Thorium, total	7440-29-1 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Tin, total	7440-31-5 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Titanium, total	7440-32-6 E420/VA	Α	0.00030	mg/L	0.00157	0.00071	<0.00030	
Tungsten, total	7440-33-7 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Uranium, total	7440-61-1 E420/VA	Α	0.000010	mg/L	0.000416	0.000713	<0.000010	
Vanadium, total	7440-62-2 E420/VA	Α	0.00050	mg/L	0.00060	<0.00050	<0.00050	
Zinc, total	7440-66-6 E420/VA	Α	0.0030	mg/L	<0.0030	<0.0030	<0.0030	
Zirconium, total	7440-67-7 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	
Dissolved Metals								
Aluminum, dissolved	7429-90-5 E421/VA	Α	0.0010	mg/L	0.0044	0.0079	0.0033 RRV	
Antimony, dissolved	7440-36-0 E421/VA	Α	0.00010	mg/L	<0.00010	0.00011	<0.00010	
Arsenic, dissolved	7440-38-2 E421/VA	Α	0.00010	mg/L	0.00021	0.00022	<0.00010	
Barium, dissolved	7440-39-3 E421/VA	Α	0.00010	mg/L	0.0304	0.182	<0.00010	
Beryllium, dissolved	7440-41-7 E421/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8 E421/VA	Α	0.010	mg/L	<0.010	0.013	<0.010	
Cadmium, dissolved	7440-43-9 E421/VA	Α	0.0000050	mg/L	0.0000056	0.0000062	0.0000057 RRV	
Calcium, dissolved	7440-70-2 E421/VA	Α	0.050	mg/L	26.5	61.4	<0.050	
Cesium, dissolved	7440-46-2 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4 E421/VA	Α	0.00010	mg/L	<0.00010	0.00024	<0.00010	
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Work Order : FJ2202956 Amendment 4
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PR3	MD	MD-FB	
(Matrix: Water)								
			Client samp	ling date / time	18-Oct-2022 08:20	18-Oct-2022 11:05	18-Oct-2022 08:20	
Analyte	CAS Number Method/L	ab	LOR	Unit	FJ2202956-001	FJ2202956-002	FJ2202956-003	
					Result	Result	Result	
Dissolved Metals								
Copper, dissolved	7440-50-8 E421/VA	Α	0.00020	mg/L	0.00059	0.00041	<0.00020	
Iron, dissolved	7439-89-6 E421/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	
Lead, dissolved	7439-92-1 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2 E421/VA	Α	0.0010	mg/L	0.0011	0.0064	<0.0010	
Magnesium, dissolved	7439-95-4 E421/VA	Α	0.0050	mg/L	5.83	16.7	<0.0050	
Manganese, dissolved	7439-96-5 E421/VA	Α	0.00010	mg/L	0.00044	0.0320	0.00014 RRV	
Mercury, dissolved	7439-97-6 E509-L/VA	Α	0.50	ng/L	1.76	1.79	<0.50 DTC	
Molybdenum, dissolved	7439-98-7 E421/VA	Α	0.000050	mg/L	0.000725	0.000922	<0.000050	
Nickel, dissolved	7440-02-0 E421/VA	Α	0.00050	mg/L	0.00065	0.00125	<0.00050	
Phosphorus, dissolved	7723-14-0 E421/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7 E421/VA	Α	0.050	mg/L	0.420	1.19	<0.050	
Rubidium, dissolved	7440-17-7 E421/VA	Α	0.00020	mg/L	0.00033	0.00032	<0.00020	
Selenium, dissolved	7782-49-2 E421/VA	Α	0.000050	mg/L	0.000283	0.000219	<0.000050	
Silicon, dissolved	7440-21-3 E421/VA	Α	0.050	mg/L	1.93	2.26	<0.050	
Silver, dissolved	7440-22-4 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5 E421/VA	Α	0.050	mg/L	1.06	8.85	<0.050	
Strontium, dissolved	7440-24-6 E421/VA	Α	0.00020	mg/L	0.103	0.167	<0.00020	
Sulfur, dissolved	7704-34-9 E421/VA	Α	0.50	mg/L	4.23	11.2	<0.50	
Tellurium, dissolved	13494-80-9 E421/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	
Thorium, dissolved	7440-29-1 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Titanium, dissolved	7440-32-6 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	
Tungsten, dissolved	7440-33-7 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	
Uranium, dissolved	7440-61-1 E421/VA	Α	0.000010	mg/L	0.000424	0.000760	<0.000010	
Vanadium, dissolved	7440-62-2 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	
Zinc, dissolved	7440-66-6 E421/VA	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	
Zirconium, dissolved	7440-67-7 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	
Dissolved MeHg filtration location	EP537/VA		-	-	Field	Field	Field	
Dissolved mercury filtration location	EP509-L/VA		-	_	Field	Field	Field	
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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

Sub-Matrix: Water			Cli	ent sample ID	PR3	MD	MD-FB	
(Matrix: Water)								
			Client sampl	ling date / time	18-Oct-2022 08:20	18-Oct-2022 11:05	18-Oct-2022 08:20	
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2202956-001	FJ2202956-002	FJ2202956-003	
					Result	Result	Result	
Dissolved Metals								
Dissolved metals filtration location	EP4	421/VA	-	-	Field	Field	Field	
Speciated Metals								
Methylmercury (as MeHg), total	22967-92-6 E536	36/VA A	0.00000002 0	mg/L	<0.00000002	<0.00000002 0	<0.000000020	
Iron, ferrous [Fe II], dissolved	15438-31-0 E54°	11/VA A	0.020	mg/L	<0.020	<0.020	<0.020	
Methylmercury (as MeHg), dissolved	22967-92-6 E537	37/VA A	0.00000002 0	mg/L	<0.00000002 0	<0.00000002 0	<0.000000020	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

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Amendment :4

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address :600 Comox Road Address :11007 Alaska Road

Courtenay BC Canada V9N3P6 Fort St. John. British Columbia Canada V1J 6P3

Telephone :--- Telephone :+1 250 261 5517

 Project
 : Surface Water MON8/9-With Metals
 Date Samples Received
 : 18-Oct-2022 16:30

 PO
 : 1200-25.03.02
 Issue Date
 : 25-Aug-2023 17:57

C-O-C number : 2022-Oct-MON8/9-Day4

Sampler : PB Site .

Quote number : VA22-ECOF100-004

No. of samples received :3
No. of samples analysed :3

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

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Analysis Holding Time Compliance

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

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

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

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

Matrix: Water Evaluation: × = I	lolding time exceedance ; ✓ = Within Holding Time
Iviation. • • • • • • • • • • • • • • • • • • •	iolding time exceedance, • - within holding hime

Matrix. Water						alaation.	I lolding time excel	oddiioo , ·	***************************************	Troiding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MD	E298	18-Oct-2022	21-Oct-2022	28 days	3 days	√	22-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PR3	E298	18-Oct-2022	21-Oct-2022	28 days	3 days	✓	22-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) MD-FB	E298	18-Oct-2022	22-Oct-2022	28 days	4 days	✓	24-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MD	E235.CI	18-Oct-2022	21-Oct-2022	28 days	3 days	1	21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE MD-FB	E235.CI	18-Oct-2022	21-Oct-2022	28 days	3 days	4	21-Oct-2022	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PR3	E235.CI	18-Oct-2022	21-Oct-2022	28 days	3 days	✓	21-Oct-2022	28 days	3 days	✓

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Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 HDPE MD E378-U 18-Oct-2022 21-Oct-2022 3 days 3 days 21-Oct-2022 3 days 3 days Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 **HDPE** E378-U 18-Oct-2022 1 21-Oct-2022 3 days 1 PR3 21-Oct-2022 3 days 3 days 3 days Anions and Nutrients: Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 **HDPE** MD-FB E378-U 18-Oct-2022 21-Oct-2022 3 days 3 days 21-Oct-2022 3 days 4 days 30 EHT Anions and Nutrients : Fluoride in Water by IC **HDPE** E235.F 1 1 18-Oct-2022 MD 21-Oct-2022 3 days 21-Oct-2022 28 days 3 days 28 days Anions and Nutrients : Fluoride in Water by IC **HDPE** MD-FB E235.F 18-Oct-2022 21-Oct-2022 3 days 1 21-Oct-2022 28 days 3 days 28 days Anions and Nutrients : Fluoride in Water by IC HDPE PR3 E235.F 18-Oct-2022 21-Oct-2022 28 3 days 1 21-Oct-2022 28 days 3 days days Anions and Nutrients : Nitrate in Water by IC (Low Level) HDPE MD E235.NO3-L 18-Oct-2022 21-Oct-2022 3 days 3 days 21-Oct-2022 3 days 3 days 1 Anions and Nutrients : Nitrate in Water by IC (Low Level) **HDPE** 1 E235.NO3-L 18-Oct-2022 21-Oct-2022 3 days 3 days 21-Oct-2022 ✓ MD-FB 3 days 3 days

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

Analyte Group	Method	Sampling Date					, ,	Tiolding Time		
Container / Client Sample ID(s)	Mounda	Camping Bate	Preparation	1	g Times	Eval	Analysis Date	Analys	g Times	Eval
,			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PR3	E235.NO3-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	E005 NO0 I	40.0.4.0000	04 0 4 0000	0.1	0.1		04.0.4.0000	0.1	0.1	√
MD	E235.NO2-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	3 days	*
Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE							I			
MD-FB	E235.NO2-L	18-Oct-2022	21-Oct-2022	3 days	3 days	√	21-Oct-2022	3 days	3 days	✓
5				,-	, -			, -	,-	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PR3	E235.NO2-L	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
MD	E392	18-Oct-2022					24-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
MD-FB	E392	18-Oct-2022					24-Oct-2022	28 days	6 days	✓
MD-FD	L392	10-001-2022					24-001-2022	20 uays	0 uays	·
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PR3	E392	18-Oct-2022					24-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
MD	E235.SO4	18-Oct-2022	21-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Sulfate in Water by IC										
HDPE	5005.00	40.0 4.0055								
MD-FB	E235.SO4	18-Oct-2022	21-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	3 days	✓
				days						

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Project : Surface Water MON8/9-With Metals



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

watrix: water			_			raidation. • =	nolaing time exce			Tiolding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PR3	E235.SO4	18-Oct-2022	21-Oct-2022	28	3 days	✓	21-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
MD	E375-T	18-Oct-2022	22-Oct-2022	28	4 days	✓	24-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)	<u> </u>				<u> </u>		<u> </u>			
MD-FB	E375-T	18-Oct-2022	22-Oct-2022	28	4 days	✓	24-Oct-2022	28 days	6 davs	✓
				days				,	,	
Anima and National Tatal Biography of Bharmhama by Calamina to 10 000 mm (II)										
Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)					I		I	I		
Amber glass dissolved (sulfuric acid) PR3	E375-T	18-Oct-2022	22-Oct-2022	200	4 days	1	24-Oct-2022	28 days	6 days	✓
PRS	L373-1	10-001-2022	22-001-2022	28	4 uays	•	24-061-2022	20 uays	0 uays	•
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry					<u> </u>					
Amber glass total (sulfuric acid)	E000	40.0.4.0000	04 0 4 0000		0.1	,	04.0.4.0000	00 1	0.1	,
MD	E366	18-Oct-2022	21-Oct-2022	28	3 days	✓	24-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
PR3	E366	18-Oct-2022	21-Oct-2022	28	3 days	✓	24-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
MD-FB	E366	18-Oct-2022	22-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	7 days	✓
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)								1		
Amber glass total (sulfuric acid)										
MD	E372-U	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days	′					
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)				, -						
Amber glass total (sulfuric acid)										
PR3	E372-U	18-Oct-2022	21-Oct-2022	20	3 days	✓	22-Oct-2022	28 days	4 days	✓
FIN	L372-0	10-001-2022	21-001-2022	28	Juays	,	22-001-2022	20 uays	- uays	•
				days						

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) 18-Oct-2022 E372-U 22-Oct-2022 23-Oct-2022 1 MD-FB 4 days 28 days 28 5 days days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) MD E509-L 18-Oct-2022 25-Oct-2022 28 7 days 1 25-Oct-2022 28 days 7 days ✓ days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) MD-FB E509-L 18-Oct-2022 25-Oct-2022 7 days 1 25-Oct-2022 28 days 7 days 28 davs Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 18-Oct-2022 ✓ PR3 25-Oct-2022 28 7 days 25-Oct-2022 28 days 7 days 1 days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) E421 18-Oct-2022 22-Oct-2022 1 22-Oct-2022 4 days ✓ MD 4 days 180 180 days days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) E421 18-Oct-2022 1 4 days MD-FB 22-Oct-2022 180 4 days 22-Oct-2022 180 1 days days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE - dissolved (lab preserved) PR3 E421 18-Oct-2022 22-Oct-2022 22-Oct-2022 ✓ 4 days 4 days 180 180 days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) MD E358-L 18-Oct-2022 22-Oct-2022 28 4 days 1 22-Oct-2022 28 days 4 days 1 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 18-Oct-2022 22-Oct-2022 1 22-Oct-2022 28 days 4 days 1 MD-FB 4 days 28

days

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

Matrix: Water					E\	/aluation. 🔻 –	Holding time exce	euance , •	– vvitriiii	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)									
Amber glass dissolved (sulfuric acid)										
PR3	E358-L	18-Oct-2022	22-Oct-2022	28	4 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
MD	E355-L	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
PR3	E355-L	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
MD-FB	E355-L	18-Oct-2022	22-Oct-2022	28	4 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : Alkalinity Species by Titration										
HDPE										
MD	E290	18-Oct-2022	21-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	4 days	✓
				days						
Physical Tests : Alkalinity Species by Titration										
HDPE										
MD-FB	E290	18-Oct-2022	21-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	4 days	✓
				days						
Physical Tests : Alkalinity Species by Titration										
HDPE										
PR3	E290	18-Oct-2022	21-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	4 days	✓
				days						
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
MD	E329	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	3 days	✓
									-	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
MD-FB	E329	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	4 days	×
									,	EHT

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Project : Surface Water MON8/9-With Metals



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

Matrix: Water						valuation. × –	Holding time exce			Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation	ı		Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PR3	E329	18-Oct-2022	21-Oct-2022	3 days	3 days	✓	21-Oct-2022	3 days	4 days	×
										EHT
Physical Tests : Conductivity in Water										
HDPE										
MD	E100	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : Conductivity in Water										
HDPE										
MD-FB	E100	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : Conductivity in Water										
HDPE										
PR3	E100	18-Oct-2022	21-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : pH by Meter										
HDPE										
MD	E108	18-Oct-2022	21-Oct-2022	0.25	79 hrs	*	22-Oct-2022	0.25	94 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PR3	E108	18-Oct-2022	21-Oct-2022	0.25	79 hrs	×	22-Oct-2022	0.25	97 hrs	æ
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE										
MD-FB	E108	18-Oct-2022	21-Oct-2022	0.25	82 hrs	×	22-Oct-2022	0.25	97 hrs	×
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : TDS by Gravimetry						<u> </u>				
HDPE										
MD	E162	18-Oct-2022					22-Oct-2022	7 days	4 days	✓
Physical Tests : TDS by Gravimetry								1		
HDPE										
MD-FB	E162	18-Oct-2022					22-Oct-2022	7 days	4 days	✓

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date **Physical Tests: TDS by Gravimetry** HDPE PR3 E162 18-Oct-2022 22-Oct-2022 4 days 7 days Physical Tests: TSS by Gravimetry **HDPE** MD E160 18-Oct-2022 22-Oct-2022 7 days 4 days 1 Physical Tests : TSS by Gravimetry HDPE MD-FB E160 18-Oct-2022 22-Oct-2022 7 days 4 days **Physical Tests: TSS by Gravimetry** HDPE E160 18-Oct-2022 PR3 22-Oct-2022 7 days 4 days 1 Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 18-Oct-2022 24-Nov-2022 × 24-Nov-2022 æ 7 days 7 days 37 days 37 EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 18-Oct-2022 MD-FB 24-Nov-2022 7 days 37 24-Nov-2022 7 days 37 days EHT EHT days Speciated Metals : Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) PR3 E541 18-Oct-2022 24-Nov-2022 7 days 24-Nov-2022 37 days 7 days 37 EHT EHT days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) 1 MD E537 18-Oct-2022 04-Nov-2022 180 17 1 10-Nov-2022 180 6 days days days days **Speciated Metals: Dissolved Methylmercury in Water by GCAFS** Amber glass dissolved (hydrochloric acid) E537 18-Oct-2022 04-Nov-2022 1 10-Nov-2022 1 MD-FB 6 days 180 17 180 days days days

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

Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Eval Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)		40.0.4.0000								,
PR3	E537	18-Oct-2022	04-Nov-2022	180	17	✓	10-Nov-2022	180	6 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS					1					
Amber glass total (hydrochloric acid) MD	E536	18-Oct-2022	03-Nov-2022	180	16	✓	07-Nov-2022	180	20 days	✓
IVID	2000	10-001-2022	00-1404-2022	days	days	,	07-1404-2022	days	20 days	•
Speciated Metals : Total Methylmercury in Water by GCAFS				aayo	dayo			dayo		
Amber glass total (hydrochloric acid)				<u> </u>	<u> </u>		I			
MD-FB	E536	18-Oct-2022	03-Nov-2022	180	16	✓	07-Nov-2022	180	20 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
PR3	E536	18-Oct-2022	03-Nov-2022	180	16	✓	07-Nov-2022	180	20 days	✓
				days	days			days		
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)						,				
MD	E508-L	18-Oct-2022	25-Oct-2022	28	7 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved) MD-FB	E508-L	18-Oct-2022	25-Oct-2022	28	7 days	√	25-Oct-2022	28 days	0 days	✓
ט ו-טועו	2000-2	10-001-2022	20-001-2022	days	7 days		25-001-2022	20 days	0 days	•
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)				uaye						
Pre-cleaned amber glass - total (lab preserved)				<u> </u>	<u> </u>					
PR3	E508-L	18-Oct-2022	25-Oct-2022	28	7 days	✓	25-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
MD	E420	18-Oct-2022	21-Oct-2022	180	3 days	✓	22-Oct-2022	180	4 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)						,				_
MD-FB	E420	18-Oct-2022	21-Oct-2022	180	3 days	✓	22-Oct-2022	180	4 days	✓
				days				days		

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

Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)		, ,	Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) PR3	E420	18-Oct-2022	21-Oct-2022	180 days	3 days	√	22-Oct-2022	180 days	4 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			Co	ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	708319	3	30	10.0	5.0	1
Ammonia by Fluorescence	E298	708387	2	29	6.9	5.0	√
Chloride in Water by IC	E235.Cl	708324	3	21	14.2	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	708335	3	11	27.2	5.0	✓
Conductivity in Water	E100	708321	3	28	10.7	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	708361	1	13	7.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	709304	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	708334	3	19	15.7	5.0	√
Fluoride in Water by IC	E235.F	708323	3	17	17.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	708325	3	34	8.8	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	708326	3	36	8.3	5.0	✓
pH by Meter	E108	708318	3	25	12.0	5.0	√
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	708327	3	17	17.6	5.0	<u> </u>
TDS by Gravimetry	E162	709337	1	20	5.0	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709303	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	708233	1	13	7.6	5.0	✓
Total Methylmercury in Water by GCAFS	E536	726346	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	708385	2	4	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	708391	2	19	10.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	708392	2	19	10.5	5.0	✓
TSS by Gravimetry	E160	709333	1	20	5.0	5.0	√
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	708319	3	30	10.0	5.0	1
Ammonia by Fluorescence	E298	708387	2	29	6.9	5.0	
Chloride in Water by IC	E235.CI	708324	3	21	14.2	5.0	
Colour (True) by Spectrometer (5 CU)	E329	708335	3	11	27.2	5.0	
Conductivity in Water	E100	708321	3	28	10.7	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	708361	1	13	7.6	5.0	<u> </u>
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	

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Matrix: Water		Evaluation	on: × = QC freque	ency outside sp	ecification; ✓ = 0	QC frequency with	hin specification
Quality Control Sample Type				ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	709304	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	708334	3	19	15.7	5.0	✓
Fluoride in Water by IC	E235.F	708323	3	17	17.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	708325	3	34	8.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	708326	3	36	8.3	5.0	✓
pH by Meter	E108	708318	3	25	12.0	5.0	✓
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	708327	3	17	17.6	5.0	✓
TDS by Gravimetry	E162	709337	1	20	5.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709303	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	708233	1	13	7.6	5.0	✓
Total Methylmercury in Water by GCAFS	E536	726346	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	708385	2	4	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	708391	2	19	10.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	708392	2	19	10.5	5.0	✓
TSS by Gravimetry	E160	709333	1	20	5.0	5.0	√
Method Blanks (MB)							
Alkalinity Species by Titration	E290	708319	3	30	10.0	5.0	✓
Ammonia by Fluorescence	E298	708387	2	29	6.9	5.0	<u> </u>
Chloride in Water by IC	E235.CI	708324	3	21	14.2	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	708335	3	11	27.2	5.0	<u> </u>
Conductivity in Water	E100	708321	3	28	10.7	5.0	<u>√</u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	708361	1	13	7.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	709304	1	20	5.0	5.0	<u>√</u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	708334	3	19	15.7	5.0	√
Fluoride in Water by IC	E235.F	708323	3	17	17.6	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	708325	3	34	8.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	708326	3	36	8.3	5.0	√
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	<u>√</u>
Sulfate in Water by IC	E235.SO4	708327	3	17	17.6	5.0	<u>√</u>
TDS by Gravimetry	E162	709337	1	20	5.0	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709303	1	6	16.6	5.0	<u>√</u>
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	<u> </u>
Total Metals in Water by CRC ICPMS	E420	708233	1	13	7.6	5.0	<u>√</u>
Total Methylmercury in Water by GCAFS	E536	726346	1	20	5.0	5.0	<u>√</u>
4 Company of the Comp		1		1	1		

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Quality Control Sample Type			Co	ount	Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Nitrogen by Colourimetry	E366	708385	2	4	50.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	708391	2	19	10.5	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	708392	2	19	10.5	5.0	√
TSS by Gravimetry	E160	709333	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	708387	2	29	6.9	5.0	✓
Chloride in Water by IC	E235.CI	708324	2	21	9.5	5.0	√
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	713015	1	19	5.2	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	708361	1	13	7.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	730526	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	709304	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	708334	2	19	10.5	5.0	✓
Fluoride in Water by IC	E235.F	708323	2	17	11.7	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	708325	3	34	8.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	708326	3	36	8.3	5.0	✓
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	708327	2	17	11.7	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709303	1	6	16.6	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	712785	1	18	5.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	708233	1	13	7.6	5.0	✓
Fotal Methylmercury in Water by GCAFS	E536	726346	1	20	5.0	5.0	✓
Fotal Nitrogen by Colourimetry	E366	708385	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	708391	2	19	10.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	708392	2	19	10.5	5.0	√

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Methodology References and Summaries

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

ALS Environmental - Vancouver PH by Meter E108 APHA 4500-H (mod) ALS Environmental - Vancouver ALS Environmental - Vancouver ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaventhous are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Vancouver PH by Meter E108 Water APHA 4500-H (mod) PH is determined by potentiometric measurement with a pH electrode, and is concat a mbient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate and methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	onductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
PH by Meter E108 APHA 4500-H (mod) pH is determined by potentiometric measurement with a pH electrode, and is condat ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		Vancouver			
ALS Environmental - Vancouver E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	H by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					pH should be measured in the field within the recommended 15 minute hold time.
filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) ALS Environmental - ALS Environmental - With gravimetric measurement of the filter at 104 ± 1°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100°C, with gravimetric measurement of the filter at 100°C, with grav	2001 0 : 1		347.7	ADUA 0540 D (1)	
ALS Environmental - Vancouver ALS Environmental - Vancouver Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. TDS by Gravimetry Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	SS by Gravimetry	E160	Water	APHA 2540 D (mod)	. , , , , , , , , , , , , , , , , , , ,
Vancouver Vancouver brackish waters) may produce a positive bias by this method. Alternate ar methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			, , , , ,
methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , ,
filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant v with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
ALS Environmental - with gravimetric measurement of the residue.	DS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
Wall gravillotto indudition induded of the residue.					filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
Vancourver		ALS Environmental -			with gravimetric measurement of the residue.
valicouvei		Vancouver			
Chloride in Water by IC E235.CI Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	hloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			dotoston.
Vancouver		Vancouver			
Fluoride in Water by IC E235.F Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	luoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Nitrite in Water by IC (Low Level) E235.NO2-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection
ALS Environmental -		ALS Environmental -			400000000
Vancouver		Vancouver			
Nitrate in Water by IC (Low Level) E235.NO3-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Sulfate in Water by IC E235.SO4 Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /or detection.	ulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental -	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
	Vancouver			
Ammonia by Fluorescence	E298	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
	ALS Environmental - Vancouver			This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric
	ALS Environmental - Vancouver			method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental -	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
	Vancouver			Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above
	ALS Environmental - Vancouver			100 mg/L is a negative interference on this test
Total Metals in Water by CRC ICPMS	E420	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental - Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental - Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L ALS Environmental -	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low	Vancouver E509-L	Water	APHA 3030B/EPA	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation
Level, LOR = 0.5 ppt)	ALS Environmental - Vancouver		1631E (mod)	using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental - Vancouver			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental - Vancouver			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	E541	Water	APHA 3500-Fe B/James Ball et al	This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample
	ALS Environmental - Vancouver		(1999)	filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters.
Dissolved Hardness (Calculated)	EC100	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	ALS Environmental - Vancouver			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a
				property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
lon Balance using Dissolved Metals	EC101	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	ALS Environmental - Vancouver			used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
	ALS Environmental - Vancouver			
Total Kjeldahl Nitrogen (Calculation)	EC318	Water	BC MOE LABORATORY	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].
	ALS Environmental - Vancouver		MANUAL (2005)	
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298	Water	Wethou Reference	Sample preparation for Preserved Nutrients Water Quality Analysis.
,	ALS Environmental -			
Parameter for Table Country Control to	Vancouver EP355	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Total Organic Carbon by Combustion		vvalei		Preparation for Total Organic Carbon by Combustion
	ALS Environmental -			
Preparation for Dissolved Organic Carbon for	Vancouver EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion	ALS Environmental -			
Digestion for Total Nitrogen in water	Vancouver EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	ALS Environmental - Vancouver			
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	ALS Environmental - Vancouver			
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	ALS Environmental -			
	Vancouver			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	ALS Environmental -			
	Vancouver			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHq".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
ĺ			B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver		(1000)	sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
	variouvei			method.
				memou.

ALS Canada Ltd.



QUALITY CONTROL REPORT

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Amendment :4

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 600 Comox Road Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received :18-Oct-2022 16:30

PO : 1200-25.03.02 Date Analysis Commenced : 21-Oct-2022

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 3
No. of samples analysed : 3

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Courtenay BC Canada V9N3P6

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department	
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
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Project : Surface Water MON8/9-With Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 708318)										
YL2201850-001	Anonymous	pH		E108	0.10	pH units	7.85	7.87	0.254%	4%	
Physical Tests (QC	Lot: 708319)										
YL2201850-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	113	112	0.623%	20%	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	113	112	0.623%	20%	
Physical Tests (QC	Lot: 708321)										
YL2201850-001	Anonymous	Conductivity		E100	2.0	μS/cm	16400	16100	1.60%	10%	
Physical Tests (QC	Lot: 708335)										
FJ2202956-001	PR3	Colour, true		E329	5.0	CU	6.4	6.5	0.1	Diff <2x LOR	
Physical Tests (QC	Lot: 708680)										
FJ2202956-002	MD	Conductivity		E100	2.0	μS/cm	424	421	0.710%	10%	
Physical Tests (QC	Lot: 708681)										
FJ2202956-002	MD	pH		E108	0.10	pH units	8.54	8.54	0.00%	4%	
Physical Tests (QC	Lot: 708682)										
FJ2202956-002	MD	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	188	188	0.00%	20%	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	15.6	15.2	2.60%	20%	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	203	203	0.197%	20%	
Physical Tests (QC	Lot: 708691)										
FJ2202956-002	MD	Colour, true		E329	5.0	CU	6.2	6.9	0.7	Diff <2x LOR	
Physical Tests (QC	Lot: 708828)										
FJ2202956-003	MD-FB	Conductivity		E100	2.0	μS/cm	<2.0	<2.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 708829)										
FJ2202956-003	MD-FB	pH		E108	0.10	pH units	5.58	5.40	3.28%	4%	
Physical Tests (QC	Lot: 708830)										
FJ2202956-003	MD-FB	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	

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Sub-Matrix: Water						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC	Lot: 708837)												
FJ2202956-003	MD-FB	Colour, true		E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR			
Physical Tests (QC	Lot: 709333)												
FJ2202956-001	PR3	Solids, total suspended [TSS]		E160	3.0	mg/L	6.6	6.2	0.4	Diff <2x LOR			
Physical Tests (QC	Lot: 709337)												
FJ2202956-001	PR3	Solids, total dissolved [TDS]		E162	13	mg/L	114	110	4	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708323)												
VA22C5356-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	<100 μg/L	<0.100	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708324)												
VA22C5356-001	Anonymous	Chloride	16887-00-6	E235.CI	2.50	mg/L	49900 μg/L	50.2	0.561%	20%			
Anions and Nutrien	ts (QC Lot: 708325)												
VA22C5356-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	21700 μg/L	21.8	0.711%	20%			
Anions and Nutrien	ts (QC Lot: 708326)												
VA22C5356-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	7.9 µg/L	0.0078	0.00006	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708327)												
VA22C5356-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	7060 μg/L	7.20	0.14	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708334)												
FJ2202956-001	PR3	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708385)												
FJ2202956-001	PR3	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.169	0.166	0.003	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708387)												
FJ2202956-001	PR3	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0146	0.0150	0.0004	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708392)												
FJ2202956-001	PR3	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0093	0.0091	0.0002	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 708683)												
VA22C4889-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	46.7	46.6	0.0663%	20%			
Anions and Nutrien	ts (QC Lot: 708684)												
VA22C4889-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0745	0.0845	12.6%	20%			
Anions and Nutrion	ts (QC Lot: 708685)												
VA22C4889-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0038	0.0034	0.0003	Diff <2x LOR			
Anions and Nutrice	ts (QC Lot: 708686)												
VA22C4889-002	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.096	0.096	0.0001	Diff <2x LOR			
	,			7				2.300					
VA22C4889-002	ts (QC Lot: 708687) Anonymous	Chloride	16887-00-6	E235.CI	0.50	mg/L	47.8	47.8	0.0420%	20%			
V 72204003-002	Allonymous	Chloride	10007-00-0	L200.01	0.50	my/L	47.0	47.0	0.042070	20 /0			

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Sub-Matrix: Water	p-Matrix: Water						Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrien	ts (QC Lot: 708690)										
FJ2202956-002	MD	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708831)										
FJ2202956-003	MD-FB	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	<0.30	<0.30	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708832)										
FJ2202956-003	MD-FB	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708833)										
FJ2202956-003	MD-FB	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708834)										
FJ2202956-003	MD-FB	Fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708835)										
FJ2202956-003	MD-FB	Chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 708836)										
FJ2202956-003	MD-FB	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 709303)										
FJ2202956-001	PR3	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 709306)										
FJ2202956-003	MD-FB	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	
Anions and Nutrion	ts (QC Lot: 709307)										
FJ2202956-003	MD-FB	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Anions and Nutrion	ts (QC Lot: 709308)										
FJ2202956-003	MD-FB	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0116	0.0110	0.0006	Diff <2x LOR	
Anions and Nutrion	ts (QC Lot: 712325)										
FJ2202956-001	PR3	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.16	4.16	0.002	Diff <2x LOR	
Organie / Inorganie	Carbon (QC Lot: 70839	, ,									
FJ2202956-001	PR3	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.83	3.13	0.30	Diff <2x LOR	
						<u> </u>					
FJ2202956-001	Carbon (QC Lot: 70930	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.77	3.62	0.15	Diff <2x LOR	
						9.=			0110		
FJ2202956-003	Carbon (QC Lot: 70930	Carbon, total organic [TOC]		E355-L	0.50	mg/L	1.27	1.08	0.19	Diff <2x LOR	
		Carbon, total organic [100]			3.55	9/ =			0.10	J ZA LOIN	
Total Metals (QC Lo	ot: 708233) Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.174	0.192	9.70%	20%	
1 L220 1000-00 1	Anonymous	,	7429-90-3	E420	0.0030	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Antimony, total				•					
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00026	0.00026	0.000002	Diff <2x LOR	

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ub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
otal Metals (QC Lo	ot: 708233) - continued										
/L2201853-001	Anonymous	Barium, total	7440-39-3	E420	0.00010	mg/L	0.00361	0.00394	8.53%	20%	
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.019	0.0008	Diff <2x LOR	
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	
		Calcium, total	7440-70-2	E420	0.050	mg/L	7.85	8.14	3.62%	20%	
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00053	0.00003	Diff <2x LOR	
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00199	0.00205	0.00006	Diff <2x LOR	
		Iron, total	7439-89-6	E420	0.010	mg/L	0.265	0.288	8.44%	20%	
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000071	0.000078	0.000006	Diff <2x LOR	
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0029	0.0030	0.0001	Diff <2x LOR	
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	6.21	6.01	3.39%	20%	
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0121	0.0134	9.85%	20%	
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000196	0.000204	0.000008	Diff <2x LOR	
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00087	0.00078	0.00009	Diff <2x LOR	
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Potassium, total	7440-09-7	E420	0.050	mg/L	2.06	2.05	0.283%	20%	
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00164	0.00164	0.000003	Diff <2x LOR	
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000056	0.000057	0.0000005	Diff <2x LOR	
		Silicon, total	7440-21-3	E420	0.10	mg/L	1.70	1.75	2.81%	20%	
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Sodium, total	7440-23-5	E420	0.050	mg/L	28.4	29.7	4.67%	20%	
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.0382	0.0371	2.85%	20%	
		Sulfur, total	7704-34-9	E420	0.50	mg/L	1.02	0.83	0.19	Diff <2x LOR	
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00543	0.00649	17.9%	20%	
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000045	0.000049	0.000004	Diff <2x LOR	
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	

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Sub-Matrix: Water	-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Total Metals (QC Lo	ot: 708233) - continue	d										
YL2201853-001	Anonymous	Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR		
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR		
Total Metals (QC Lo	ot: 712785)											
CG2214494-007	Anonymous	Mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR		
Dissolved Metals (C	QC Lot: 708361)											
-J2202956-001	PR3	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0044	0.0045	0.0002	Diff <2x LOR		
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00021	0.00016	0.00005	Diff <2x LOR		
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0304	0.0308	1.31%	20%		
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR		
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR		
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR		
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000056	0.0000087	0.0000031	Diff <2x LOR		
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	26.5	26.6	0.368%	20%		
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR		
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00059	0.00058	0.000006	Diff <2x LOR		
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR		
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR		
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0011	0.0011	0.00001	Diff <2x LOR		
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.83	5.84	0.141%	20%		
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00044	0.00044	0.000004	Diff <2x LOR		
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000725	0.000770	6.01%	20%		
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00065	0.00065	0.000003	Diff <2x LOR		
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR		
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.420	0.419	0.0008	Diff <2x LOR		
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00033	0.00030	0.00002	Diff <2x LOR		
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000283	0.000252	0.000030	Diff <2x LOR		
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.93	1.91	1.12%	20%		
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR		
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.06	1.05	0.806%	20%		
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.103	0.102	0.385%	20%		
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.23	4.09	0.14	Diff <2x LOR		

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ub-Matrix: Water					Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Dissolved Metals (QC Lot: 708361) - cor	ntinued										
FJ2202956-001	PR3	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR		
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR		
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR		
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR		
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000424	0.000423	0.141%	20%		
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR		
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR		
Dissolved Metals (QC Lot: 713015)											
FJ2202949-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	2.12	2.73	0.60	Diff <2x LOR		
Speciated Metals (QC Lot: 726346)											
FJ2202949-001	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	0.000000074 mg/L	0.000095	0.000021	Diff <2x LOR		
Speciated Metals (QC Lot: 730526)											
FJ2202949-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000000125 mg/L	0.000149	17.0%	30%		
Speciated Metals(QC Lot: 756854)											
FJ2202949-001	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	0.046	0.046	0.0002	Diff <2x LOR		

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 708319)						
Alkalinity, bicarbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)		E290	1	mg/L	<1.0	
Physical Tests (QCLot: 708321)						
Conductivity		E100	1	μS/cm	1.1	
Physical Tests (QCLot: 708335)						
Colour, true		E329	5	CU	<5.0	
Physical Tests (QCLot: 708680)						
Conductivity		E100	1	μS/cm	1.1	
Physical Tests (QCLot: 708682)						
Alkalinity, bicarbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)		E290	1	mg/L	<1.0	
Physical Tests (QCLot: 708691)						
Colour, true		E329	5	CU	<5.0	
Physical Tests (QCLot: 708828)						
Conductivity		E100	1	μS/cm	1.1	
Physical Tests (QCLot: 708830)						
Alkalinity, bicarbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)		E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)		E290	1	mg/L	<1.0	
Physical Tests (QCLot: 708837)						
Colour, true		E329	5	CU	<5.0	
Physical Tests (QCLot: 709333)						
Solids, total suspended [TSS]		E160	3	mg/L	<3.0	
Physical Tests (QCLot: 709337)						
Solids, total dissolved [TDS]		E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 708323)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	

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Anions and Nutrients (QCLot: 708832)

Anions and Nutrients (QCLot: 708833)

Anions and Nutrients (QCLot: 708834)

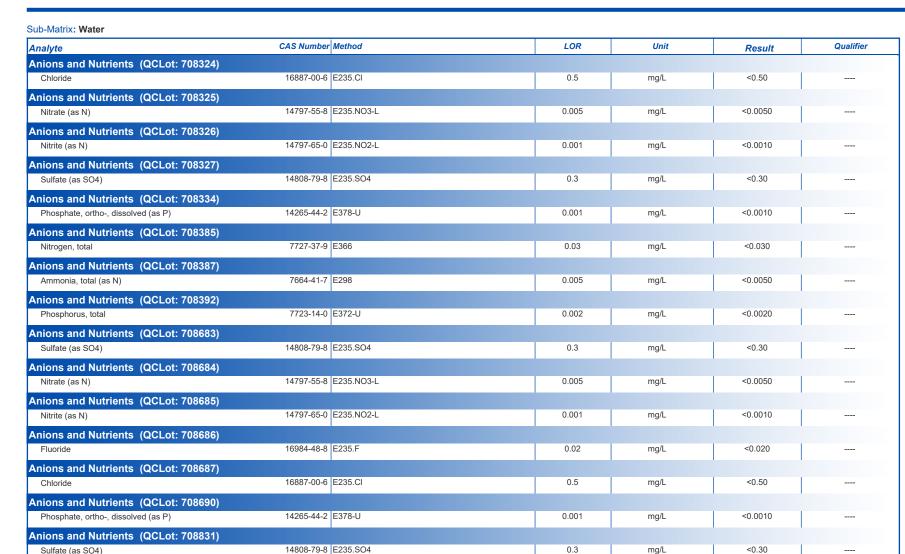
Nitrate (as N)

Nitrite (as N)

Fluoride

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



0.005

0.001

0.02

mg/L

mg/L

mg/L

< 0.0050

< 0.0010

< 0.020

14797-55-8 E235.NO3-L

14797-65-0 E235.NO2-L

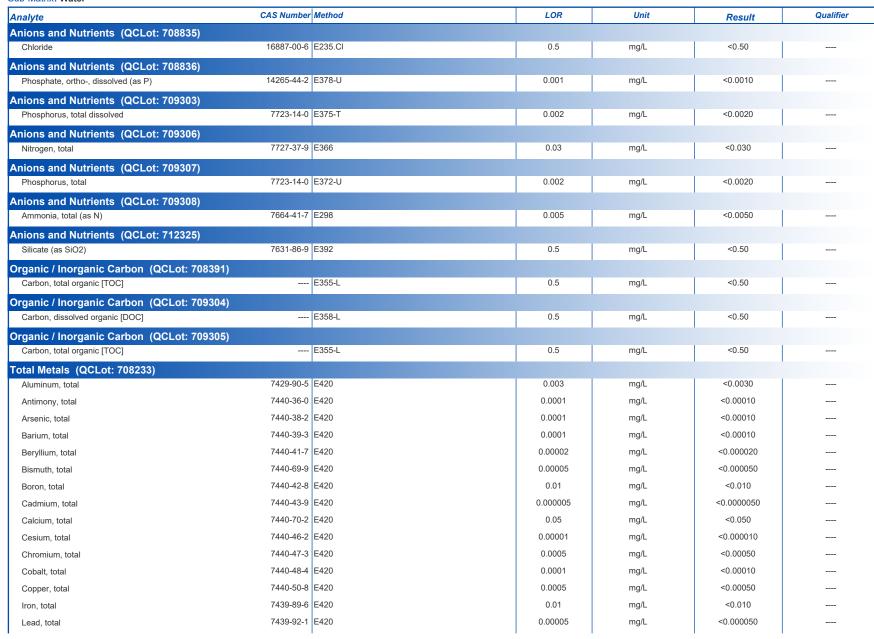
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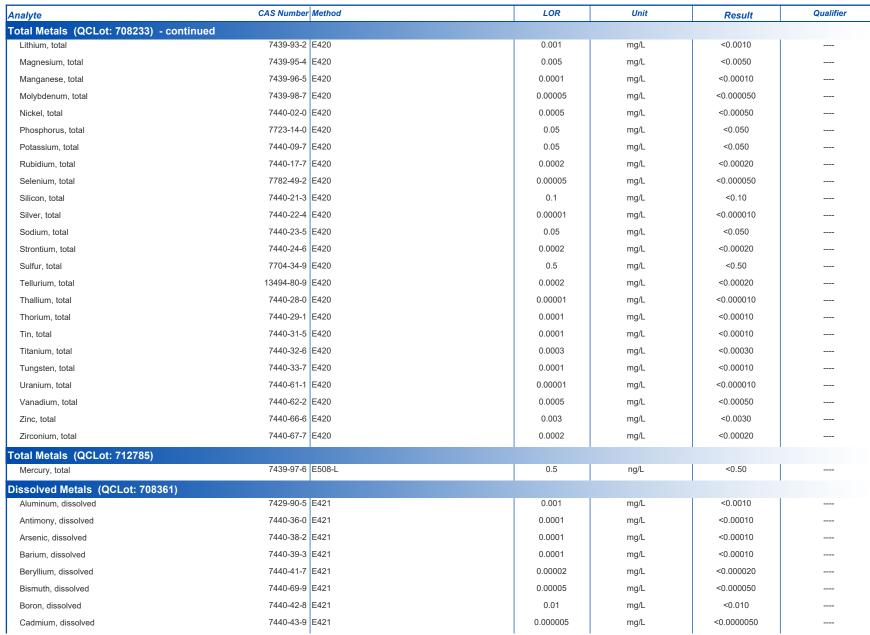




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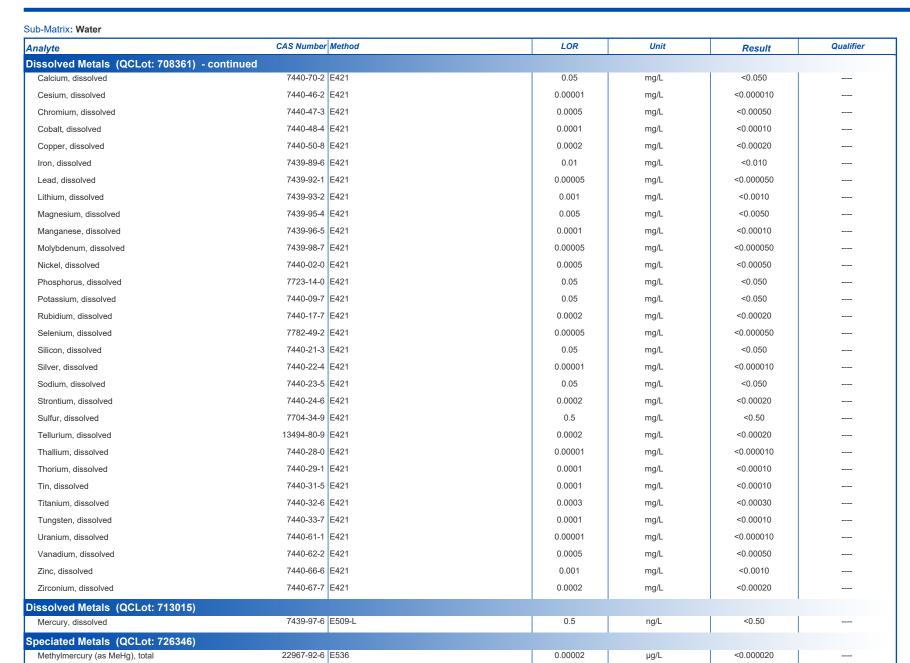






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Project : Surface Water MON8/9-With Metals

Sub-Matrix: Water





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Project : Surface Water MON8/9-With Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 708318)								
рН	E108		pH units	7 pH units	99.8	98.0	102	
Physical Tests (QCLot: 708319)								
Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	107	85.0	115	
Physical Tests (QCLot: 708321)								
Conductivity	E100	1	μS/cm	146.9 μS/cm	98.5	90.0	110	
Physical Tests (QCLot: 708335)								
Colour, true	E329	5	CU	100 CU	101	85.0	115	
Physical Tests (QCLot: 708680)								
Conductivity	E100	1	μS/cm	146.9 μS/cm	99.6	90.0	110	
Physical Tests (QCLot: 708681)								
pH	E108		pH units	7 pH units	99.8	98.0	102	
Physical Tests (QCLot: 708682)								
Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	107	85.0	115	
Physical Tests (QCLot: 708691)						0.5.0		1
Colour, true	E329	5	CU	100 CU	102	85.0	115	
Physical Tests (QCLot: 708828)	15400					00.0	440	
Conductivity	E100	1	μS/cm	146.9 μS/cm	100	90.0	110	
Physical Tests (QCLot: 708829)	E108		m I I somite			00.0	400	ı
рН	E108		pH units	7 pH units	99.7	98.0	102	
Physical Tests (QCLot: 708830) Alkalinity, total (as CaCO3)	E290	1	ma/l	500 ··· ·· //	400	85.0	115	
	2290	'	mg/L	500 mg/L	106	65.0	115	
Physical Tests (QCLot: 708837) Colour, true	E329	5	CU	100 CU	101	85.0	115	
·	2329	3		100 CO	101	65.0	113	
Physical Tests (QCLot: 709333) Solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	87.0	85.0	115	
	2100	3	mg/L	150 Hig/L	87.0	00.0	110	
Physical Tests (QCLot: 709337) Solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	101	85.0	115	
Condo, total alborrou [1DO]	2102	10	9, _	1000 Hig/L	101	55.5	110	
Anione and Nutrients (OCL et 709222)								
Anions and Nutrients (QCLot: 708323) Fluoride	16984-48-8 E235.F	0.02	mg/L	1 mg/L	101	90.0	110	
			<u> </u>	g/ 2				
Anions and Nutrients (QCLot: 708324) Chloride	16887-00-6 E235.CI	0.5	mg/L	100 mg/L	102	90.0	110	
<u> </u>	1220.0.	0.0		100 Hig/L	102		1	l

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Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 708325) Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	
			···g-	2.0 mg/L	102			
Anions and Nutrients (QCLot: 708326) Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 708327) Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	
Anions and Nutrients (QCLot: 708334) Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	
Anions and Nutrients (QCLot: 708385) Nitrogen, total	7727-37-9 E366	0.03	mg/L	0.5 mg/L	101	75.0	125	
Anions and Nutrients (QCLot: 708387) Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	0.2 mg/L	99.7	85.0	115	
Anions and Nutrients (QCLot: 708392) Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	0.05 mg/L	93.3	80.0	120	
Anions and Nutrients (QCLot: 708683) Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	
Anions and Nutrients (QCLot: 708684) Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 708685) Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 708686) Fluoride	16984-48-8 E235.F	0.02	mg/L	1 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 708687) Chloride	16887-00-6 E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 708690) Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	0.03 mg/L	100	80.0	120	
Anions and Nutrients (QCLot: 708831) Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	
Anions and Nutrients (QCLot: 708832) Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 708833) Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110	
Anions and Nutrients (QCLot: 708834) Fluoride	16984-48-8 E235.F	0.02	mg/L	1 mg/L	98.7	90.0	110	
Anions and Nutrients (QCLot: 708835) Chloride	16887-00-6 E235.CI	0.5	mg/L	100 mg/L	99.3	90.0	110	

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Work Order: FJ2202956 Amendment 4
Client: Ecofish Research Ltd



Spike Recovery (No) Reco	Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
Anions and Nutrients (QCLot: 70836)						Spike	Recovery (%)	Recovery	Limits (%)	
Properties (Pin- desiro-de (eP 14,056+42 275-U 0.001 mp\) 0.05 mp\ 0.05 mp\ 20 0.00 120	Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Properties (Pin- desiro-de (eP 14,056+42 275-U 0.001 mp\) 0.05 mp\ 0.05 mp\ 20 0.00 120	Anions and Nutrients (QCLot: 708836)									
Procession Service 1973 10 1975 10 100 10 10 10 10 10		14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.2	80.0	120	
Procession Service 1973 10 1975 10 100 10 10 10 10 10	Anions and Nutrients (QCLot: 709303)									
Narogen, Intell 7727-574 288 0.03 mg/L 0.5 mg/L 97.0 78.0 125		7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	92.1	80.0	120	
Narogen, Intell 7727-574 288 0.03 mg/L 0.5 mg/L 97.0 78.0 125	Anions and Nutrients (QCLot: 709306)									
Phosphorus, total 7723-14-0 [372-14	· · · · · · · · · · · · · · · · · · ·	7727-37-9	E366	0.03	mg/L	0.5 mg/L	97.0	75.0	125	
Phosphorus, total 7723-14-0 [372-14	Anions and Nutrients (QCLot: 709307)									
Ammonia full (last N) 7684-41-7 E298 0.005 mg/L 0.2 mg/L 103 85.0 115 m-		7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	92.0	80.0	120	
Ammonia full (last N) 7684-41-7 E298 0.005 mg/L 0.2 mg/L 103 85.0 115 m-	Anions and Nutrients (QCI of: 709308)									
Silicate (as SiO2)		7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	
Silicate (as SiO2)	Anions and Nutrients (OCI of: 712325)									
Organic Carbon (QCLot: 708391) Garbon, Idea organic [TOC] — E355-L 0.5 mg/L 8.57 mg/L 101 80.0 120 — Organic / Inorganic Carbon (QCLot: 709304) Carbon, dissolved organic [DOC] — E355-L 0.5 mg/L 8.57 mg/L 95.9 80.0 120 — Organic / Inorganic Carbon (QCLot: 709305) Carbon, Iotal organic [TOC] — E355-L 0.5 mg/L 8.57 mg/L 102 80.0 120 — Total Metals (QCLot: 708233) Antimony, Iotal 7449-96-5 E420 0.003 mg/L 1 mg/L 104 80.0 120 — Antimony, Iotal 7449-96-2 E420 0.0001 mg/L 1 mg/L 104 80.0 120 — Assaring (ball) 7449-98-2 E420 0.0001 mg/L 1 mg/L 104 80.0 120 — Assaring (ball) 7449-98-9		7631-86-9	E392	0.5	mg/L	10 mg/L	104	85.0	115	
Carbon, total organic TOC Sa55-L	,				Ū	. 0				
Carbon, total organic TOC Sa55-L	Organia / Ingraggia Carbon (OCI et. 709204)									
Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dissolved organic DOC Carbon, dotal organic TOC Carbon, dotal	<u> </u>		E355-L	0.5	mg/L	8 57 mg/l	101	80.0	120	
Carbon, dissolved organic [DOC] E388-L 0.5 mg/L 8.57 mg/L 95.9 80.0 120						0.07 1119/2	.01			
Organic Carbon (QCLot: 709305) Carbon, total organic [TOC] E355-L 0.5 mg/L 8.57 mg/L 102 80.0 120			F358-I	0.5	ma/l	8 57 mg/l	05.0	80.0	120	
Carbon, total organic [TOC]			2000 E	0.0	mg/L	0.57 Hig/L	90.9	00.0	120	
Total Metals (QCLot: 708233) Aluminum, total 7429-90.5 E420 0.003 mg/L 2 mg/L 103 80.0 120 Aluminum, total 7440-36-0 E420 0.0001 mg/L 1 mg/L 104 80.0 120 Arsenic, total 7440-38-2 E420 0.0001 mg/L 1 mg/L 104 80.0 120 Barium, total 7440-39-3 E420 0.0001 mg/L 0.25 mg/L 99.6 80.0 120 Barium, total 7440-41-7 E420 0.00002 mg/L 0.1 mg/L 99.5 80.0 120 Bismuth, total 7440-49-9 E420 0.00005 mg/L 1 mg/L 107 80.0 120 Boron, total 7440-42-8 E420 0.00005 mg/L 1 mg/L 93.8 80.0 120 Cadmium, total 7440-43-9 E420 0.00005 mg/L 0.1 mg/L 102 80.0 120 Calcium, total 7440-40-2 E420 0.05 mg/L 50 mg/L 103 80.0 120 Calcium, total 7440-46-2 E420 0.005 mg/L 0.05 mg/L 103 80.0 120 Cesium, total 7440-46-2 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Cobalt, total 7440-48-4 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Cobalt, total 7440-48-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-48-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-89-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-89-8 E420 0.0005 mg/L 0.25 mg/L 98.0 80.0 120 Copper, total 7440-89-8 E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7440-89-8 E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 1	· · · · · · · · · · · · · · · · · · ·		E255 I	0.5	ma/l	0.57 //	400	90.0	120	
Aluminum, total 7429-05 E420 0.003 mg/L 2 mg/L 103 80.0 120	Carbon, total organic [100]		E333-L	0.5	IIIg/L	8.57 mg/L	102	80.0	120	
Aluminum, total 7429-05 E420 0.003 mg/L 2 mg/L 103 80.0 120										
Antimony, total 7440-36-0		7420 00 5	E420	0.003	ma/l	0 //	400	90.0	120	
Arsenic, total 7440-38-2 E420 0.0001 mg/L 1 mg/L 104 80.0 120					_	, and the second				
Barium, total 7440-39-3					_	_				
Beryllium, total 7440-41-7 E420 0.00002 mg/L 0.1 mg/L 99.5 80.0 120 Bismuth, total 7440-69-9 E420 0.00005 mg/L 1 mg/L 107 80.0 120 Boron, total 7440-42-8 E420 0.01 mg/L 1 mg/L 93.8 80.0 120 Cadmium, total 7440-43-9 E420 0.00005 mg/L 0.1 mg/L 102 80.0 120 Calcium, total 7440-70-2 E420 0.05 mg/L 50 mg/L 103 80.0 120 Cesium, total 7440-46-2 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48- E420 0.0005 mg/L 0.25 mg/L 97.6 80.0 120 Cobalt, total 7440-48- E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-48- E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-89- E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Copper, total 7440-89- E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.25 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 7439-89- E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120					_	_				
Bismuth, total 7440-69-9 E420 0.00005 mg/L 1 mg/L 107 80.0 120 Boron, total 7440-42-8 E420 0.01 mg/L 1 mg/L 93.8 80.0 120 Cadmium, total 7440-43-9 E420 0.00005 mg/L 0.1 mg/L 102 80.0 120 Calcium, total 7440-40-2 E420 0.05 mg/L 50 mg/L 97.6 80.0 120 Cesium, total 7440-47-3 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 97.6 80.0 120 Cobalt, total 7440-48-4 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-89-6 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Copper, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120 Copper, total 7439-89-6 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120						, and the second second				
Boron, total 7440-42-8 E420 0.01 mg/L 1 mg/L 93.8 80.0 120 Cadmium, total 7440-43-9 E420 0.00005 mg/L 0.1 mg/L 102 80.0 120 Calcium, total 7440-70-2 E420 0.05 mg/L 50 mg/L 103 80.0 120 Cesium, total 7440-46-2 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-48-4 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Lead, total 7439-89-6 E420 0.01 mg/L 1 mg/L 1 mg/L 107 80.0 120					_	_				
Cadmium, total 7440-43-9 E420 0.00005 mg/L 0.1 mg/L 102 80.0 120 Calcium, total 7440-70-2 E420 0.05 mg/L 50 mg/L 103 80.0 120 Cesium, total 7440-46-2 E420 0.00001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Lead, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 7439-92-1 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120					_	, and the second				
Calcium, total 7440-70-2 E420 0.05 mg/L 50 mg/L 103 80.0 120 Cesium, total 7440-46-2 E420 0.00001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 98.8 80.0 120 Lead, total 7439-89-6 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Lead, total 7439-92-1 E420 0.0005 mg/L 0.55 mg/L 99.4 80.0 120 Copper, total 1 mg/L 1 mg/L 107 80.0 120 Sometime total 103 80.0 120	Boron, total				mg/L	1 mg/L	93.8			
Cesium, total 7440-46-2 E420 0.0001 mg/L 0.05 mg/L 97.6 80.0 120 Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Iron, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 7439-92-1 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120	Cadmium, total				mg/L	0.1 mg/L	102			
Chromium, total 7440-47-3 E420 0.0005 mg/L 0.25 mg/L 102 80.0 120 Cobalt, total 7440-48-4 E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Iron, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 7439-92-1 E420 0.0005 mg/L 0.5 mg/L 99.4 80.0 120	Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	
Cobalt, total 7440-48-4 E420 0.0001 mg/L 0.25 mg/L 98.8 80.0 120 Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Iron, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 7439-92-1 E420 0.00005 mg/L 0.5 mg/L 99.4 80.0 120	Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.6	80.0	120	
Copper, total 7440-50-8 E420 0.0005 mg/L 0.25 mg/L 96.0 80.0 120 Iron, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 99.4 80.0 120	Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	
Iron, total 7439-89-6 E420 0.01 mg/L 1 mg/L 107 80.0 120 Lead, total 7439-92-1 E420 0.00005 mg/L 0.5 mg/L 99.4 80.0 120	Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.8	80.0	120	
Lead, total 7439-92-1 E420 0.00005 mg/L 0.5 mg/L 99.4 80.0 120	Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.0	80.0	120	
	Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	107	80.0	120	
Lithium, total 7439-93-2 E420 0.001 mg/L 0.25 mg/L 90.8 80.0 120	Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	
	Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	90.8	80.0	120	

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Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 708233) - conti	nued								
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.8	80.0	120	
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	95.2	80.0	120	
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.2	80.0	120	
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	116	80.0	120	
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	104	80.0	120	
Fellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.8	80.0	120	
Fhallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	
horium, total	7440-29-1		0.0001	mg/L	0.1 mg/L	97.1	80.0	120	
Fin, total	7440-31-5		0.0001	mg/L	0.5 mg/L	101	80.0	120	
Fitanium, total	7440-32-6		0.0003	mg/L	0.25 mg/L	94.2	80.0	120	
Fungsten, total	7440-33-7		0.0001	mg/L	0.1 mg/L	101	80.0	120	
Jranium, total	7440-61-1		0.00001	mg/L	0.1 mg/L 0.005 mg/L	105	80.0	120	
Vanadium, total	7440-62-2		0.0005	mg/L	0.5 mg/L	104	80.0	120	
,	7440-66-6		0.003	mg/L	_		80.0	120	
Zinc, total	7440-60-6		0.0002		0.5 mg/L	94.5	80.0	120	
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	60.0	120	
Total Metals (QCLot: 712785)		lesso.						400	
Mercury, total	7439-97-6	E5U8-L	0.5	ng/L	5 ng/L	112	80.0	120	
Dissolved Metals (QCLot: 708361)									
Aluminum, dissolved	7429-90-5		0.001	mg/L	2 mg/L	101	80.0	120	
Antimony, dissolved	7440-36-0		0.0001	mg/L	1 mg/L	104	80.0	120	
Arsenic, dissolved	7440-38-2		0.0001	mg/L	1 mg/L	106	80.0	120	
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.8	80.0	120	
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	106	80.0	120	
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	

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Client: Ecofish Research Ltd



Sub-Matrix: Water				Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Meth	hod	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Dissolved Metals (QCLot: 708361) - con	ntinued								
Cesium, dissolved	7440-46-2 E42	1 (0.00001	mg/L	0.05 mg/L	103	80.0	120	
Chromium, dissolved	7440-47-3 E42 ⁻	1	0.0005	mg/L	0.25 mg/L	100	80.0	120	
Cobalt, dissolved	7440-48-4 E42°	1	0.0001	mg/L	0.25 mg/L	102	80.0	120	
Copper, dissolved	7440-50-8 E42°	1	0.0002	mg/L	0.25 mg/L	100	80.0	120	
Iron, dissolved	7439-89-6 E42°	1	0.01	mg/L	1 mg/L	102	80.0	120	
Lead, dissolved	7439-92-1 E42°	1	0.00005	mg/L	0.5 mg/L	102	80.0	120	
Lithium, dissolved	7439-93-2 E42°	1	0.001	mg/L	0.25 mg/L	103	80.0	120	
Magnesium, dissolved	7439-95-4 E42°	1	0.005	mg/L	50 mg/L	105	80.0	120	
Manganese, dissolved	7439-96-5 E42°	1	0.0001	mg/L	0.25 mg/L	105	80.0	120	
Molybdenum, dissolved	7439-98-7 E42 ⁻	1	0.00005	mg/L	0.25 mg/L	104	80.0	120	
Nickel, dissolved	7440-02-0 E42 ⁻	1	0.0005	mg/L	0.5 mg/L	102	80.0	120	
Phosphorus, dissolved	7723-14-0 E42 ⁻	1	0.05	mg/L	10 mg/L	99.1	80.0	120	
Potassium, dissolved	7440-09-7 E42 ⁻	1	0.05	mg/L	50 mg/L	104	80.0	120	
Rubidium, dissolved	7440-17-7 E42 ⁻	1	0.0002	mg/L	0.1 mg/L	97.8	80.0	120	
Selenium, dissolved	7782-49-2 E42 ⁻	1	0.00005	mg/L	1 mg/L	107	80.0	120	
Silicon, dissolved	7440-21-3 E42 ⁻	1	0.05	mg/L	10 mg/L	108	80.0	120	
Silver, dissolved	7440-22-4 E42 ⁻	1	0.00001	mg/L	0.1 mg/L	98.3	80.0	120	
Sodium, dissolved	7440-23-5 E42°	1	0.05	mg/L	50 mg/L	105	80.0	120	
Strontium, dissolved	7440-24-6 E42 ⁻	1	0.0002	mg/L	0.25 mg/L	105	80.0	120	
Sulfur, dissolved	7704-34-9 E42 ⁻	1	0.5	mg/L	50 mg/L	96.4	80.0	120	
Tellurium, dissolved	13494-80-9 E42°	1	0.0002	mg/L	0.1 mg/L	97.8	80.0	120	
Thallium, dissolved	7440-28-0 E42 ⁻	1	0.00001	mg/L	1 mg/L	103	80.0	120	
Thorium, dissolved	7440-29-1 E42 ⁻	1	0.0001	mg/L	0.1 mg/L	97.4	80.0	120	
Tin, dissolved	7440-31-5 E42°	1	0.0001	mg/L	0.5 mg/L	101	80.0	120	
Titanium, dissolved	7440-32-6 E42 ⁻	1	0.0003	mg/L	0.25 mg/L	100	80.0	120	
Tungsten, dissolved	7440-33-7 E42 ⁻	1	0.0001	mg/L	0.1 mg/L	103	80.0	120	
Uranium, dissolved	7440-61-1 E42°	1	0.00001	mg/L	0.005 mg/L	104	80.0	120	
Vanadium, dissolved	7440-62-2 E42 ⁻	1	0.0005	mg/L	0.5 mg/L	104	80.0	120	
Zinc, dissolved	7440-66-6 E42	1	0.001	mg/L	0.5 mg/L	105	80.0	120	
Zirconium, dissolved	7440-67-7 E42	1	0.0002	mg/L	0.1 mg/L	99.0	80.0	120	
Mercury, dissolved	7439-97-6 E509	9-L	0.5	ng/L	5 ng/L	102	80.0	120	
Speciated Metals (QCLot: 726346)									1
Methylmercury (as MeHg), total	22967-92-6 E536	6	0.00002	μg/L	0.0025 μg/L	85.7	70.0	130	
Speciated Metals (QCLot: 730526)									1
opeciated Metals (QCLOL, 730320)	22967-92-6 E533		0.00002	μg/L	0.0025 μg/L	79.4	70.0	130	I

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Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
					Recovery (%	Recove	Recovery Limits (%)				
Analyte	CAS Number Meth	lod LO	R Unit	Concentr	ation LCS	Low	High	Qualifier			
Speciated Metals (QCLot: 756854) - contin	nued										
Iron, ferrous [Fe II], dissolved	15438-31-0 E541	0.0	2 mg/L	0.5 mg/	L 103	80.0	120				

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Work Order: FJ2202956 Amendment 4
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report						
					Spike		Recovery (%)	Recovery Limits (%)			
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
Anions and Nutri	ents (QCLot: 708323)										
YL2201843-001	Anonymous	Fluoride	16984-48-8	E235.F	20.4 mg/L	20 mg/L	102	75.0	125		
Anions and Nutri	ents (QCLot: 708324)										
YL2201843-001	Anonymous	Chloride	16887-00-6	E235.CI	2050 mg/L	2000 mg/L	103	75.0	125		
Anions and Nutri	ents (QCLot: 708325)										
YL2201843-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	51.4 mg/L	50 mg/L	103	75.0	125		
Anions and Nutri	ents (QCLot: 708326)										
YL2201843-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	9.91 mg/L	10 mg/L	99.1	75.0	125		
Anions and Nutri	ents (QCLot: 708327)										
YL2201843-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	2040 mg/L	2000 mg/L	102	75.0	125		
Anions and Nutri	ents (QCLot: 708334)										
VA22C5356-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	0.03 mg/L	ND	70.0	130		
Anions and Nutri	ents (QCLot: 708385)										
FJ2202956-002	MD	Nitrogen, total	7727-37-9	E366	0.400 mg/L	0.4 mg/L	100	70.0	130		
Anions and Nutri	ents (QCLot: 708387)										
FJ2202956-002	MD	Ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125		
Anions and Nutri	ents (QCLot: 708392)										
FJ2202956-002	MD	Phosphorus, total	7723-14-0	E372-U	0.0500 mg/L	0.05 mg/L	100	70.0	130		
Anions and Nutri	ents (QCLot: 708683)										
VA22C4889-003	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125		
Anions and Nutri	ents (QCLot: 708684)										
VA22C4889-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125		
Anions and Nutri	ents (QCLot: 708685)										
VA22C4889-003	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.506 mg/L	0.5 mg/L	101	75.0	125		
Anions and Nutri	ents (QCLot: 708686)										
VA22C4889-003	Anonymous	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125		
Anions and Nutri	ents (QCLot: 708687)										
VA22C4889-003	Anonymous	Chloride	16887-00-6	E235.CI	105 mg/L	100 mg/L	105	75.0	125		

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Sub-Matrix: Water			Matrix Spike (MS) Report							
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ents (QCLot: 708832)									
VA22C4152-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	107	75.0	125	
Anions and Nutri	ents (QCLot: 708833)									
VA22C4152-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 708836)									
VA22C4152-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0290 mg/L	0.03 mg/L	96.5	70.0	130	
Anions and Nutri	ents (QCLot: 709303)									
FJ2202956-002	MD	Phosphorus, total dissolved	7723-14-0	E375-T	0.0492 mg/L	0.05 mg/L	98.3	70.0	130	
Anions and Nutri	ents (QCLot: 709307)									1
WR2201327-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0499 mg/L	0.05 mg/L	99.9	70.0	130	
Anions and Nutri	ents (QCLot: 709308)									
WR2201327-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	
Anions and Nutri	ents (QCLot: 712325)									
FJ2202956-002	MD	Silicate (as SiO2)	7631-86-9	E392	10.4 mg/L	10 mg/L	104	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 708	391)								
FJ2202956-002	MD	Carbon, total organic [TOC]		E355-L	5.56 mg/L	5 mg/L	111	70.0	130	
Organic / Inorgan	ic Carbon (QCLot: 709	304)								
FJ2202956-002	MD	Carbon, dissolved organic [DOC]		E358-L	4.54 mg/L	5 mg/L	90.9	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 709	305)								
WR2201327-001	Anonymous	Carbon, total organic [TOC]		E355-L	4.55 mg/L	5 mg/L	91.0	70.0	130	
Total Metals (QC	Lot: 708233)									
FJ2202956-002	MD	Aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.4	70.0	130	
		Antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	
		Arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, total	7440-41-7	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	
	Bismuth, total	7440-69-9	E420	0.00891 mg/L	0.01 mg/L	89.1	70.0	130		
		Boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	96.3	70.0	130	
		Cadmium, total	7440-43-9	E420	0.00404 mg/L	0.004 mg/L	101	70.0	130	
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, total	7440-46-2	E420	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	
		Chromium, total	7440-47-3	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	
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Work Order: FJ2202956 Amendment 4
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spi	ke (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
otal Metals (QC	Lot: 708233) - contin	ued								
FJ2202956-002	MD	Copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	
		Iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.0	70.0	130	
		Lead, total	7439-92-1	E420	0.0183 mg/L	0.02 mg/L	91.3	70.0	130	
		Lithium, total	7439-93-2	E420	0.0935 mg/L	0.1 mg/L	93.5	70.0	130	
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Molybdenum, total	7439-98-7	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	
		Nickel, total	7440-02-0	E420	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	
		Phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	70.0	130	
		Potassium, total	7440-09-7	E420	3.88 mg/L	4 mg/L	96.9	70.0	130	
		Rubidium, total	7440-17-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	
		Selenium, total	7782-49-2	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	
		Silicon, total	7440-21-3	E420	9.62 mg/L	10 mg/L	96.2	70.0	130	
		Silver, total	7440-22-4	E420	0.00405 mg/L	0.004 mg/L	101	70.0	130	
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Sulfur, total	7704-34-9	E420	22.3 mg/L	20 mg/L	111	70.0	130	
		Tellurium, total	13494-80-9	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	
		Thallium, total	7440-28-0	E420	0.00368 mg/L	0.004 mg/L	92.0	70.0	130	
		Thorium, total	7440-29-1	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	
		Tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	
		Titanium, total	7440-32-6	E420	0.0381 mg/L	0.04 mg/L	95.2	70.0	130	
		Tungsten, total	7440-33-7	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	
		Uranium, total	7440-61-1	E420	0.00388 mg/L	0.004 mg/L	97.1	70.0	130	
		Vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	
		Zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.8	70.0	130	
		Zirconium, total	7440-67-7	E420	0.0434 mg/L	0.04 mg/L	108	70.0	130	
otal Metals (QC	Lot: 712785)									
CG2214545-001	Anonymous	Mercury, total	7439-97-6	E508-L	6.41 ng/L	5 ng/L	128	70.0	130	
	(QCLot: 708361)									
FJ2202956-002	MD	Aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	97.9	70.0	130	
		Antimony, dissolved	7440-36-0	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
	1	Beryllium, dissolved	7440-41-7	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	

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Client: Ecofish Research Ltd



Sub-Matrix: Water						Matrix Spike (MS) Report							
					Spi	ke	Recovery (%)	Recovery	Limits (%)				
Laboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifie			
	(QCLot: 708361) -	continued											
J2202956-002	MD	Bismuth, dissolved	7440-69-9	E421	0.00925 mg/L	0.01 mg/L	92.5	70.0	130				
		Boron, dissolved	7440-42-8	E421	0.089 mg/L	0.1 mg/L	88.7	70.0	130				
		Cadmium, dissolved	7440-43-9	E421	0.00412 mg/L	0.004 mg/L	103	70.0	130				
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130				
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130				
		Chromium, dissolved	7440-47-3	E421	0.0386 mg/L	0.04 mg/L	96.5	70.0	130				
		Cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130				
		Copper, dissolved	7440-50-8	E421	0.0187 mg/L	0.02 mg/L	93.5	70.0	130				
		Iron, dissolved	7439-89-6	E421	1.98 mg/L	2 mg/L	98.8	70.0	130				
		Lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130				
		Lithium, dissolved	7439-93-2	E421	0.0982 mg/L	0.1 mg/L	98.2	70.0	130				
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130				
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130				
		Molybdenum, dissolved	7439-98-7	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130				
		Nickel, dissolved	7440-02-0	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130				
		Phosphorus, dissolved	7723-14-0	E421	9.98 mg/L	10 mg/L	99.8	70.0	130				
		Potassium, dissolved	7440-09-7	E421	3.91 mg/L	4 mg/L	97.8	70.0	130				
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.0	70.0	130				
		Selenium, dissolved	7782-49-2	E421	0.0446 mg/L	0.04 mg/L	111	70.0	130				
		Silicon, dissolved	7440-21-3	E421	9.61 mg/L	10 mg/L	96.1	70.0	130				
		Silver, dissolved	7440-22-4	E421	0.00427 mg/L	0.004 mg/L	107	70.0	130				
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130				
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130				
		Sulfur, dissolved	7704-34-9	E421	20.3 mg/L	20 mg/L	101	70.0	130				
		Tellurium, dissolved	13494-80-9	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130				
		Thallium, dissolved	7440-28-0	E421	0.00392 mg/L	0.004 mg/L	97.9	70.0	130				
		Thorium, dissolved	7440-29-1	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130				
		Tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130				
		Titanium, dissolved	7440-32-6	E421	0.0386 mg/L	0.04 mg/L	96.4	70.0	130				
		Tungsten, dissolved	7440-33-7	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130				
		Uranium, dissolved	7440-61-1	E421	0.00403 mg/L	0.004 mg/L	101	70.0	130				
		Vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130				
		Zinc, dissolved	7440-66-6	E421	0.402 mg/L	0.4 mg/L	101	70.0	130				
		Zirconium, dissolved	7440-67-7	E421	0.0414 mg/L	0.04 mg/L	104	70.0	130				

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Work Order: FJ2202956 Amendment 4
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 713015) - cont	inued								
FJ2202949-002	Anonymous	Mercury, dissolved	7439-97-6	E509-L	5.55 ng/L	5 ng/L	111	70.0	130	
Speciated Metals	(QCLot: 726346)									
FJ2202949-002	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00186 μg/L	0.0025 μg/L	74.6	60.0	140	
Speciated Metals	(QCLot: 730526)									
FJ2202949-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00417 μg/L	0.0025 μg/L	83.5	60.0	140	
Speciated Metals	(QCLot: 756854)									
FJ2202949-002	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.355 mg/L	0.5 mg/L	71.1	70.0	130	

Chain of Custody (COC) / Analytical Request Form

coc Number: 2022-Oct-MON8/9- Day 4

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Report To	Contact and company name below will appear on the final report	on the final report			Reports / Recipients			Tur	around	Time (T,	Turnaround Time (TAT) Requested	ested		115					_
Company:	Ecofish Research Ltd.		Select Report Format:	ormat: JPDF	S EXCEL S EDG	FDD (DIGITAL)	Routine [R] if received by 3pm M-F	≀]ifreceiv	ad by 3pm	M-F - nc	- no surcharges apply	s apply		(§-	, è	4. j		38	_
Contact:	Sarah Kennedy		Merge QC/QCI	Merge QC/QCI Reports with COA JYES	N DYES DNO	₹	4 day [P4] if receive	d by 3pm	M-F - 20	% rrush sur	4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	шпш	- 67		200	N		
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Street:	600 Comox Rd.		Email 1 or Fax	skennedy@ecofishresearch.com	shresearch.com		Same day [E2]	[E2] if red	eived by	if received by 10am M-S -	200%	ush surchar	200% rush surcharge. Addition.	·.					_
City/Province:	Courtenay, BC		Email 2	tkasubuchi@ecofishresearch.com	ishresearch.com		routine tests	apply to re		S OU WEE	erios, stat	jees may apply to rosh requests on weekends, statutory holitodys and non- routine tests	-dion pole s	1	À	in a second		ke.	
Postal Code:	V9N 3P6		Email 3	waterqualitylabda	waterqualitylabdata@ecofishresearch	ch.com	Date	Date and Time Required for all E&P TATS:	Sequired	or all ESI	TATS:		þ	dd-mmm-yy	-yy hh:m	hh:mm ant/pm	ء		
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Company:	Ecofish Research Ltd.		Email 1 or Fax	Email 1 or Fax accountspayable@ecofishresearch.com	@ecofishresearch	m05.	s:	Ē	icate Filte	red (F), Pi	eserved (²) or Filtere	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	Ned (F/P	below			H	-
Contact:	accountspayable@ecofishresearch.com		Email 2				13	F/P I	_ a	-	ш	u	<u>"</u>				3 a ı	-	
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Job #:	Surface water MON8/9- with metals		Major/Minor Code:		Routing Code:		noin		'ual	s		<u>401</u>	st p) \√				_		_
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Drinking	Drinking Water (DW) Samples' (client use)		Ð.	Excel COC only)			Cooling Method	lethod:	NON			ZE PACKS	☐ FROZEN	OZEN	lП	COOLING INTRIATED	ATTIATED		_
Are samples tak	Are samples taken from a Regulated DW System?	o o oco O	od Asimirah s	Diases sand Asimith a formy of the data in their FDD formation	their COD 45		Submissi	on Comr	nents id	sutified .	on Samp	le Receip	Submission Comments identified on Sample Receipt Notification:	tion:		2			_
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MELET TO BACK PAGETOR ALS LOCATIONS AND SAMPLING INFORMATION
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and egrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202978

Amendment : 5

Client : Ecofish Research Ltd

Contact : Sarah Kennedy

Address : 600 Comox Road

Courtenay BC Canada V9N3P6

Telephone : ---

Project : Surface Water MON8/9-With Metals

PO : 1200-25.03.02

C-O-C number : 2022-OCT-MON8/9-DAY 1

Sampler : ---

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 9

Laboratory : ALS Environmental - Fort St. John

Account Manager : Sean Zhang

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : +1 250 261 5517

Date Samples Received : 19-Oct-2022 11:29

Date Analysis Commenced : 20-Oct-2022

Issue Date : 25-Aug-2023 17:57

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Anthony Calero	Supervisor - Inorganic	Metals, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Elke Tabora		Inorganics, Calgary, Alberta
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Louis Wagner	Technical Specialist	Administration, Calgary, Alberta
Louis Wagner	Technical Specialist	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sara Niroomand		Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia
Vladka Stamenova	Analyst	Inorganics, Calgary, Alberta

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μg/L	micrograms per litre
μg/sample	micrograms per sample
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
L	litres
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
А	CALA ISO/IEC 17025:2017	CG ALS Environmental - Calgary	2559 29th Street NE, Calgary, AB
В	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

>: greater than.

Page : 4 of 9

Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (10/5/2023): This report has been amended and re-released to allow the reporting of additional analytical data. Added ug/L calculation for Chlorophyll-a.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

Page : 5 of 9

Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			C	lient sample ID	W1-SHALLOW	W1-DEEP	D1-SHALLOW	D1-DEEP	TRAVEL BLANK
(Matrix: Water)									
		- 41 1/1 - 1-		oling date / time	19-Oct-2022 07:50	19-Oct-2022 08:30	19-Oct-2022 10:25	19-Oct-2022 09:55	19-Oct-2022 00:00
Analyte	CAS Number M	ethod/Lab	LOR	Unit	FJ2202978-001 Result	FJ2202978-002 Result	FJ2202978-003 Result	FJ2202978-004 Result	FJ2202978-005 Result
Sample Preparation					Result	Result	Result	Nesuit	Result
Dissolved Fe2 filtration location	EP541/	VΑ	-	-	Field	Field	Field	Field	
Volume filtered	EF870E	s/CG	0.001	L	0.200	0.200	0.200	0.200	0.200
Physical Tests									
Alkalinity, bicarbonate (as CaCO3)	E290/C	G A	1.0	mg/L	74.8	76.1	83.0	81.0	
Alkalinity, carbonate (as CaCO3)	E290/C	G A	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290/C	G A	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
Alkalinity, total (as CaCO3)	E290/C	G A	1.0	mg/L	74.8	76.1	83.0	81.0	
Colour, true	E329/C	G A	5.0	CU	7.0	7.3	7.7	10.9	
Conductivity	E100/C	G A	2.0	μS/cm	159	159	163	163	
Hardness (as CaCO3), dissolved	EC100/	CG	0.50	mg/L	92.2	89.8	92.8	90.2	
Hardness (as CaCO3), from total Ca/Mg	EC100	VCG	0.50	mg/L	94.4	94.4	96.3	94.2	
рН	E108/C	G A	0.10	pH units	8.07	8.00	7.97	7.97	
Solids, total dissolved [TDS]	E162/C	G A	10	mg/L	110	108	96	92	
Solids, total suspended [TSS]	E160/C	G A	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7 E298/C	G A	0.0050	mg/L	<0.0050	<0.0050	0.0073	<0.0050	
Chloride	16887-00-6 E235.C	/CG A	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	
Fluoride	16984-48-8 E235.F	CG A	0.020	mg/L	0.034	0.032	0.034	0.033	
Kjeldahl nitrogen, total [TKN]	EC318/	VA	0.050	mg/L	0.084	0.094	0.108	0.086	
Nitrate (as N)	14797-55-8 E235.N G	O3-L/C A	0.0050	mg/L	0.0688	0.0615	0.0667	0.0654	
Nitrite (as N)	14797-65-0 E235.N G	O2-L/C A	0.0010	mg/L	0.0017	0.0010	<0.0010	<0.0010	
Nitrogen, total	7727-37-9 E366/V	A B	0.030	mg/L	0.155	0.157	0.175	0.151	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U		0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus, total	7723-14-0 E372-U		0.0020	mg/L	0.0038	0.0036	0.0119	0.0039	
Phosphorus, total dissolved	7723-14-0 E375-T	CG A	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	
Silicate (as SiO2)	7631-86-9 E392/V	А В	0.50	mg/L	4.16	4.17	4.24	4.26	
Sulfate (as SO4)	14808-79-8 E235.S	O4/CG A	0.30	mg/L	11.9	11.6	12.0	12.0	

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	W1-SHALLOW	W1-DEEP	D1-SHALLOW	D1-DEEP	TRAVEL BLANK
(Matrix: Water)									
			Client samp	ling date / time	19-Oct-2022 07:50	19-Oct-2022 08:30	19-Oct-2022 10:25	19-Oct-2022 09:55	19-Oct-2022 00:00
Analyte	CAS Number Method/L	.ab	LOR	Unit	FJ2202978-001	FJ2202978-002	FJ2202978-003	FJ2202978-004	FJ2202978-005
					Result	Result	Result	Result	Result
Anions and Nutrients									
Nitrate + Nitrite (as N)	EC235.N+N/C G		0.0032	mg/L	0.0705	0.0625	0.0667	0.0654	
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	E358-L/CG	Α	0.50	mg/L	2.69	2.30	3.07	2.58	
Carbon, total organic [TOC]	E355-L/CG	Α	0.50	mg/L	2.61	2.74	3.23	2.44	
Ion Balance									
Anion sum	EC101/CG		0.10	meq/L	1.75	1.77	1.92	1.87	
Cation sum	EC101/CG		0.10	meq/L	1.90	1.85	1.91	1.86	
Ion balance (APHA)	EC101/CG		0.010	%	4.11	2.21	0.261	0.268	
Total Metals									
Aluminum, total	7429-90-5 E420/CG	Α	0.0030	mg/L	0.0166	0.0153	0.0212	0.0205	
Antimony, total	7440-36-0 E420/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic, total	7440-38-2 E420/CG	Α	0.00010	mg/L	0.00021	0.00019	0.00022	0.00020	
Barium, total	7440-39-3 E420/CG	Α	0.00010	mg/L	0.0291	0.0280	0.0298	0.0290	
Beryllium, total	7440-41-7 E420/CG	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, total	7440-69-9 E420/CG	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, total	7440-42-8 E420/CG	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	
Cadmium, total	7440-43-9 E420/CG	Α	0.0000050	mg/L	0.0000110	0.0000110	0.0000166	0.0000186	
Calcium, total	7440-70-2 E420/CG	Α	0.050	mg/L	27.8	27.6	28.2	27.8	
Cesium, total	7440-46-2 E420/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, total	7440-47-3 E420/CG	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, total	7440-48-4 E420/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, total	7440-50-8 E420/CG	Α	0.00050	mg/L	0.00067	0.00069	0.00077	0.00066	
Iron, total	7439-89-6 E420/CG	Α	0.010	mg/L	0.014	0.014	0.023	0.023	
Lead, total	7439-92-1 E420/CG	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, total	7439-93-2 E420/CG	Α	0.0010	mg/L	0.0013	0.0013	0.0014	0.0013	
Magnesium, total	7439-95-4 E420/CG	Α	0.0050	mg/L	6.08	6.20	6.29	6.02	
Manganese, total	7439-96-5 E420/CG	Α	0.00010	mg/L	0.00132	0.00127	0.00188	0.00206	
Mercury, total	7439-97-6 E508-L/VA	В	0.50	ng/L	0.51	<0.50	<0.50	0.52	
Molybdenum, total	7439-98-7 E420/CG	Α	0.000050	mg/L	0.000808	0.000767	0.000765	0.000717	
Molybdenum, total	7439-98-7 E420/CG	A	0.000050	mg/L	0.000606	0.000767	0.000765	0.000717	

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	W1-SHALLOW	W1-DEEP	D1-SHALLOW	D1-DEEP	TRAVEL BLANK
(Matrix: Water)									
			Client samp	ling date / time	19-Oct-2022 07:50	19-Oct-2022 08:30	19-Oct-2022 10:25	19-Oct-2022 09:55	19-Oct-2022 00:00
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2202978-001	FJ2202978-002	FJ2202978-003	FJ2202978-004	FJ2202978-005
					Result	Result	Result	Result	Result
Total Metals									
Nickel, total	7440-02-0 E420/CG	Α	0.00050	mg/L	0.00072	0.00069	0.00075	0.00072	
Phosphorus, total	7723-14-0 E420/CG	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
Potassium, total	7440-09-7 E420/CG	Α	0.050	mg/L	0.435	0.443	0.442	0.436	
Rubidium, total	7440-17-7 E420/CG	Α	0.00020	mg/L	0.00034	0.00029	0.00030	0.00029	
Selenium, total	7782-49-2 E420/CG	Α	0.000050	mg/L	0.000241	0.000241	0.000211	0.000251	
Silicon, total	7440-21-3 E420/CG	Α	0.10	mg/L	2.07	2.06	2.15	2.10	
Silver, total	7440-22-4 E420/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, total	7440-23-5 E420/CG	Α	0.050	mg/L	1.01	1.02	1.04	1.01	
Strontium, total	7440-24-6 E420/CG	Α	0.00020	mg/L	0.106	0.104	0.109	0.106	
Sulfur, total	7704-34-9 E420/CG	Α	0.50	mg/L	4.67	4.54	4.71	4.73	
Tellurium, total	13494-80-9 E420/CG	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, total	7440-28-0 E420/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, total	7440-29-1 E420/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, total	7440-31-5 E420/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, total	7440-32-6 E420/CG	Α	0.00030	mg/L	0.00046	<0.00030	0.00066	0.00048	
Tungsten, total	7440-33-7 E420/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, total	7440-61-1 E420/CG	Α	0.000010	mg/L	0.000412	0.000401	0.000420	0.000400	
Vanadium, total	7440-62-2 E420/CG	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc, total	7440-66-6 E420/CG	Α	0.0030	mg/L	< 0.0030	<0.0030	<0.0030	<0.0030	
Zirconium, total	7440-67-7 E420/CG	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals									
Aluminum, dissolved	7429-90-5 E421/CG	Α	0.0010	mg/L	0.0044	0.0047	0.0044	0.0043	
Antimony, dissolved	7440-36-0 E421/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic, dissolved	7440-38-2 E421/CG	Α	0.00010	mg/L	0.00019	0.00018	0.00019	0.00020	
Barium, dissolved	7440-39-3 E421/CG	Α	0.00010	mg/L	0.0285	0.0275	0.0290	0.0292	
Beryllium, dissolved	7440-41-7 E421/CG	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9 E421/CG	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8 E421/CG	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	
Cadmium, dissolved	7440-43-9 E421/CG	Α	0.0000050	mg/L	0.0000080	0.0000071	0.0000070	0.0000077	
Calcium, dissolved	7440-70-2 E421/CG	Α	0.050	mg/L	26.6	25.9	26.8	26.1	
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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	W1-SHALLOW	W1-DEEP	D1-SHALLOW	D1-DEEP	TRAVEL BLANK
(Matrix: Water)									
			Client samp	ling date / time	19-Oct-2022 07:50	19-Oct-2022 08:30	19-Oct-2022 10:25	19-Oct-2022 09:55	19-Oct-2022 00:00
Analyte	CAS Number Method/I	Lab	LOR	Unit	FJ2202978-001	FJ2202978-002	FJ2202978-003	FJ2202978-004	FJ2202978-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Cesium, dissolved	7440-46-2 E421/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3 E421/CG	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4 E421/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, dissolved	7440-50-8 E421/CG	Α	0.00020	mg/L	0.00060	0.00057	0.00059	0.00061	
Iron, dissolved	7439-89-6 E421/CG	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	
Lead, dissolved	7439-92-1 E421/CG	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2 E421/CG	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium, dissolved	7439-95-4 E421/CG	Α	0.0050	mg/L	6.26	6.10	6.28	6.09	
Manganese, dissolved	7439-96-5 E421/CG	Α	0.00010	mg/L	0.00021	0.00018	0.00051	0.00051	
Mercury, dissolved	7439-97-6 E509-L/VA	В	0.50	ng/L	<0.50	<0.50	<0.50	<0.50	
Molybdenum, dissolved	7439-98-7 E421/CG	Α	0.000050	mg/L	0.000709	0.000708	0.000728	0.000702	
Nickel, dissolved	7440-02-0 E421/CG	Α	0.00050	mg/L	0.00068	0.00061	0.00065	0.00062	
Phosphorus, dissolved	7723-14-0 E421/CG	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7 E421/CG	Α	0.050	mg/L	0.378	0.370	0.380	0.372	
Rubidium, dissolved	7440-17-7 E421/CG	Α	0.00020	mg/L	0.00030	0.00031	0.00030	0.00031	
Selenium, dissolved	7782-49-2 E421/CG	Α	0.000050	mg/L	0.000244	0.000259	0.000281	0.000254	
Silicon, dissolved	7440-21-3 E421/CG	Α	0.050	mg/L	2.11	2.04	2.12	2.10	
Silver, dissolved	7440-22-4 E421/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5 E421/CG	Α	0.050	mg/L	1.00	0.985	1.01	1.01	
Strontium, dissolved	7440-24-6 E421/CG	Α	0.00020	mg/L	0.106	0.101	0.104	0.102	
Sulfur, dissolved	7704-34-9 E421/CG	Α	0.50	mg/L	3.72	3.48	3.81	3.78	
Tellurium, dissolved	13494-80-9 E421/CG	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0 E421/CG	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, dissolved	7440-29-1 E421/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5 E421/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, dissolved	7440-32-6 E421/CG	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	
Tungsten, dissolved	7440-33-7 E421/CG	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, dissolved	7440-61-1 E421/CG	Α	0.000010	mg/L	0.000404	0.000393	0.000404	0.000407	
Vanadium, dissolved	7440-62-2 E421/CG	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc, dissolved	7440-66-6 E421/CG	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

Sub-Matrix: Water				Cli	ient sample ID	W1-SHALLOW	W1-DEEP	D1-SHALLOW	D1-DEEP	TRAVEL BLANK
(Matrix: Water)										
					ling date / time	07:50	19-Oct-2022 08:30	19-Oct-2022 10:25	19-Oct-2022 09:55	19-Oct-2022 00:00
Analyte	CAS Number	Method/l	Lab	LOR	Unit	FJ2202978-001	FJ2202978-002	FJ2202978-003	FJ2202978-004	FJ2202978-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Zirconium, dissolved	7440-67-7	E421/CG	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	
Dissolved MeHg filtration location		EP537/VA		-	-	Field	Field	Field	Field	
Dissolved mercury filtration location		EP509-L/VA		-	-	Field	Field	Field	Field	
Dissolved metals filtration location		EP421/CG		-	-	Field	Field	Field	Field	
Speciated Metals										
Methylmercury (as MeHg), total	22967-92-6	E536/VA	В	0.00000002	mg/L	<0.00000002	<0.00000002	<0.000000020	<0.00000002	
				0		0	0		0	
Iron, ferrous [Fe II], dissolved	15438-31-0	E541/VA	В	0.020	mg/L	0.029	<0.020	<0.020	<0.020	
Methylmercury (as MeHg), dissolved	22967-92-6	E537/VA	В	0.00000002	mg/L	<0.00000002	<0.00000002	<0.000000020	<0.00000002	
				0		0	0		0	
Plant Pigments										
Chlorophyll a	479-61-8	EC870B/VA		0.010	μg/L	2.56	3.08	2.58	2.60	<0.010
Chlorophyll a	479-61-8	E870B/VA	В	0.0020	µg/sample	0.513	0.617	0.516	0.520	<0.0020

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202978** Page : 1 of 24

Amendment :5

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address :600 Comox Road Address :11007 Alaska Road

Courtenay BC Canada V9N3P6 Fort St. John, British Columbia Canada V1J 6P3

Telephone :--- Telephone :+1 250 261 5517

 Project
 : Surface Water MON8/9-With Metals
 Date Samples Received
 : 19-Oct-2022 11:29

 PO
 : 1200-25.03.02
 Issue Date
 : 25-Aug-2023 17:58

C-O-C number : 2022-OCT-MON8/9-DAY 1

Sampler :----

Site :

Quote number : VA22-ECOF100-004

No. of samples received :5
No. of samples analysed :5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

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

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Matrix: Water

Analyte Group

Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Anions and Nutrients : Chloride in Water by IC

HDPE

W1-DEEP

Project : Surface Water MON8/9-With Metals



Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Analysis

Analysis Holding Time Compliance

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

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

Sampling Date

Method

E235.CI

Extraction / Preparation

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

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

Container / Client Sample ID(s)			Preparation	Holding Times		Eval Analysis Date		ate Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D1-DEEP	E298	19-Oct-2022	20-Oct-2022	28 days	1 days	✓	20-Oct-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D1-SHALLOW	E298	19-Oct-2022	20-Oct-2022	28 days	1 days	✓	20-Oct-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) W1-DEEP	E298	19-Oct-2022	20-Oct-2022	28 days	1 days	✓	20-Oct-2022	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) W1-SHALLOW	E298	19-Oct-2022	20-Oct-2022	28 days	1 days	✓	20-Oct-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE D1-DEEP	E235.Cl	19-Oct-2022	20-Oct-2022	28 days	1 days	4	20-Oct-2022	28 days	1 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE D1-SHALLOW	E235.CI	19-Oct-2022	20-Oct-2022	28 days	1 days	✓	20-Oct-2022	28 days	1 days	✓

19-Oct-2022

20-Oct-2022

1 days

28 days 20-Oct-2022

28 days 1 days

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd





Matrix: Water					Ev	⁄aluation: <mark>≭</mark> =	Holding time exce	edance ; 🔻	/ = Within	Holding Tim
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE										
W1-SHALLOW	E235.CI	19-Oct-2022	20-Oct-2022	28	1 days	✓	20-Oct-2022	28 days	1 days	✓
				days						
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE	E070 II	40.0.4.0000				,				,
D1-DEEP	E378-U	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE	E378-U	19-Oct-2022	20 0-4 2022	0 4	4 -1	✓	20 0-4 2022	0 4	4 -1	√
D1-SHALLOW	E378-U	19-Oct-2022	20-Oct-2022	3 days	1 days	•	20-Oct-2022	3 days	1 days	•
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
	1						1		<u> </u>	
HDPE	E378-U	19-Oct-2022	20-Oct-2022	0 4	1 days	✓	20-Oct-2022	0 4	1 days	√
W1-DEEP	E376-U	19-001-2022	20-OGI-2022	3 days	i days	•	20-001-2022	3 days	Tuays	•
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE	T	1		T			<u> </u>	T		
W1-SHALLOW	E378-U	19-Oct-2022	20-Oct-2022	3 days	1 days	1	20-Oct-2022	3 days	1 days	1
WI-GIALLOW	2070 0	10 000 2022	20-001-2022	o days	1 days	·	20-001-2022	o days	1 days	•
Anions and Nutrients : Fluoride in Water by IC							1			
HDPE D1-DEEP	E235.F	19-Oct-2022	20-Oct-2022	28	1 days	✓	20-Oct-2022	28 days	1 days	√
DI-DEEP	L233.1	19-061-2022	20-001-2022	days	1 days	•	20-061-2022	20 days	1 uays	•
				uays						
Anions and Nutrients : Fluoride in Water by IC										
HDPE D1-SHALLOW	E235.F	19-Oct-2022	20-Oct-2022	00	1 days	✓	20-Oct-2022	28 days	1 days	√
DI-SHALLOW	E233.F	19-061-2022	20-UG-2022	28	1 days	•	20-001-2022	∠o uays	ruays	•
				days						
Anions and Nutrients : Fluoride in Water by IC										
HDPE	E235.F	19-Oct-2022	20-Oct-2022		1 days	✓	20-Oct-2022	20 day:-	1 days	1
W1-DEEP	E235.F	19-UCI-2022	20-UCI-2022	28	1 days	*	20-OCI-2022	28 days	1 days	*
				days						

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



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

Matrix: Water					E	valuation. * -	Holding time excee	edance, v	– vvitriiri	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W1-SHALLOW	E235.F	19-Oct-2022	20-Oct-2022	28	1 days	✓	20-Oct-2022	28 days	1 days	✓
				days						
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D1-DEEP	E235.NO3-L	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D1-SHALLOW	E235.NO3-L	19-Oct-2022	20-Oct-2022	3 days	1 days	1	20-Oct-2022	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE							I			
W1-DEEP	E235.NO3-L	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
W1 5221		""	20 000 2022	o dayo	. aays		20 00. 2022	o aayo	· uayo	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE				1	<u> </u>		<u> </u>	<u> </u>		
W1-SHALLOW	E235.NO3-L	19-Oct-2022	20-Oct-2022	3 days	1 days	√	20-Oct-2022	3 days	1 days	✓
VVI OTIVILLOV	2200.1100 2	10 000 2022	20 000 2022	o dayo	, dayo	·	20 000 2022	o dayo	1 dayo	·
Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE							I			
D1-DEEP	E235.NO2-L	19-Oct-2022	20-Oct-2022	3 days	1 days	√	20-Oct-2022	3 days	1 days	✓
DI-DEEF	L233.1102-L	19-001-2022	20-001-2022	3 days	luays	•	20-001-2022	3 days	1 uays	•
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D1-SHALLOW	E235.NO2-L	19-Oct-2022	20-Oct-2022	3 days	1 days	√	20-Oct-2022	3 days	1 days	✓
D1-SHALLOW	EZ33.NOZ-L	19-001-2022	20-OCI-2022	3 days	Tuays	•	20-OCI-2022	3 days	Tuays	•
				<u> </u>				<u> </u>		
Anions and Nutrients : Nitrite in Water by IC (Low Level)							1			
HDPE	FOOT NOO!	10.051.0000	20 04 2020	2 4	1 d	√	20 04 2022	2 4	1 d	✓
W1-DEEP	E235.NO2-L	19-Oct-2022	20-Oct-2022	3 days	1 days	*	20-Oct-2022	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE		40.0 :								,
W1-SHALLOW	E235.NO2-L	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Matrix: Water Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Anions and Nutrients: Reactive Silica by Colourimetry HDPE E392 19-Oct-2022 24-Oct-2022 1 D1-DEEP 28 days 5 days Anions and Nutrients: Reactive Silica by Colourimetry **HDPE** D1-SHALLOW E392 19-Oct-2022 24-Oct-2022 28 days 5 days 1 Anions and Nutrients : Reactive Silica by Colourimetry HDPE W1-DEEP E392 19-Oct-2022 24-Oct-2022 28 days 5 days Anions and Nutrients : Reactive Silica by Colourimetry **HDPE** 19-Oct-2022 W1-SHALLOW E392 24-Oct-2022 28 days 5 days 1 Anions and Nutrients : Sulfate in Water by IC **HDPE** D1-DEEP E235.SO4 19-Oct-2022 20-Oct-2022 1 20-Oct-2022 28 days 1 1 days 1 days 28 days Anions and Nutrients : Sulfate in Water by IC **HDPE** E235.SO4 19-Oct-2022 1 1 days 1 D1-SHALLOW 20-Oct-2022 28 1 days 20-Oct-2022 28 days days Anions and Nutrients : Sulfate in Water by IC HDPE W1-DEEP E235.SO4 19-Oct-2022 20-Oct-2022 20-Oct-2022 1 days 28 days 1 days 28 days Anions and Nutrients : Sulfate in Water by IC HDPE W1-SHALLOW E235.SO4 19-Oct-2022 20-Oct-2022 28 1 days 1 20-Oct-2022 28 days 1 days 1 days Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) E375-T 19-Oct-2022 D1-DEEP 22-Oct-2022 1 25-Oct-2022 28 days 6 days 1 3 days 28

days

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Work Order : FJ2202978 Amendment 5
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



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

Matrix: Water						/aluation. ^ -	Holding time exce	euance , •	_ vviti iii i	Holding Time	
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	Analysis		
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass dissolved (sulfuric acid)											
D1-SHALLOW	E375-T	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓	
				days							
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass dissolved (sulfuric acid)											
W1-DEEP	E375-T	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓	
				days					,		
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)				,							
Amber glass dissolved (sulfuric acid)											
W1-SHALLOW	E375-T	19-Oct-2022	22-Oct-2022	28	3 days	√	25-Oct-2022	28 days	6 davs	✓	
WI OWNEED W	20.0	10 001 2022		days	o days		20 001 2022	20 44,0	o aayo		
				uays							
Anions and Nutrients : Total Nitrogen by Colourimetry				T	1			T			
Amber glass total (sulfuric acid)	E366	19-Oct-2022	22 0-4 2022		0 4	√	25 0-4 2022	00 4	C -l	✓	
D1-DEEP	⊏300	19-001-2022	22-Oct-2022	28	3 days	•	25-Oct-2022	28 days	6 days	•	
				days							
Anions and Nutrients : Total Nitrogen by Colourimetry											
Amber glass total (sulfuric acid)											
D1-SHALLOW	E366	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓	
				days							
Anions and Nutrients : Total Nitrogen by Colourimetry											
Amber glass total (sulfuric acid)											
W1-DEEP	E366	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓	
				days							
Anions and Nutrients : Total Nitrogen by Colourimetry											
Amber glass total (sulfuric acid)				T							
W1-SHALLOW	E366	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓	
				days							
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass total (sulfuric acid)							l				
D1-DEEP	E372-U	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 davs	✓	
-·				days	,-				,-		
				days							
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)											
Amber glass total (sulfuric acid)	E372-U	19-Oct-2022	22 04 2022	60	2 days	√	25 Oct 2022	28 days	6 40.40	✓	
D1-SHALLOW	E312-U	19-061-2022	22-Oct-2022	28	3 days	•	25-Oct-2022	20 days	o days	•	
				days							

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

Matrix: Water						/aluation. ^ -	Holding time exce	euance , v	_ vviti iii i	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
W1-DEEP	E372-U	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
W1-SHALLOW	E372-U	19-Oct-2022	22-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	6 days	✓
				days						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)							<u> </u>		
Pre-cleaned amber glass - dissolved (lab preserved)										
D1-DEEP	E509-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	7 days	✓
				days						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)									
Pre-cleaned amber glass - dissolved (lab preserved)										
D1-SHALLOW	E509-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	7 days	✓
				days						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p)	ot)									
Pre-cleaned amber glass - dissolved (lab preserved)				<u> </u>						
W1-DEEP	E509-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	7 days	✓
				days						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p)	of)									
Pre-cleaned amber glass - dissolved (lab preserved)										
W1-SHALLOW	E509-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	7 days	✓
				days				-		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
D1-DEEP	E421	19-Oct-2022	24-Oct-2022	180	5 days	✓	25-Oct-2022	180	6 days	✓
				days	,-			days	,-	
Dissolved Metals - Dissolved Metals in Water by CRC ICRMS				,-				, -		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid)										
D1-SHALLOW	E421	19-Oct-2022	24-Oct-2022	180	5 days	√	25-Oct-2022	180	6 days	✓
D 1-01 II LEE 0 VV		10 000 2022	21 000 2022	days	o dayo		20 000 2022	days	o dayo	
			The state of the s	uays				uays		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) W1-DEEP	E421	19-Oct-2022	24-Oct-2022	100	5 days	✓	25-Oct-2022	100	6 days	✓
VVI-DEEP	L+21	19-001-2022	24-001-2022	180	Juays	•	20-001-2022	180	o uays	•
				days				days		

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation Holding Times Eval Analysis Date Eval Rec Actual Rec Actual Date Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) E421 19-Oct-2022 24-Oct-2022 ✓ W1-SHALLOW 5 days 25-Oct-2022 180 180 6 days days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-DFFP E358-L 19-Oct-2022 20-Oct-2022 28 1 days 1 20-Oct-2022 28 days 1 days ✓ days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) D1-SHALLOW E358-L 19-Oct-2022 20-Oct-2022 1 20-Oct-2022 1 days 28 days 1 days 28 davs Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L ✓ W1-DEEP 19-Oct-2022 20-Oct-2022 28 1 days 20-Oct-2022 28 days 1 days 1 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) W1-SHALLOW E358-L 19-Oct-2022 20-Oct-2022 1 20-Oct-2022 ✓ 1 days 28 days 1 days 28 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 19-Oct-2022 1 D1-DEEP 20-Oct-2022 28 1 days 20-Oct-2022 28 days 1 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) D1-SHALLOW E355-L 19-Oct-2022 20-Oct-2022 20-Oct-2022 1 days 28 days 1 days 28 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) 1 W1-DEEP E355-L 19-Oct-2022 20-Oct-2022 28 1 days 20-Oct-2022 28 days 1 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 19-Oct-2022 20-Oct-2022 1 20-Oct-2022 28 days 1 days 1 W1-SHALLOW 1 days 28 days

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Project : Surface Water MON8/9-With Metals



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

Matrix: Water					E	/aluation. * -	Holding time excee	euance , v	_ vviti iii i	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-DEEP	E290	19-Oct-2022	22-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	3 days	✓
				days						
Physical Tests : Alkalinity Species by Titration										
HDPE										
D1-SHALLOW	E290	19-Oct-2022	22-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	3 days	✓
				days					-	
Physical Tests : Alkalinity Species by Titration										
HDPE										
W1-DEEP	E290	19-Oct-2022	22-Oct-2022	14	3 days	✓	22-Oct-2022	14 days	3 days	✓
				days					,	
Physical Tests : Alkalinity Species by Titration										
HDPE				<u> </u>						
W1-SHALLOW	E290	19-Oct-2022	22-Oct-2022	14	3 days	1	22-Oct-2022	14 days	3 days	✓
WIPOTIALLOW		10 000 2022	22-001-2022	days	o days	Ť	22-001-2022	14 days	o days	·
				uays						
Physical Tests : Colour (True) by Spectrometer (5 CU)				T	I					
HDPE	E329	19-Oct-2022	20-Oct-2022	2 days	1 days	√	20-Oct-2022	2 days	1 days	√
D1-DEEP	E329	19-001-2022	20-OCI-2022	3 days	Tuays	•	20-OCI-2022	3 days	Tuays	•
Physical Tests : Colour (True) by Spectrometer (5 CU)					1					
HDPE						,				
D1-SHALLOW	E329	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
W1-DEEP	E329	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
W1-SHALLOW	E329	19-Oct-2022	20-Oct-2022	3 days	1 days	✓	20-Oct-2022	3 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE										
D1-DEEP	E100	19-Oct-2022	22-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	3 days	✓
				days						
				,-						

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Project : Surface Water MON8/9-With Metals



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

vaux: water						valuation.	nolding time exce	oddiioo ,	***************************************	rriolaling rilli
Analyte Group	Method	Sampling Date	Ext	raction / P	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Conductivity in Water										
HDPE										
D1-SHALLOW	E100	19-Oct-2022	22-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	3 days	✓
				days						
Physical Tests : Conductivity in Water										
HDPE										
W1-DEEP	E100	19-Oct-2022	22-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	3 days	✓
				days					_	
Physical Tests : Conductivity in Water										
HDPE					<u> </u>		<u> </u>			
W1-SHALLOW	E100	19-Oct-2022	22-Oct-2022	28	3 days	✓	22-Oct-2022	28 days	3 davs	✓
				days						
Dhysical Tests until by Mater				,-						
Physical Tests : pH by Meter HDPE				I			I	I		
D1-SHALLOW	E108	19-Oct-2022	22-Oct-2022	0.05	71 hrs	æ	22-Oct-2022	0.05	71 hrs	×
D1-SHALLOW	L 100	19-061-2022	22-001-2022	0.25	711115	EHTR-FM	22-061-2022	0.25	711115	EHTR-FM
				hrs		EHTK-FIVI		hrs		ENTK-FIVE
Physical Tests : pH by Meter					1					
HDPE										
D1-DEEP	E108	19-Oct-2022	22-Oct-2022	0.25	72 hrs	*	22-Oct-2022	0.25	72 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE										
W1-DEEP	E108	19-Oct-2022	22-Oct-2022	0.25	73 hrs	×	22-Oct-2022	0.25	73 hrs	×
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE										
W1-SHALLOW	E108	19-Oct-2022	22-Oct-2022	0.25	74 hrs	*	22-Oct-2022	0.25	74 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : TDS by Gravimetry										I
HDPE										
D1-DEEP	E162	19-Oct-2022					24-Oct-2022	7 days	5 days	✓
							<u> </u>			
Physical Tosts: TDS by Gravimetry										
Physical Tests : TDS by Gravimetry HDPF										
Physical Tests : TDS by Gravimetry HDPE D1-SHALLOW	E162	19-Oct-2022					24-Oct-2022	7 days	5 days	√

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Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Physical Tests: TDS by Gravimetry HDPE E162 19-Oct-2022 24-Oct-2022 1 W1-DEEP 7 days 5 days **Physical Tests: TDS by Gravimetry HDPE** W1-SHALLOW E162 19-Oct-2022 24-Oct-2022 7 days 5 days 1 **Physical Tests: TSS by Gravimetry** HDPE D1-DEEP E160 19-Oct-2022 25-Oct-2022 6 days 1 7 days **Physical Tests: TSS by Gravimetry** HDPE E160 19-Oct-2022 D1-SHALLOW 25-Oct-2022 7 days 6 days 1 **Physical Tests: TSS by Gravimetry HDPE** W1-DEEP E160 19-Oct-2022 25-Oct-2022 6 days 1 7 days **Physical Tests: TSS by Gravimetry** HDPE E160 19-Oct-2022 1 W1-SHALLOW 25-Oct-2022 7 days 6 days ----Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered μg) **Opaque HDPE** D1-DEEP E870B 19-Oct-2022 24-Oct-2022 5 days 24-Oct-2022 28 days 0 days 28 days Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg) Opaque HDPE D1-SHALLOW E870B 19-Oct-2022 24-Oct-2022 1 24-Oct-2022 28 days 0 days 1 28 5 days days Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg) Opaque HDPE E870B 19-Oct-2022 1 24-Oct-2022 24-Oct-2022 28 days 0 days 1 TRAVEL BLANK 5 days 28 days

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Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation Holding Times Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered µg) **Opaque HDPE** W1-DEEP E870B 19-Oct-2022 24-Oct-2022 24-Oct-2022 1 5 days 28 days 0 days 28 days Plant Pigments : Chlorophyll-a by Fluorometry (Support Lab Filtered μg) **Opaque HDPE** W1-SHALLOW E870B 19-Oct-2022 24-Oct-2022 28 5 days 1 24-Oct-2022 28 days 0 days 1 days Sample Preparation : Chlorophyll-a Filtration by Support Laboratory **Opaque HDPE tube** TRAVEL BLANK EF870B 19-Oct-2022 20-Oct-2022 25 hrs 1 48 hrs Sample Preparation : Chlorophyll-a Filtration by Support Laboratory Opaque HDPE tube EF870B 19-Oct-2022 D1-SHALLOW 20-Oct-2022 48 hrs 29 hrs 1 Sample Preparation : Chlorophyll-a Filtration by Support Laboratory Opaque HDPE tube D1-DEEP EF870B 19-Oct-2022 20-Oct-2022 30 hrs 1 48 hrs Sample Preparation: Chlorophyll-a Filtration by Support Laboratory Opaque HDPE tube EF870B 19-Oct-2022 1 W1-DEEP 20-Oct-2022 48 hrs 31 hrs Sample Preparation : Chlorophyll-a Filtration by Support Laboratory Opaque HDPE tube W1-SHALLOW EF870B 19-Oct-2022 20-Oct-2022 48 hrs 32 hrs Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) D1-DEEP E541 19-Oct-2022 24-Nov-2022 7 days 36 30 24-Nov-2022 7 days 36 days EHT EHT days Speciated Metals : Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) 19-Oct-2022 7 days E541 24-Nov-2022 30 24-Nov-2022 7 days 36 days D1-SHALLOW 30 36 EHT EHT days

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Matrix: Water

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Project : Surface Water MON8/9-With Metals

Speciated Metals: Total Methylmercury in Water by GCAFS

Speciated Metals: Total Methylmercury in Water by GCAFS

Amber glass total (hydrochloric acid)

Amber glass total (hydrochloric acid)

D1-SHALLOW

W1-DEEP



Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) 19-Oct-2022 E541 W1-DEEP 24-Nov-2022 7 days * 24-Nov-2022 7 days 36 days × 36 EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) W1-SHALLOW E541 19-Oct-2022 24-Nov-2022 7 days 36 24-Nov-2022 7 days 36 days EHT EHT days **Speciated Metals: Dissolved Methylmercury in Water by GCAFS** Amber glass dissolved (hydrochloric acid) D1-DEEP E537 19-Oct-2022 04-Nov-2022 1 10-Nov-2022 1 6 days 180 16 180 days days days Speciated Metals : Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) ✓ D1-SHALLOW E537 19-Oct-2022 04-Nov-2022 180 10-Nov-2022 180 6 days 1 16 days days days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) W1-DEEP E537 19-Oct-2022 04-Nov-2022 1 10-Nov-2022 6 days 1 180 16 180 days days days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) E537 19-Oct-2022 1 1 W1-SHALLOW 04-Nov-2022 180 16 10-Nov-2022 180 6 days days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) D1-DEEP E536 19-Oct-2022 03-Nov-2022 07-Nov-2022 19 days 180 15 180

19-Oct-2022

19-Oct-2022

E536

E536

days

180

days

180

days

03-Nov-2022

03-Nov-2022

days

15

days

15

days

1

1

days

180

days

180

days

19 days

19 days

✓

1

07-Nov-2022

07-Nov-2022

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

viatrix: water					L	raiuation. * =	nolding time exce	cuarice, .	- ٧٧١٤١١١١١	riolaling riii
Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
W1-SHALLOW	E536	19-Oct-2022	03-Nov-2022	180	15	✓	07-Nov-2022	180	19 days	✓
				days	days			days		
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-DEEP	E508-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
D1-SHALLOW	E508-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
W1-DEEP	E508-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
W1-SHALLOW	E508-L	19-Oct-2022	26-Oct-2022	28	7 days	✓	26-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D1-DEEP	E420	19-Oct-2022	23-Oct-2022	180	4 days	✓	24-Oct-2022	180	5 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D1-SHALLOW	E420	19-Oct-2022	23-Oct-2022	180	4 days	✓	24-Oct-2022	180	5 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
W1-DEEP	E420	19-Oct-2022	23-Oct-2022	180	4 days	✓	24-Oct-2022	180	5 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)								1		
W1-SHALLOW	E420	19-Oct-2022	23-Oct-2022	180	4 days	✓	24-Oct-2022	180	5 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Matrix: Water		Evaluation	on: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	thin specification
Quality Control Sample Type			Co	unt		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	709480	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	706906	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	706622	1	19	5.2	5.0	✓
Chlorophyll-a by Fluorometry (Support Lab Filtered µg)	E870B	711796	0	5	0.0	5.0	×
Colour (True) by Spectrometer (5 CU)	E329	706831	1	10	10.0	5.0	✓
Conductivity in Water	E100	709479	1	15	6.6	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	712298	1	8	12.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	730526	2	22	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	706185	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	706660	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	706619	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	706624	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	706625	1	4	25.0	5.0	✓
pH by Meter	E108	709478	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	706621	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	708441	1	4	25.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709902	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	715085	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	710437	1	18	5.5	5.0	✓
Total Methylmercury in Water by GCAFS	E536	728312	2	44	4.5	5.0	×
Total Nitrogen by Colourimetry	E366	709885	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	706186	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	709210	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	708445	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	709480	1	15	6.6	5.0	1
Ammonia by Fluorescence	E298	706906	1	20	5.0	5.0	<u> </u>
Chloride in Water by IC	E235.CI	706622	1	19	5.2	5.0	<u> </u>
Chlorophyll-a by Fluorometry (Support Lab Filtered μg)	E870B	711796	1	5	20.0	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	706831	1	10	10.0	5.0	<u> </u>
Conductivity in Water	E100	709479	1	15	6.6	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	<u>√</u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	

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Matrix: Water		Evaluation	on: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	hin specification.
Quality Control Sample Type				unt		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Control Samples (LCS) - Continued							
Dissolved Metals in Water by CRC ICPMS	E421	712298	1	8	12.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	730526	2	22	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	706185	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	706660	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	706619	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	706624	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	706625	1	4	25.0	5.0	✓
pH by Meter	E108	709478	1	20	5.0	5.0	✓
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	706621	1	19	5.2	5.0	✓
TDS by Gravimetry	E162	708441	1	4	25.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709902	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	715085	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	710437	1	18	5.5	5.0	✓
Total Methylmercury in Water by GCAFS	E536	728312	3	44	6.8	5.0	✓
Total Nitrogen by Colourimetry	E366	709885	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	706186	1	11	9.0	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	709210	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	708445	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	709480	1	15	6.6	5.0	✓
Ammonia by Fluorescence	E298	706906	1	20	5.0	5.0	<u> </u>
Chloride in Water by IC	E235.CI	706622	1	19	5.2	5.0	<u> </u>
Chlorophyll-a by Fluorometry (Support Lab Filtered µg)	E870B	711796	1	5	20.0	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	706831	1	10	10.0	5.0	<u>√</u>
Conductivity in Water	E100	709479	1	15	6.6	5.0	<u>√</u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	<u> </u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	<u>√</u>
Dissolved Metals in Water by CRC ICPMS	E421	712298	1	8	12.5	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	730526	2	22	9.0	5.0	<u>√</u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	706185	1	11	9.0	5.0	<u>√</u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	706660	1	19	5.2	5.0	<u> </u>
Fluoride in Water by IC	E235.F	706619	1	19	5.2	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	706624	1	4	25.0	5.0	<u> </u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	706625	1	4	25.0	5.0	<u> </u>
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	<u>√</u>
Sulfate in Water by IC	E235.SO4	706621	1	19	5.2	5.0	<u> </u>
TDS by Gravimetry	E162	708441	1	4	25.0	5.0	<u>√</u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709902	1	18	5.5	5.0	

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Matrix: Water		Evaluati	ion: × = QC freque	ency outside spe	ecification; ✓ = 0	QC frequency wit	hin specification
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	715085	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	710437	1	18	5.5	5.0	✓
Total Methylmercury in Water by GCAFS	E536	728312	3	44	6.8	5.0	✓
Total Nitrogen by Colourimetry	E366	709885	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	706186	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	709210	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	708445	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	706906	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.CI	706622	1	19	5.2	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	712298	1	8	12.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	730526	2	22	9.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	706185	1	11	9.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	706660	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	706619	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	706624	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	706625	1	4	25.0	5.0	✓
Reactive Silica by Colourimetry	E392	712325	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	706621	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	709902	1	18	5.5	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	715085	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	710437	1	18	5.5	5.0	✓
Total Methylmercury in Water by GCAFS	E536	728312	2	44	4.5	5.0	sc
Total Nitrogen by Colourimetry	E366	709885	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	706186	1	11	9.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	709210	1	20	5.0	5.0	√

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Project : Surface Water MON8/9-With Metals



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Calgary			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	ALS Environmental -			pH should be measured in the field within the recommended 15 minute hold time.
	Calgary			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
				filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	ALS Environmental -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Calgary			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
				filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	ALS Environmental -			with gravimetric measurement of the residue.
	Calgary	147.7	554 000 4 (I)	
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Calgary			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			dotoston.
	Calgary			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
				detection.
	ALS Environmental -			
	Calgary			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			300000000000000000000000000000000000000
	Calgary			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			udicolion.
	Calgary			
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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	ALS Environmental - Calgary			alkalinity values.
Ammonia by Fluorescence	E298	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde).
	ALS Environmental - Calgary		2010	This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric
	ALS Environmental - Calgary			method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Calgary	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Calgary	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental -	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.
	Calgary			Field filtration is recommended to ensure test results represent conditions at time of sampling.

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ALS Environmental Valence of the second of t	Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
ALS Environmental - Vancouver Total Metals in Water by CRC IGPMS E420 ALS Environmental - Calgary Dissolved Metals in Water by CRC IGPMS E421 ALS Environmental - Calgary Dissolved Metals in Water by CRC IGPMS E421 ALS Environmental - Calgary Dissolved Metals in Water by CRC IGPMS E421 ALS Environmental - Calgary Water APHA 3030B/EPA 6020B (mod) Callisson/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Calgary Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Callisson/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Level, LOR = 0.5 ppt) ALS Environmental - Vancouver Total Methylmortcury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental - Vancouver E508 Water E609-L ALS Environmental - Vancouver E619 ALS Environmental - Vancouver E619 ALS Environmental - Vancouver Dissolved Methylmortcury in Water by GCAFS E636 Water ALS Environmental - Vancouver Dissolved Methylmortcury in Water by Colour E637 Water APHA 300-Fe BAG (mod) This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmortcury and minimizer matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desoprion and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported 'as MeHg'. Dissolved Forrous Iron in Water by Colour E670B ALS Environmental - Vancouver E670B ALS Environmental - Vancouver E670B APHA 3500-Fe BAG (mod)	Reactive Silica by Colourimetry	E392	Water	APHA 4500-SiO2 E	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue
Total Metals in Water by CRC ICPMS E420 Water ALS Environmental Caigary Dissolved Metals in Water by CRC ICPMS E421 ALS Environmental Caigary ALS Environmental Caigary ALS Environmental Caigary Total Metrury in Water by CVAFS (Low E508-L Vancouver				(mod)	colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above
Total Metals in Water by CRC ICPMS E420 ALS Environmental - Calgary Dissolved Metals in Water by CRC ICPMS E421 Water APHA 3000B/EPA 6020B (mod) ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Calgary ALS Environmental - Vancouver E508-L Water E508-L Water E508-L Water E508-L Value (E508-L Value Level, LOR = 0.5 ppt) ALS Environmental - Vancouver ALS Environmental - Vancouver Total Methylmercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental - Vancouver Total Methylmercury in Water by GCAFS E536 Water EPA 1630 (mod) ALS Environmental - Vancouver Dissolved Methylmercury in Water by GCAFS E537 Water EPA 1630 (mod) Dissolved Methylmercury in Water by GCAFS E537 Water EPA 1630 (mod) Dissolved Ferrous fron in Water by CClour E541 Water APHA 3500-F ALS Environmental - Vancouver E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Methylmercury in Water by GCAFS E537 Water EPA 1630 (mod) Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Methylmercury in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colour E541 Water APHA 3500-F ALS Environmental - Vancouver Dissolved Ferrous fron in Water by Colou		ALS Environmental -			100 mg/L is a negative interference on this test
Collision/Reaction Cell (CPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. ALS Environmental - Calgary ALS Environmental - Cal		Vancouver			
ALS Environmental Calgary Water APHA 3030B/EPA 60208 (mod) Dissolved Metals in Water by CRC ICPMS E421 Water APHA 3030B/EPA 60208 (mod) ALS Environmental Calgary Water APHA 3030B/EPA 60208 (mod) ALS Environmental Calgary Water APHA 3030B/EPA 60208 (mod) ALS Environmental Vancouver Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Water APHA 3030B/EPA 1631E (mod) ALS Environmental Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water samples are filtered (0.45 um), preserved with HCl, then undergo and the preserved with HCl, then undergo and the preserved with stannous chloride, and analyzed by CVAFS. This method Clorose Me	Total Metals in Water by CRC ICPMS	E420	Water		
Dissolved Metals in Water by CRC ICPMS E421 Water APHA 3030B/EPA 60208 (mod) ALS Environmental-Calgary Water APHA 3030B/EPA 60208 (mod) ALS Environmental-Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental-Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental-Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental-Vancouver Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental-Vancouver Total Methylmercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) ALS Environmental-Vancouver Total Methylmercury in Water by GCAFS E536 Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Total Methylmercury in Water by GCAFS E536 Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS. Water Samples are filtered (0.45 um), preserv		ALS Environmental -		(mod)	Completification Control Me.
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Dissolved Methylmercury in Water by GCAFS E537 Water EPA 1630 (mod) This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg". Dissolved Ferrous Iron in Water by Colour E541 Water APHA 3500-Fe B/James Ball et al (1999) ALS Environmental - Vancouver APHA 3500-Fe B/James Ball et al (1999) (1999) ALS Environmenty (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client.		ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
Dissolved Methylmercury in Water by GCAFS E537 Water EPA 1630 (mod) This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg". Dissolved Ferrous Iron in Water by Colour E541 ALS Environmental - Vancouver Water APHA 3500-Fe B/James Ball et al (1999) ALS Environmental - Vancouver Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg". This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client.		Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
ALS Environmental - Vancouver Bissolved Ferrous Iron in Water by Colour E541 ALS Environmental - Vancouver Water APHA 3500-Fe Bijames Ball et al (1999) Chlorophyll-a by Fluorometry (Support Lab Filtered μg) Bissolved Ferrous Iron in Water by Colour E741 Water APHA 3500-Fe Bijames Ball et al (1999) Bijames Ball et al (1999) Chlorophyll-a by Fluorometry (Support Lab Filtered μg) Bijames Ball et al (1999) ALS Environmental - Vancouver Water APHA 3500-Fe Bijames Ball et al (1999) Bijam					
ALS Environmental - Vancouver ALS Environmental - Vancouver APHA 3500-Fe B/James Ball et al Vancouver ALS Environmental - Vancouver ALS Environmental - Vancouver Bisolved Ferrous Iron in Water by Colour E541 Water APHA 3500-Fe B/James Ball et al (1999) ALS Environmental - Vancouver Chlorophyll-a by Fluorometry (Support Lab Filtered µg) ALS Environmental - ALS Environmental - Vancouver APHA 3500-Fe B/James Ball et al Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B ALS Environmental - Vancouver ALS Environ	Dissolved Methylmercury in Water by GCAFS	E537	Water	EPA 1630 (mod)	·
Vancouver The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg". Dissolved Ferrous Iron in Water by Colour E541 Water APHA 3500-Fe B/James Ball et al Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) ALS Environmental - ALS Environmental - ALS Environmental -					, ,
atomic flourescence spectroscopy. Results are reported "as MeHg". Dissolved Ferrous Iron in Water by Colour E541 Water APHA 3500-Fe B/James Ball et al Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1 um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) ALS Environmental - ALS Environmental - ALS Environmental -					
Dissolved Ferrous Iron in Water by Colour E541 Water APHA 3500-Fe B and B/James Ball et al (1999) ALS Environmental - Vancouver Chlorophyll-a by Fluorometry (Support Lab E870B Water APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) ALS Environmental - ALS Environmental -		Vancouver			
B/James Ball et al (1999) B/James Ball et al (1	B: 1 15 1 : W . 1 0 1				
ALS Environmental - Vancouver ALS Environmental - Vancouver Water EPA 445.0 (mod) ALS Environmental - Vancouver ALS Environmental - Vancouver (1999) filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab EPA 445.0 (mod) ALS Environmental - ALS Environmental - Vancouver ALS Environmental - Vancouver Mater EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client.	Dissolved Ferrous Iron in Water by Colour	E541	Water		
Vancouver Vancouver Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client.					
sing 0.1um filters. Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client. ALS Environmental -				(1999)	
Chlorophyll-a by Fluorometry (Support Lab E870B Water EPA 445.0 (mod) Chlorophyll-a is determined by solvent extraction followed with analysis by fluorometry using the non-acidification procedure. Sampling volume not provided by client. ALS Environmental -		Vancouver			
Filtered μg) ALS Environmental -	Chlorophyll-a by Fluorometry (Support Lab	E870B	Water	EPA 445.0 (mod)	ŭ
ALS Environmental -	Filtered μg)			` ′	
		ALS Environmental -			J
		Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Hardness (Calculated)	EC100	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and
				Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	ALS Environmental -			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially
	Calgary			calculated from dissolved Calcium and Magnesium concentrations, because it is a
				property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and
				Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	ALS Environmental -			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially
	Calgary			calculated from dissolved Calcium and Magnesium concentrations, because it is a
				property of water due to dissolved divalent cations. Hardness from total Ca/Mg is
Ion Balance using Dissolved Metals	EC101	Water	APHA 1030E	normally comparable to Dissolved Hardness in non-turbid waters. Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA
ion Balance using Bissorved Wetais	ECIUI	vater	7117110000	Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	ALS Environmental -			used where available. Minor ions are included where data is present.
	Calgary			Ion Balance cannot be calculated accurately for waters with very low electrical
	3 7			conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as
				N) + Nitrate (as N).
	ALS Environmental -			
	Calgary			
Total Kjeldahl Nitrogen (Calculation)	EC318	Water	BC MOE	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total
			LABORATORY	Nitrogen - [Nitrite (as N) + Nitrate (as N)].
	ALS Environmental -		MANUAL (2005)	
	Vancouver	Water	CALC	Convert results to sample concentration based on support lab filter information.
Chlorophyll-a by Fluorometry (Support Lab	EC870B	vvalei	CALC	Convert results to sample concentration based on support lab linter information.
Filtered µg/L)	ALS Environmental -			
	Vancouver			
Chlorophyll-a Filtration by Support Laboratory	EF870B	Water	EPA 445.0 (mod)	Filtration for chlorophyll-a analysis
	21 01 02		,	, , ,
	ALS Environmental -			
	Calgary			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
	ALS Environmental -			
	Calgary			
Preparation for Total Organic Carbon by	EP355	Water		Preparation for Total Organic Carbon by Combustion
Combustion				
	ALS Environmental -			
	Calgary			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion				
	ALS Environmental -			
	Calgary			
Digestion for Total Nitrogen in water	EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	ALC Environmental			
	ALS Environmental - Vancouver			
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Total Friosphorus in Water	EP3/2	vvater	Al 11A 4300-1 L (11100).	Camples are neated with a persunate digestion reagont.
	ALS Environmental -			
	Calgary			
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a
			, , ,	persulfate digestion reagent.
	ALS Environmental -			
	Calgary			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Calgary			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	ALS Environmental -			
Tribball by the Day	Vancouver	10/	EDA 1000	
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylinercury Water Freparation	EP537	vvalei	EFA 1030	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
	vanocavor			atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
,	2.011	·	B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver		(,	sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
				method.
Chlorophyll-a Extraction (Support Lab Filtered)	EP870B	Water	EPA 445.0 (mod)	Chlorophyll-a solvent extraction.
	ALS Environmental -			
	Vancouver			
	vancouvei			

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : **FJ2202978** Page : 1 of 21

Amendment : 5

Address

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

: 600 Comox Road Address : 11007 Alaska Road Courtenay BC Canada V9N3P6 Fort St. John, British

Fort St. John, British Columbia Canada V1J 6P3
Telephone ;+1 250 261 5517

Laboratory Department

Telephone : Telephone :+1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received :19-Oct-2022 11:29

Sampler :----

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5

No. of samples analysed : 5

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Position

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Signatories

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

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Anthony Calero	Supervisor - Inorganic	Calgary Metals, Calgary, Alberta
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
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Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Louis Wagner	Technical Specialist	Calgary Administration, Calgary, Alberta
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Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Millicent Brentnall	Laboratory Analyst	Calgary Metals, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Calgary Inorganics, Calgary, Alberta

Ruifang Zheng Sara Niroomand Shirley Li Tracy Harley Vladka Stamenova

Team Leader - Inorganics

Analyst

Team Leader - Inorganics
Supervisor - Water Quality Instrumentation
Analyst

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Vancouver Inorganics, Burnaby, British Columbia
Calgary Inorganics, Calgary, Alberta

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 706831)										
CG2214572-001	Anonymous	Colour, true		E329	5.0	CU	138	136	1.19%	20%	
Physical Tests (QC	Lot: 708441)										
FJ2202978-001	W1-SHALLOW	Solids, total dissolved [TDS]		E162	20	mg/L	110	108	3	Diff <2x LOR	
Physical Tests (QC	Lot: 708445)										
CG2214684-004	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	10.5	10.3	0.2	Diff <2x LOR	
Physical Tests (QC	Lot: 709478)										
CG2214644-003	Anonymous	pH		E108	0.10	pH units	5.24	5.45	3.93%	4%	
Physical Tests (QC	Lot: 709479)										
CG2214645-001	Anonymous	Conductivity		E100	2.0	μS/cm	1260	1270	0.710%	10%	
Physical Tests (QC	Lot: 709480)										
CG2214645-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	319	322	0.905%	20%	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	319	322	0.905%	20%	
Anions and Nutrier	its (QC Lot: 706619)										
CG2214600-001	Anonymous	Fluoride	16984-48-8	E235.F	0.400	mg/L	<0.400	<0.400	0	Diff <2x LOR	
Anions and Nutrier	its (QC Lot: 706621)										
CG2214600-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	6.00	mg/L	3410	3450	1.16%	20%	
Anions and Nutrier	its (QC Lot: 706622)										
CG2214600-001	Anonymous	Chloride	16887-00-6	E235.CI	10.0	mg/L	509	512	0.615%	20%	
Anions and Nutrier	its (QC Lot: 706624)										
FJ2202978-001	W1-SHALLOW	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0688	0.0668	2.95%	20%	
Anions and Nutrier	its (QC Lot: 706625)										
FJ2202978-001	W1-SHALLOW	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0017	0.0016	0.0001	Diff <2x LOR	
Anions and Nutrier	its (QC Lot: 706660)										
CG2214557-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrier	its (QC Lot: 706906)										
CG2214603-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.380	0.380	0.0263%	20%	
Anions and Nutrier	its (QC Lot: 709210)										
FC2202569-008	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0063	0.0058	0.0005	Diff <2x LOR	

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Client: Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	ts (QC Lot: 709885)										
FJ2202978-001	W1-SHALLOW	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.155	0.155	0.0002	Diff <2x LOR	
Anions and Nutrient	ts (QC Lot: 709902)										
CG2214526-005	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0822	0.0815	0.799%	20%	
Anions and Nutrient	ts (QC Lot: 712325)										
FJ2202956-001	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	4.16	4.16	0.002	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 706185	5)									
FJ2202978-001	W1-SHALLOW	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.69	3.04	0.35	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 706186										
FJ2202978-001	W1-SHALLOW	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.61	2.58	0.03	Diff <2x LOR	
Total Metals (QC Lo	ot: 710437)										
CG2214619-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00068	0.00071	0.00002	Diff <2x LOR	
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	0.00020	0.00021	0.000004	Diff <2x LOR	
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0301	0.0301	0.0593%	20%	
		Beryllium, total	7440-41-7	E420	0.000040	mg/L	<0.040 µg/L	<0.000040	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Boron, total	7440-42-8	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	1.41 µg/L	0.00150	6.43%	20%	
		Calcium, total	7440-70-2	E420	0.100	mg/L	472	479	1.66%	20%	
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.000027	0.000030	0.000002	Diff <2x LOR	
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	0.77 μg/L	0.00077	0.000002	Diff <2x LOR	
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.00102	<0.00100	0.00002	Diff <2x LOR	
		Iron, total	7439-89-6	E420	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0911	0.0889	2.42%	20%	
		Magnesium, total	7439-95-4	E420	0.0100	mg/L	364	368	0.939%	20%	
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.00574	0.00585	1.96%	20%	
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.00402	0.00415	3.01%	20%	
		Nickel, total	7440-02-0	E420	0.00100	mg/L	0.0658	0.0658	0.0509%	20%	
		Phosphorus, total	7723-14-0	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	
		Potassium, total	7440-09-7	E420	0.100	mg/L	5.30	5.28	0.325%	20%	
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00386	0.00379	0.00008	Diff <2x LOR	
		Selenium, total	7782-49-2	E420	0.000100	mg/L	588 μg/L	0.594	0.969%	20%	

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Client: Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lo	ot: 710437) - continued										
CG2214619-001	Anonymous	Silicon, total	7440-21-3	E420	0.20	mg/L	2.69	2.65	1.54%	20%	
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	
		Sodium, total	7440-23-5	E420	0.100	mg/L	2.63	2.65	0.638%	20%	
		Strontium, total	7440-24-6	E420	0.00040	mg/L	0.289	0.296	2.51%	20%	
		Sulfur, total	7704-34-9	E420	1.00	mg/L	775	752	3.08%	20%	
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	
		Thallium, total	7440-28-0	E420	0.000020	mg/L	0.000069	0.000066	0.000003	Diff <2x LOR	
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.0198	0.0195	1.19%	20%	
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	
		Zinc, total	7440-66-6	E420	0.0060	mg/L	0.0795	0.0787	1.05%	20%	
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	
Total Metals (QC Lo	ot: 715085)										
CG2214161-001	Anonymous	Mercury, total	7439-97-6	E508-L	0.50	ng/L	1.47	1.50	0.02	Diff <2x LOR	
Dissolved Metals (C	QC Lot: 712298)										
CG2214693-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0011	0.00004	Diff <2x LOR	
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00026	0.00025	0.00001	Diff <2x LOR	
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	0.00010	0.000002	Diff <2x LOR	
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0894	0.0865	3.24%	20%	
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.020 µg/L	<0.000020	0	Diff <2x LOR	
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.016	0.016	0.0005	Diff <2x LOR	
		Boron, dissolved Cadmium, dissolved	7440-42-8 7440-43-9	E421	0.010 0.0000050	mg/L mg/L	0.016 0.0674 µg/L	0.016 0.0000696	0.0005 3.06%	Diff <2x LOR 20%	
		, i									
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0674 µg/L	0.0000696	3.06%	20%	
		Cadmium, dissolved Calcium, dissolved	7440-43-9 7440-70-2	E421	0.0000050 0.050	mg/L mg/L	0.0674 μg/L 186	0.0000696 188	3.06% 0.734%	20% 20%	
		Cadmium, dissolved Calcium, dissolved Cesium, dissolved	7440-43-9 7440-70-2 7440-46-2	E421 E421 E421	0.0000050 0.050 0.000010	mg/L mg/L mg/L	0.0674 µg/L 186 0.000011	0.0000696 188 <0.000010	3.06% 0.734% 0.000001	20% 20% Diff <2x LOR	
		Cadmium, dissolved Calcium, dissolved Cesium, dissolved Chromium, dissolved Cobalt, dissolved	7440-43-9 7440-70-2 7440-46-2 7440-47-3	E421 E421 E421 E421	0.0000050 0.050 0.000010 0.00050	mg/L mg/L mg/L mg/L	0.0674 μg/L 186 0.000011 <0.00050	0.0000696 188 <0.000010 <0.00050	3.06% 0.734% 0.000001 0	20% 20% Diff <2x LOR Diff <2x LOR	
		Cadmium, dissolved Calcium, dissolved Cesium, dissolved Chromium, dissolved Cobalt, dissolved Copper, dissolved	7440-43-9 7440-70-2 7440-46-2 7440-47-3 7440-48-4	E421 E421 E421 E421 E421	0.0000050 0.050 0.000010 0.00050 0.00010	mg/L mg/L mg/L mg/L	0.0674 μg/L 186 0.000011 <0.00050 <0.10 μg/L	0.0000696 188 <0.000010 <0.00050 <0.00010	3.06% 0.734% 0.000001 0	20% 20% Diff <2x LOR Diff <2x LOR	
		Cadmium, dissolved Calcium, dissolved Cesium, dissolved Chromium, dissolved Cobalt, dissolved	7440-43-9 7440-70-2 7440-46-2 7440-47-3 7440-48-4 7440-50-8	E421 E421 E421 E421 E421 E421	0.0000050 0.050 0.000010 0.00050 0.00010 0.00020	mg/L mg/L mg/L mg/L mg/L	0.0674 μg/L 186 0.000011 <0.00050 <0.10 μg/L 0.00024	0.0000696 188 <0.000010 <0.00050 <0.00010 0.00025	3.06% 0.734% 0.000001 0 0	20% 20% Diff <2x LOR Diff <2x LOR Diff <2x LOR Diff <2x LOR	

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Sub-Matrix: Water							Labora	Laboratory Duplicate (DUP) Report						
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie			
Dissolved Metals (C	QC Lot: 712298) - cont	inued												
CG2214693-001	Anonymous	Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	105	101	4.54%	20%				
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00906	0.00862	5.00%	20%				
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00727	0.00730	0.392%	20%				
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00845	0.00827	2.11%	20%				
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR				
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.89	2.77	4.19%	20%				
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00171	0.00161	0.00010	Diff <2x LOR				
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	89.1 µg/L	0.0898	0.857%	20%				
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.80	1.74	3.67%	20%				
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR				
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	6.53	6.26	4.28%	20%				
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.232	0.234	0.559%	20%				
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	181	181	0.133%	20%				
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR				
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000010	<0.000010	0.00000005	Diff <2x LOR				
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR				
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR				
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR				
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR				
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00607	0.00605	0.286%	20%				
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR				
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0031	0.0029	0.0002	Diff <2x LOR				
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR				
Dissolved Metals (C	OC Lot: 715134)													
J2202978-001	W1-SHALLOW	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR				
Speciated Metals (C	QC Lot: 728312)													
FJ2202949-005	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000080	μg/L	<0.000000080 mg/L	<0.000080	0	Diff <2x LOR				
Speciated Metals (C	QC Lot: 730526)													
J2202949-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000000125 mg/L	0.000149	17.0%	30%				
Speciated Metals (C														
FJ2202978-004	D1-DEEP	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR				

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Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Speciated Metals (0	QC Lot: 747329) - continu	ied									
FJ2202978-002	W1-DEEP	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (0	QC Lot: 756854)										
FJ2202949-001	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	0.046	0.046	0.0002	Diff <2x LOR	

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Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 706831)					
Colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 708441)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Physical Tests (QCLot: 708445)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
hysical Tests (QCLot: 709479)					
Conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 709480)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
nions and Nutrients (QCLot: 706619)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
nions and Nutrients (QCLot: 706621)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
nions and Nutrients (QCLot: 706622)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
nions and Nutrients (QCLot: 706624)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
nions and Nutrients (QCLot: 706625)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
nions and Nutrients (QCLot: 706660)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
nions and Nutrients (QCLot: 706906)					
Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
nions and Nutrients (QCLot: 709210)					
Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
nions and Nutrients (QCLot: 709885)					
Nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
nions and Nutrients (QCLot: 709902)					
Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	

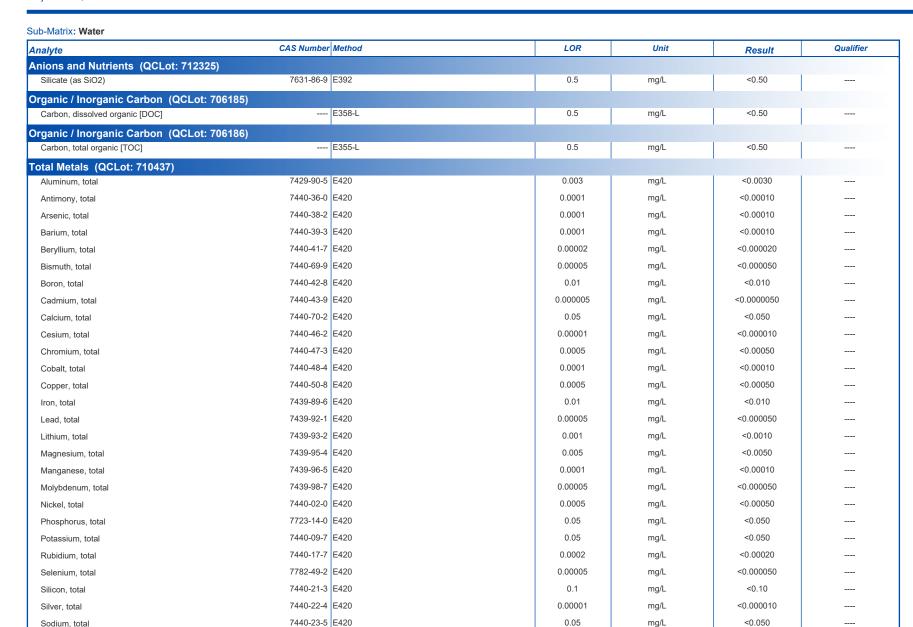
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Strontium, total

Sulfur, total

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Project : Surface Water MON8/9-With Metals



0.0002

0.5

mg/L

mg/L

< 0.00020

< 0.50

7440-24-6 E420

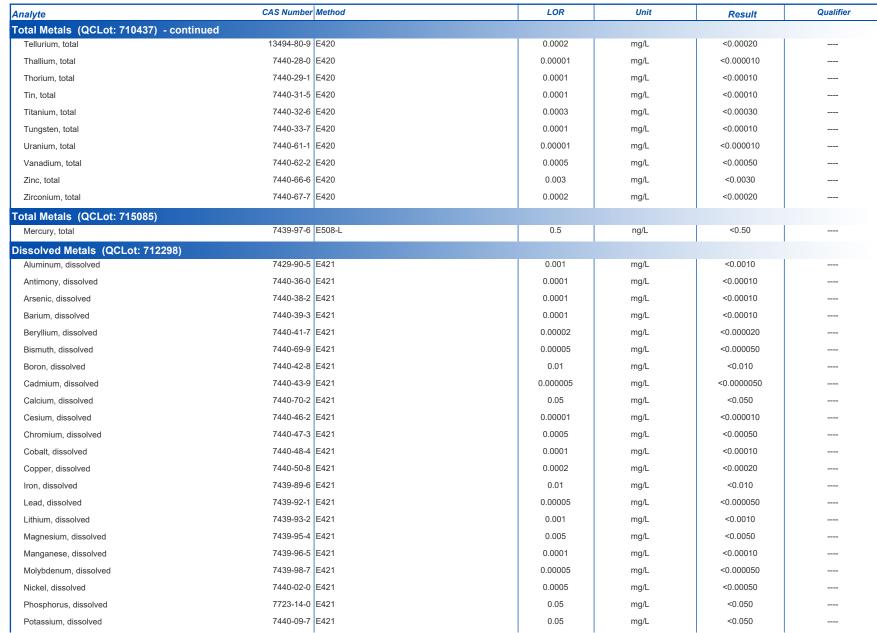
7704-34-9 E420



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Project : Surface Water MON8/9-With Metals

Sub-Matrix: Water



Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 712298) - conti	nued				
Rubidium, dissolved	7440-17-7 E421	0.0002	mg/L	<0.00020	
Selenium, dissolved	7782-49-2 E421	0.00005	mg/L	<0.000050	
Silicon, dissolved	7440-21-3 E421	0.05	mg/L	<0.050	
Silver, dissolved	7440-22-4 E421	0.00001	mg/L	<0.000010	
Sodium, dissolved	7440-23-5 E421	0.05	mg/L	<0.050	
Strontium, dissolved	7440-24-6 E421	0.0002	mg/L	<0.00020	
Sulfur, dissolved	7704-34-9 E421	0.5	mg/L	<0.50	
Tellurium, dissolved	13494-80-9 E421	0.0002	mg/L	<0.00020	
Thallium, dissolved	7440-28-0 E421	0.00001	mg/L	<0.000010	
Thorium, dissolved	7440-29-1 E421	0.0001	mg/L	<0.00010	
Tin, dissolved	7440-31-5 E421	0.0001	mg/L	<0.00010	
Titanium, dissolved	7440-32-6 E421	0.0003	mg/L	<0.00030	
Tungsten, dissolved	7440-33-7 E421	0.0001	mg/L	<0.00010	
Uranium, dissolved	7440-61-1 E421	0.00001	mg/L	<0.000010	
Vanadium, dissolved	7440-62-2 E421	0.0005	mg/L	<0.00050	
Zinc, dissolved	7440-66-6 E421	0.001	mg/L	<0.0010	
Zirconium, dissolved	7440-67-7 E421	0.0002	mg/L	<0.00020	
Dissolved Metals (QCLot: 715134)					
Mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
peciated Metals (QCLot: 728312)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 730526)					
Methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 733968)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 740379)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
speciated Metals (QCLot: 747329)					
Methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
speciated Metals (QCLot: 756854)					
Iron, ferrous [Fe II], dissolved	15438-31-0 E541	0.02	mg/L	<0.020	
Plant Pigments (QCLot: 711796)					
Chlorophyll a	479-61-8 E870B	0.002	μg/sample	<0.0020	

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Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water						Laboratory Cor	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 706831)									
Colour, true		E329	5	CU	100 CU	95.8	85.0	115	
Physical Tests (QCLot: 708441)									
Solids, total dissolved [TDS]		E162	10	mg/L	1000 mg/L	95.6	85.0	115	
Physical Tests (QCLot: 708445)									
Solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	106	85.0	115	
Physical Tests (QCLot: 709478)									
pH		E108		pH units	7 pH units	100	98.6	101	
Physical Tests (QCLot: 709479)									
Conductivity		E100	1	μS/cm	146.9 μS/cm	100	90.0	110	
Physical Tests (QCLot: 709480)									
Alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	103	85.0	115	
Anions and Nutrients (QCLot: 706619)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.6	90.0	110	
Anions and Nutrients (QCLot: 706621)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	
Anions and Nutrients (QCLot: 706622)									
Chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	98.8	90.0	110	
Anions and Nutrients (QCLot: 706624)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.1	90.0	110	
Anions and Nutrients (QCLot: 706625)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.7	90.0	110	
Anions and Nutrients (QCLot: 706660)									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	101	80.0	120	
Anions and Nutrients (QCLot: 706906)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	102	85.0	115	
Anions and Nutrients (QCLot: 709210)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	105	80.0	120	
Anions and Nutrients (QCLot: 709885)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	97.4	75.0	125	
Anions and Nutrients (QCLot: 709902)									
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.03 mg/L	100	80.0	120	

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Sub-Matrix: Water						Laboratory Co	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 712325)									
Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	104	85.0	115	
Organic / Inorganic Carbon (QCLot: 706185)									
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	95.5	80.0	120	
Organic / Inorganic Carbon (QCLot: 706186)									
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	97.5	80.0	120	
Total Metals (QCLot: 710437)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.8	80.0	120	
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	87.3	80.0	120	
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	89.0	80.0	120	
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	80.1	80.0	120	
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	83.1	80.0	120	
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	83.4	80.0	120	
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	87.6	80.0	120	
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	91.8	80.0	120	
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	86.6	80.0	120	
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	92.1	80.0	120	
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	91.9	80.0	120	
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	90.7	80.0	120	
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	90.0	80.0	120	
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	86.6	80.0	120	
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.5	80.0	120	
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	91.2	80.0	120	
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	90.4	80.0	120	
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	89.8	80.0	120	
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	94.8	70.0	130	
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	94.6	80.0	120	
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	96.4	80.0	120	
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	84.6	80.0	120	
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	92.7	60.0	140	
Silver, total		E420	0.00001	mg/L	0.1 mg/L	82.0	80.0	120	
Sodium, total	7440-23-5		0.05	mg/L	50 mg/L	96.4	80.0	120	
Strontium, total	7440-24-6		0.0002	mg/L	0.25 mg/L	91.8	80.0	120	
,		•	1	J. –	5.25 mg/L	01.0		1	I

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number M	lethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Total Metals (QCLot: 710437) - continued											
Sulfur, total	7704-34-9 E	420	0.5	mg/L	50 mg/L	109	80.0	120			
Tellurium, total	13494-80-9 E	420	0.0002	mg/L	0.1 mg/L	81.0	80.0	120			
Thallium, total	7440-28-0 E	420	0.00001	mg/L	1 mg/L	83.2	80.0	120			
Thorium, total	7440-29-1 E	420	0.0001	mg/L	0.1 mg/L	81.7	80.0	120			
Tin, total	7440-31-5 E	420	0.0001	mg/L	0.5 mg/L	88.6	80.0	120			
Titanium, total	7440-32-6 E	420	0.0003	mg/L	0.25 mg/L	99.5	80.0	120			
Tungsten, total	7440-33-7 E	420	0.0001	mg/L	0.1 mg/L	86.6	80.0	120			
Uranium, total	7440-61-1 E	420	0.00001	mg/L	0.005 mg/L	90.7	80.0	120			
Vanadium, total	7440-62-2 E	420	0.0005	mg/L	0.5 mg/L	92.5	80.0	120			
Zinc, total	7440-66-6 E	420	0.003	mg/L	0.5 mg/L	80.8	80.0	120			
Zirconium, total	7440-67-7 E	420	0.0002	mg/L	0.1 mg/L	92.3	80.0	120			
Total Metals (QCLot: 715085)											
Mercury, total	7439-97-6 E	508-L	0.5	ng/L	5 ng/L	102	80.0	120			
Dissolved Metals (QCLot: 712298)											
Aluminum, dissolved	7429-90-5 E	421	0.001	mg/L	2 mg/L	102	80.0	120			
Antimony, dissolved	7440-36-0 E	421	0.0001	mg/L	1 mg/L	98.2	80.0	120			
Arsenic, dissolved	7440-38-2 E	421	0.0001	mg/L	1 mg/L	95.3	80.0	120			
Barium, dissolved	7440-39-3 E	421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120			
Beryllium, dissolved	7440-41-7 E	421	0.00002	mg/L	0.1 mg/L	92.8	80.0	120			
Bismuth, dissolved	7440-69-9 E	421	0.00005	mg/L	1 mg/L	96.5	80.0	120			
Boron, dissolved	7440-42-8 E	421	0.01	mg/L	1 mg/L	104	80.0	120			
Cadmium, dissolved	7440-43-9 E	421	0.000005	mg/L	0.1 mg/L	93.6	80.0	120			
Calcium, dissolved	7440-70-2 E	421	0.05	mg/L	50 mg/L	99.5	80.0	120			
Cesium, dissolved	7440-46-2 E	421	0.00001	mg/L	0.05 mg/L	98.8	80.0	120			
Chromium, dissolved	7440-47-3 E	421	0.0005	mg/L	0.25 mg/L	91.7	80.0	120			
Cobalt, dissolved	7440-48-4 E	421	0.0001	mg/L	0.25 mg/L	93.5	80.0	120			
Copper, dissolved	7440-50-8 E	421	0.0002	mg/L	0.25 mg/L	93.8	80.0	120			
Iron, dissolved	7439-89-6 E	421	0.01	mg/L	1 mg/L	94.6	80.0	120			
Lead, dissolved	7439-92-1 E	421	0.00005	mg/L	0.5 mg/L	96.9	80.0	120			
Lithium, dissolved	7439-93-2 E	421	0.001	mg/L	0.25 mg/L	103	80.0	120			
Magnesium, dissolved	7439-95-4 E	421	0.005	mg/L	50 mg/L	108	80.0	120			
Manganese, dissolved	7439-96-5 E	421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120			
Molybdenum, dissolved	7439-98-7 E	421	0.00005	mg/L	0.25 mg/L	94.6	80.0	120			
Nickel, dissolved	7440-02-0 E	421	0.0005	mg/L	0.5 mg/L	91.8	80.0	120			
		421	0.05	mg/L	J.		70.0	130			

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd



ıb-Matrix: Water					Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)				
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Dissolved Metals (QCLot: 712298) - continu	ued											
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.7	80.0	120				
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	94.0	80.0	120				
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	93.5	80.0	120				
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	97.4	60.0	140				
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.4	80.0	120				
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.0	80.0	120				
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120				
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120				
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	96.0	80.0	120				
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.8	80.0	120				
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	96.6	80.0	120				
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	93.3	80.0	120				
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.7	80.0	120				
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	96.9	80.0	120				
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	97.6	80.0	120				
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.6	80.0	120				
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	91.4	80.0	120				
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.0	80.0	120				
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	102	80.0	120				
Speciated Metals (QCLot: 728312)												
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	76.3	70.0	130				
Speciated Metals (QCLot: 730526)												
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	79.4	70.0	130				
Speciated Metals (QCLot: 733968) Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	79.0	70.0	130				
				P3/-	0.0020 μg/2	70.0						
Speciated Metals (QCLot: 740379) Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	81.8	70.0	130				
	22307-32-0		0.00002	μg/L	0.0025 µg/L	01.0	70.0	100				
Speciated Metals (QCLot: 747329)	22967-92-6	E527	0.00002	ug/l	0.0005 #	70.0	70.0	130				
Methylmercury (as MeHg), dissolved	22901-92-0	LUUI	0.00002	µg/L	0.0025 μg/L	73.9	70.0	130				
Speciated Metals (QCLot: 756854)	15100 1		0.00					400	ı			
Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.02	mg/L	0.5 mg/L	103	80.0	120				
Plant Pigments (QCLot: 711796)	100		0.000					400	ı			
Chlorophyll a	479-61-8	E8/0B	0.002	μg/sample	1 μg/sample	95.0	80.0	120				

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water	ub-Matrix: Water					Matrix Spike (MS) Report							
					Spi	ke	Recovery (%)	Recovery Limits (%)					
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
	ents (QCLot: 706619)												
CG2214600-002	Anonymous	Fluoride	16984-48-8	E235.F	0.898 mg/L	1 mg/L	89.8	75.0	125				
Anions and Nutri	ents (QCLot: 706621)												
CG2214600-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125				
Anions and Nutri	ents (QCLot: 706622)												
CG2214600-002	Anonymous	Chloride	16887-00-6	E235.CI	ND mg/L	100 mg/L	ND	75.0	125				
Anions and Nutri	ents (QCLot: 706624)												
FJ2202978-002	W1-DEEP	Nitrate (as N)	14797-55-8	E235.NO3-L	2.46 mg/L	2.5 mg/L	98.5	75.0	125				
Anions and Nutri	ents (QCLot: 706625)												
FJ2202978-002	W1-DEEP	Nitrite (as N)	14797-65-0	E235.NO2-L	0.501 mg/L	0.5 mg/L	100	75.0	125				
Anions and Nutri	ents (QCLot: 706660)												
CG2214557-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0534 mg/L	0.05 mg/L	107	70.0	130				
Anions and Nutri	ents (QCLot: 706906)												
CG2214603-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125				
Anions and Nutri	ents (QCLot: 709210)												
FC2202573-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130				
Anions and Nutri	ents (QCLot: 709885)												
FJ2202978-002	W1-DEEP	Nitrogen, total	7727-37-9	E366	0.378 mg/L	0.4 mg/L	94.5	70.0	130				
Anions and Nutri	ents (QCLot: 709902)												
FC2202568-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	ND mg/L	0.05 mg/L	ND	70.0	130				
Anions and Nutri	ents (QCLot: 712325)												
FJ2202956-002	Anonymous	Silicate (as SiO2)	7631-86-9	E392	10.4 mg/L	10 mg/L	104	75.0	125				
Organic / Inorgar	nic Carbon (QCLot: 70	6185)											
FJ2202978-001	W1-SHALLOW	Carbon, dissolved organic [DOC]		E358-L	4.85 mg/L	5 mg/L	97.0	70.0	130				
Organic / Inorgar	nic Carbon (QCLot: 70	6186)											
FJ2202978-001	W1-SHALLOW	Carbon, total organic [TOC]		E355-L	5.24 mg/L	5 mg/L	105	70.0	130				
Total Metals (QC	Lot: 710437)												
CG2214619-003	Anonymous	Aluminum, total	7429-90-5	E420	2.16 mg/L	2 mg/L	108	70.0	130				

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd



ub-Matrix: Water							Matrix Spi	ke (MS) Report			
					Spi	ike	Recovery (%)	Recovery	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
Total Metals (QC	CLot: 710437) - conti	nued									
CG2214619-003	Anonymous	Antimony, total	7440-36-0	E420	0.201 mg/L	0.2 mg/L	100	70.0	130		
		Arsenic, total	7440-38-2	E420	0.203 mg/L	0.2 mg/L	102	70.0	130		
		Barium, total	7440-39-3	E420	0.202 mg/L	0.2 mg/L	101	70.0	130		
		Beryllium, total	7440-41-7	E420	0.403 mg/L	0.4 mg/L	101	70.0	130		
		Bismuth, total	7440-69-9	E420	0.103 mg/L	0.1 mg/L	103	70.0	130		
		Boron, total	7440-42-8	E420	1.09 mg/L	1 mg/L	109	70.0	130		
		Cadmium, total	7440-43-9	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130		
		Calcium, total	7440-70-2	E420	ND mg/L	40 mg/L	ND	70.0	130		
		Cesium, total	7440-46-2	E420	0.114 mg/L	0.1 mg/L	114	70.0	130		
		Chromium, total	7440-47-3	E420	0.414 mg/L	0.4 mg/L	103	70.0	130		
		Cobalt, total	7440-48-4	E420	0.204 mg/L	0.2 mg/L	102	70.0	130		
		Copper, total	7440-50-8	E420	0.197 mg/L	0.2 mg/L	98.6	70.0	130		
		Iron, total	7439-89-6	E420	20.2 mg/L	20 mg/L	101	70.0	130		
		Lead, total	7439-92-1	E420	0.215 mg/L	0.2 mg/L	108	70.0	130		
		Lithium, total	7439-93-2	E420	0.862 mg/L	1 mg/L	86.2	70.0	130		
		Magnesium, total	7439-95-4	E420	ND mg/L	10 mg/L	ND	70.0	130		
		Manganese, total	7439-96-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130		
		Molybdenum, total	7439-98-7	E420	0.228 mg/L	0.2 mg/L	114	70.0	130		
		Nickel, total	7440-02-0	E420	0.390 mg/L	0.4 mg/L	97.5	70.0	130		
		Phosphorus, total	7723-14-0	E420	104 mg/L	100 mg/L	104	70.0	130		
		Potassium, total	7440-09-7	E420	40.6 mg/L	40 mg/L	102	70.0	130		
		Rubidium, total	7440-17-7	E420	0.211 mg/L	0.2 mg/L	106	70.0	130		
		Selenium, total	7782-49-2	E420	0.396 mg/L	0.4 mg/L	99.1	70.0	130		
		Silicon, total	7440-21-3	E420	96.4 mg/L	100 mg/L	96.4	70.0	130		
		Silver, total	7440-22-4	E420	0.0444 mg/L	0.04 mg/L	111	70.0	130		
		Sodium, total	7440-23-5	E420	19.3 mg/L	20 mg/L	96.4	70.0	130		
		Strontium, total	7440-24-6	E420	ND mg/L	0.2 mg/L	ND	70.0	130		
		Sulfur, total	7704-34-9	E420	ND mg/L	200 mg/L	ND	70.0	130		
		Tellurium, total	13494-80-9	E420	0.398 mg/L	0.4 mg/L	99.5	70.0	130		
		Thallium, total	7440-28-0	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130		
		Thorium, total	7440-29-1	E420	0.216 mg/L	0.2 mg/L	108	70.0	130		
		Tin, total	7440-31-5	E420	0.203 mg/L	0.2 mg/L	101	70.0	130		
		Titanium, total	7440-32-6	E420	0.402 mg/L	0.4 mg/L	100	70.0	130		
		Tungsten, total	7440-33-7	E420	0.214 mg/L	0.2 mg/L	107	70.0	130		
	1	Uranium, total	7440-61-1	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130		

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd



ıb-Matrix: Water					Matrix Spike (MS) Report							
					Spi	ike	Recovery (%)	Recovery	Limits (%)			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier		
	Lot: 710437) - conti	inued										
CG2214619-003	Anonymous	Vanadium, total	7440-62-2	E420	1.03 mg/L	1 mg/L	103	70.0	130			
		Zinc, total	7440-66-6	E420	3.90 mg/L	4 mg/L	97.6	70.0	130			
		Zirconium, total	7440-67-7	E420	0.487 mg/L	0.4 mg/L	122	70.0	130			
otal Metals (QC	Lot: 715085)											
CG2214161-002	Anonymous	Mercury, total	7439-97-6	E508-L	4.98 ng/L	5 ng/L	99.6	70.0	130			
issolved Metals	(QCLot: 712298)											
CG2214807-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	1.87 mg/L	2 mg/L	93.5	70.0	130			
		Antimony, dissolved	7440-36-0	E421	0.188 mg/L	0.2 mg/L	93.8	70.0	130			
		Arsenic, dissolved	7440-38-2	E421	0.187 mg/L	0.2 mg/L	93.3	70.0	130			
		Barium, dissolved	7440-39-3	E421	0.178 mg/L	0.2 mg/L	89.2	70.0	130			
		Beryllium, dissolved	7440-41-7	E421	0.337 mg/L	0.4 mg/L	84.2	70.0	130			
		Bismuth, dissolved	7440-69-9	E421	0.0885 mg/L	0.1 mg/L	88.5	70.0	130			
		Boron, dissolved	7440-42-8	E421	1.05 mg/L	1 mg/L	105	70.0	130			
		Cadmium, dissolved	7440-43-9	E421	0.0371 mg/L	0.04 mg/L	92.7	70.0	130			
		Calcium, dissolved	7440-70-2	E421	ND mg/L	40 mg/L	ND	70.0	130			
		Cesium, dissolved	7440-46-2	E421	0.0978 mg/L	0.1 mg/L	97.8	70.0	130			
		Chromium, dissolved	7440-47-3	E421	0.358 mg/L	0.4 mg/L	89.5	70.0	130			
		Cobalt, dissolved	7440-48-4	E421	ND mg/L	0.2 mg/L	ND	70.0	130			
		Copper, dissolved	7440-50-8	E421	0.182 mg/L	0.2 mg/L	91.0	70.0	130			
		Iron, dissolved	7439-89-6	E421	18.3 mg/L	20 mg/L	91.3	70.0	130			
		Lead, dissolved	7439-92-1	E421	0.184 mg/L	0.2 mg/L	91.8	70.0	130			
		Lithium, dissolved	7439-93-2	E421	0.856 mg/L	1 mg/L	85.6	70.0	130			
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	10 mg/L	ND	70.0	130			
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.2 mg/L	ND	70.0	130			
		Molybdenum, dissolved	7439-98-7	E421	0.181 mg/L	0.2 mg/L	90.4	70.0	130			
		Nickel, dissolved	7440-02-0	E421	0.358 mg/L	0.4 mg/L	89.6	70.0	130			
		Phosphorus, dissolved	7723-14-0	E421	96.5 mg/L	100 mg/L	96.5	70.0	130			
		Potassium, dissolved	7440-09-7	E421	ND mg/L	40 mg/L	ND	70.0	130			
		Rubidium, dissolved	7440-17-7	E421	0.180 mg/L	0.2 mg/L	90.2	70.0	130			
		Selenium, dissolved	7782-49-2	E421	0.380 mg/L	0.4 mg/L	95.1	70.0	130			
		Silicon, dissolved	7440-21-3	E421	95.0 mg/L	100 mg/L	95.0	70.0	130			
		Silver, dissolved	7440-22-4	E421	0.0350 mg/L	0.04 mg/L	87.5	70.0	130			
		Sodium, dissolved	7440-23-5	E421	ND mg/L	20 mg/L	ND	70.0	130			
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.2 mg/L	ND	70.0	130			
	T	Sulfur, dissolved	7704-34-9	E421	ND mg/L	200 mg/L	ND	70.0	130	1		

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Work Order: FJ2202978 Amendment 5
Client: Ecofish Research Ltd



Sub-Matrix: Water						Matrix Spike (MS) Report							
					Sp	ike	Recovery (%)	Recovery	Limits (%)				
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Dissolved Metals	(QCLot: 712298) - c	continued											
CG2214807-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130				
		Thallium, dissolved	7440-28-0	E421	0.0353 mg/L	0.04 mg/L	88.4	70.0	130				
		Thorium, dissolved	7440-29-1	E421	0.189 mg/L	0.2 mg/L	94.4	70.0	130				
		Tin, dissolved	7440-31-5	E421	0.184 mg/L	0.2 mg/L	92.3	70.0	130				
		Titanium, dissolved	7440-32-6	E421	0.378 mg/L	0.4 mg/L	94.6	70.0	130				
		Tungsten, dissolved	7440-33-7	E421	0.185 mg/L	0.2 mg/L	92.7	70.0	130				
		Uranium, dissolved	7440-61-1	E421	0.0359 mg/L	0.04 mg/L	89.8	70.0	130				
		Vanadium, dissolved	7440-62-2	E421	0.931 mg/L	1 mg/L	93.1	70.0	130				
		Zinc, dissolved	7440-66-6	E421	ND mg/L	4 mg/L	ND	70.0	130				
		Zirconium, dissolved	7440-67-7	E421	0.393 mg/L	0.4 mg/L	98.3	70.0	130				
Dissolved Metals	(QCLot: 715134)												
FJ2202978-002	W1-DEEP	Mercury, dissolved	7439-97-6	E509-L	5.35 ng/L	5 ng/L	107	70.0	130				
Speciated Metals	(QCLot: 728312)												
FJ2202978-001	W1-SHALLOW	Methylmercury (as MeHg), total	22967-92-6	E536	0.00178 μg/L	0.0025 μg/L	71.1	60.0	140				
Speciated Metals	(QCLot: 730526)												
FJ2202949-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00417 μg/L	0.0025 μg/L	83.5	60.0	140				
Speciated Metals	(QCLot: 733968)												
FJ2202994-003	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00175 μg/L	0.0025 μg/L	70.0	60.0	140				
Speciated Metals	(QCLot: 747329)												
VA22C5113-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00176 μg/L	0.0025 μg/L	70.4	60.0	140				
Speciated Metals	(QCLot: 756854)												
FJ2202949-002	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.355 mg/L	0.5 mg/L	71.1	70.0	130				

Chain of Custody (COC) / Analytical Request Form



Canada Toll Free: 1 800 668 9878

COC Number: 2022-OCT-MON8/9- Day 1

Page

of

Report To	Contact and company name below will app	ear on the final report		Reports / F	Recipients		Т		Tu	rnaro	und Tir	ne (T	AT) Re	questo	ed				handa d				
Company:	Ecofish Research Ltd.		Select Report F	ormat: PDF	☑ EXCEL ☑ ED	D (DIGITAL)	Zkou	tine [R]	if recei	ved by	3pm M	-F - n	surcha	rges ap	ply					April 1	15000		
Contact:	Sarah Kennedy		Merge QC/QC	Reports with COA	YES .NO	N/A □N/A	∐4 da	y [P4] i	f receiv	ed by :	3pm M-	F - 20	% rush	surchar	ge min	imum							
Phone:	250-334-3042		☑Compare Result	ts to Criteria on Report -									5% rush					AFF	IX ALS		ODE L		HERE
	Company address below will appear on the fir	nal report	Select Distribut	ion: 🖸 EMAIL	MAIL [FAX	_				-		0% rush 1% rush		-						SC OIII	4	
Street:	600 Comox Rd.		Email 1 or Fax	skennedy@ecofis	hresearch.com		L day [E] if received by 3pm M-F - 100% rush surcharge minimum Same day [E2] if received by 10am M-S - 200% rush surcharge. Additiona ess may apply to rush requests on weekends, statutory holidays and non-																
City/Province:	Courtenay, BC		Email 2	tkasubuchi@ecofi	shresearch.com			may ap ine tests		usn rec	luests o	n weer	cenos, si	atutory	nolloa	ys and	non-						- Contracting
Postal Code:	V9N 3P6		Email 3	waterqualitylabdat	ta@ecofishresea	rch.com	1	Date an	d Time	Requi	red for	ali E&	P TATS				dd-	กากาศ	-yy hi	irnim e	mq\rm		
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Company:	Ecofish Research Ltd.		Email 1 or Fax	accountspayable@	_ecofishresearc	h.com	3		lr	idicate	Filtered	(F), P	reserve	1 (P) or	Filtere	d and	Preserv	ed (F/F) below		Т	<u> </u>	्र
Contact:	accountspayable@ecofishresearch.com		Email 2] 🖳			F/P	Р			F		F	I	F				1 2	notes)
	Project Information		i Oil	l and Gas Require	d Fields (client	use)	CONTAINERS				a							mg/L)			\Box_{λ}	, 현	ا ۾ ا
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Job #:	Surface water MON8/9- with metals		Major/Minor Code:		Routing Code:		Įģ	Anions, Iour, pH	etry		gen,		S	Hg by GCAFS (L)	N B	5	CVAFS mg/L)	in Water by 1 0.0000005				2 6	
PO / AFE:	1200-25.03.02	·	Requisitioner:	B. L. //				SS.	rom	<u>a</u>	Nitro	ب	SCAI	à	Ca/Mg	S	D E	<u>8</u> 8			=	2	: [≶ ˈ
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ALS Lab Worl	Order# (ALS use only):	The second secon	ALS Contact:	Sean Zhang	Sampler:	Pat Beaupre	NUMBER	pH, TD diss ort	Chlorophyll-a by fluorometry	DOC, Total dissolved	Total Kjeldahl Nitrogen, IC, Total P	ONBALANCE-BC-CL	otal Methyl Hg by GCAFS 0.00000002 mg/L)	solved Methy 00000002 mg	Total Metals by (Hardness from T	ssolved Metals by CRC ardness	red 0.00	≗ ≱l			ON VO	EXTENDED	
ALS Sample #	Sample Identification	and/or Coordinates		Date	Time	S!- T	1≅	Ec,	oropł	Ž,	ZH3, To	BAL	M 1	900	al Me	dnes	Le Me	Dissolved CVAFS (Lo					i s
(ALS use only)	(This description will	appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	١ź	Alk., I Silica	Chic	000	F E	ō	Tota (0.0)	0.0)	Tota Hand	Diss Har	Total (Low	Sis S V I			1	5 X	i Di
	W1-Shallow			19-10-22	7:50	Water	10	R	R	R	R	R	R	R	R	R	R	R			\top	\top	
	W1-Deep			19-10-22	8:30	Water	10	R	R	R	R	R	R	R	R	R	R	R		\neg	\top	\top	1
	D1-Shallow Fort St. John			19-10-22	10:25	Water	10	R	R	R	R	R	R	R	R	R	R	R	\dashv	\dashv	+	\top	+
	D1-Deep Work Order Ref	erence	_	19-10-22	9.55	Water	10	R	R	R	R	R	R	R	R	R	R	R		+	+	+	+-
	Travel Blank FJ2202	072		11-10-66	7.33		+						_					_			+	- -	
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Drinking	Water (DW) Samples ¹ (client use)	Notes / Specify L		valuation by selecting xcel COC only)	ng from drop-dov	vn below	Cool	na Me	e e		NONE	THE COLUMN	ICE ICE	ADMINISTRAÇÃO	PACK	THE RESERVE OF	FROZ	1000	only)		·	ora granda ara	erwewyspowers sy .a
Are samples tak	en from a Regulated DW System?		,	,,			20000000000000000000000000000000000000		ANGRANGSONS CHANGESONS	CONTRACTOR OF THE			on Sai			20949 CX () 21	UANGES AND AND	00000000000000000000000000000000000000	⊢	April 2015	ING IN □NO	HATED	201010101111111
	s 🗸 no	Please se	end Azimuth a c	opy of the data in	their EDD form	at:	385, 12177			e e e e e e e e e e e e	s iden Intact	uncu	eden Probablishe për	40169999999	8-7-05-7-70		COMMUNICACIONI I	SE SELLECTE CO.	Seals I	12 15 15 15 15 15 15 15 15 15 15 15 15 15	Inter-designation	ΈSΓ	Twa .
Are samples for	human consumption/ use?	gmann@azimuthgroup.c	<u>:a</u>	imcivor@azimuthe	group.ca			diel hüneneteke	denieny of Const	urian yapınanı	and a second	PERA	LLIFES FURES	Account to the		oaiii.		ATAL TALL	Seals I	The second	days to the second	Population of	_1¥/~
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ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2202994** Page : 1 of 9

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John BC Canada V1J 6P3

Telephone : --- Telephone : +1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received : 20-Oct-2022 15:28

PO : 1200-25.03.02 Date Analysis Commenced : 25-Oct-2022

C-O-C number : 2022-Oct-Mon8/9-Day3 Issue Date : 25-Aug-2023 17:58

Sampler : PB Site :

Quote number : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia	
Caitlin Macey	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia	
Kenson Lo		Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Kyle Chang	Lab Assistant	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia	
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia	



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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

>: greater than.

Page : 4 of 9

Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Qualifiers

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

Page : 5 of 9

Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water				Cli	ent sample ID	PD2-A	PD2-B	PD5	PD3	Travel Blank
(Matrix: Water)										
				Client samp	ling date / time	20-Oct-2022 13:15	20-Oct-2022 13:15	20-Oct-2022 07:45	20-Oct-2022 11:40	20-Oct-2022 00:00
Analyte	CAS Number	Method/Lab)	LOR	Unit	FJ2202994-001	FJ2202994-002	FJ2202994-003	FJ2202994-004	FJ2202994-005
						Result	Result	Result	Result	Result
Sample Preparation	EDE	541/VA				Field	Field	Field	Field	
Dissolved Fe2 filtration location	EP5	04 I/VA		-	-	Field	Fleid	Field	Fleid	
Physical Tests	F-00	0.0.44		4.0		77.0	77.0	70.0	70.5	
Alkalinity, bicarbonate (as CaCO3)		90/VA	Α	1.0	mg/L	77.2	77.3	79.2	78.5	<1.0
Alkalinity, carbonate (as CaCO3)	E290		Α	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, hydroxide (as CaCO3)	E290		Α	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	<1.0
Alkalinity, total (as CaCO3)	E290		Α	1.0	mg/L	77.2	77.3	79.2	78.5	<1.0
Colour, true	E329		Α	5.0	CU	6.3	6.3	7.1	6.0	<5.0
Conductivity	E100		Α	2.0	μS/cm	178	179	186	184	<2.0
Hardness (as CaCO3), dissolved	EC1	100/VA		0.50	mg/L	86.2	86.9	90.5	88.3	
Hardness (as CaCO3), from total Ca/Mg	EC1	100A/VA		0.50	mg/L	91.6	90.6	94.3	93.9	<0.50
рН	E108	08/VA	Α	0.10	pH units	8.18	8.20	8.20	8.21	5.44
Solids, total dissolved [TDS]	E162	62/VA	Α	10	mg/L	111	112	112	108	<10
Solids, total suspended [TSS]	E160	60/VA	Α	3.0	mg/L	10.2	12.6	13.4	10.6	<3.0
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7 E298	98/VA	Α	0.0050	mg/L	<0.0050	<0.0050	0.0103	0.0075	<0.0050
Chloride	16887-00-6 E23	35.CI/VA	Α	0.50	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50
Fluoride	16984-48-8 E23	85.F/VA	Α	0.020	mg/L	0.038	0.037	0.038	0.037	<0.020
Kjeldahl nitrogen, total [TKN]	EC3	318/VA		0.050	mg/L	0.114	0.110	0.136	0.100	<0.050
Nitrate (as N)	14797-55-8 E23	85.NO3-L/V	Α	0.0050	mg/L	0.0610	0.0594	0.0556	0.0547	<0.0050
Nitrite (as N)	Α 14797-65-0 Δ	85.NO2-L/V	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Nitrogen, total	7727-37-9 E360	66/VA	Α	0.030	mg/L	0.175	0.169	0.192	0.155	<0.030
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378		Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Phosphorus, total	7723-14-0 E37		Α	0.0020	mg/L	0.0156	0.0212	0.0188	0.0238	<0.0020
Phosphorus, total dissolved	7723-14-0 E37		Α	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	
Silicate (as SiO2)	7631-86-9 E392		Α	0.50	mg/L	4.18	4.15	4.07	4.09	<0.50
Sulfate (as SO4)	14808-79-8 E23		Α	0.30	mg/L	13.0	12.9	13.4	13.0	<0.30
Nitrate + Nitrite (as N)		235.N+N/V		0.0032	mg/L	0.0610	0.0594	0.0556	0.0547	<0.0051
	Δ	200.IN 1 IN/ V		0.0002	g, =	0.00.0	5.555	0.0000	0.00	0.0001

Page : 6 of 9

Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



(Matrix: Water) Analyte	CAS Number Method		Client samn						
Analyte	CAS Number Method		Client samn						
Analyte	CAS Number Method		Onent samp	ling date / time	20-Oct-2022 13:15	20-Oct-2022 13:15	20-Oct-2022 07:45	20-Oct-2022 11:40	20-Oct-2022 00:00
		l/Lab	LOR	Unit	FJ2202994-001	FJ2202994-002	FJ2202994-003	FJ2202994-004	FJ2202994-005
					Result	Result	Result	Result	Result
Organic / Inorganic Carbon Carbon, dissolved organic [DOC]	E358-L/VA	A	0.50	ma/l	3.06	2.86	3.53	2.93	
Carbon, total organic [TOC]	E355-L/VA	A	0.50	mg/L mg/L	3.01	3.11	3.66	3.24	<0.50
	L333-L/VA	A	0.30	IIIg/L	3.01	5.11	3.00	5.24	\0.30
Ion Balance Anion sum	EC101/VA		0.10	meg/L	1.82	1.82	1.87	1.84	
Anion sum	EC101A/VA		0.10	· ·	1.02	1.02	1.07	1.04	<0.10
Cation sum (total)	EC101A/VA		0.10	meq/L					<0.10
Cation sum	EC101/VA		0.10	meq/L meg/L	1.78	1.79	1.88	1.82	
Ion balance (APHA)	EC101A/VA		0.010	ттеч/L %	1.70	1.75	1.00	1.02	<0.010
Ion balance (APHA)	EC101/VA		0.010	%	1.11	0.83	0.27	0.55	
, ,	20101/7/		0.01	70	1.11	0.00	0.21	0.00	
Total Metals Aluminum, total	7429-90-5 E420/VA	A	0.0030	mg/L	0.155	0.146	0.194	0.138	<0.0030
Antimony, total	7440-36-0 E420/VA	A	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2 E420/VA	Α	0.00010	mg/L	0.00032	0.00032	0.00036	0.00026	<0.00010
Barium, total	7440-39-3 E420/VA	A	0.00010	mg/L	0.0368	0.0364	0.0414	0.0370	<0.00010
Beryllium, total	7440-41-7 E420/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Bismuth, total	7440-69-9 E420/VA	Α	0.000050	mg/L	<0.000050	<0.00050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8 E420/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9 E420/VA	A	0.0000050	mg/L	0.0000239	0.0000239	0.0000257	0.0000188	<0.0000050
Calcium, total	7440-70-2 E420/VA	Α	0.050	mg/L	26.5	26.2	27.3	27.2	<0.050
Cesium, total	7440-46-2 E420/VA	Α	0.000010	mg/L	0.000038	0.000042	0.000053	0.000034	<0.000010
Chromium, total	7440-47-3 E420/VA	Α	0.00050	mg/L	0.00051	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4 E420/VA	Α	0.00010	mg/L	0.00012	0.00012	0.00017	0.00011	<0.00010
Copper, total	7440-50-8 E420/VA	Α	0.00050	mg/L	0.00094	0.00098	0.00102	0.00091	<0.00050
Iron, total	7439-89-6 E420/VA	Α	0.010	mg/L	0.256	0.271	0.353	0.228	<0.010
Lead, total	7439-92-1 E420/VA	Α	0.000050	mg/L	0.000140	0.000150	0.000197	0.000123	<0.000050
Lithium, total	7439-93-2 E420/VA	Α	0.0010	mg/L	0.0014	0.0014	0.0016	0.0015	<0.0010
Magnesium, total	7439-95-4 E420/VA	Α	0.0050	mg/L	6.18	6.11	6.34	6.32	<0.0050
Manganese, total	7439-96-5 E420/VA	Α	0.00010	mg/L	0.00710	0.00726	0.00915	0.00676	<0.00010
Mercury, total	7439-97-6 E508-L/VA	Α	0.50	ng/L	<0.50	<0.50	0.56	<0.50	<0.50
Molybdenum, total	7439-98-7 E420/VA	Α	0.000050	mg/L	0.000825	0.000830	0.000858	0.000864	<0.000050

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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PD2-A	PD2-B	PD5	PD3	Travel Blank
(Matrix: Water)									
			Client samp	ling date / time	20-Oct-2022 13:15	20-Oct-2022 13:15	20-Oct-2022 07:45	20-Oct-2022 11:40	20-Oct-2022 00:00
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2202994-001	FJ2202994-002	FJ2202994-003	FJ2202994-004	FJ2202994-005
					Result	Result	Result	Result	Result
Total Metals									
Nickel, total	7440-02-0 E420/VA	Α	0.00050	mg/L	0.00101	0.00105	0.00108	0.00093	<0.00050
Phosphorus, total	7723-14-0 E420/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7 E420/VA	Α	0.050	mg/L	0.477	0.487	0.499	0.466	<0.050
Rubidium, total	7440-17-7 E420/VA	Α	0.00020	mg/L	0.00072	0.00067	0.00082	0.00066	<0.00020
Selenium, total	7782-49-2 E420/VA	Α	0.000050	mg/L	0.000307	0.000286	0.000264	0.000252	<0.000050
Silicon, total	7440-21-3 E420/VA	Α	0.10	mg/L	2.09	2.13	2.30	2.05	<0.10
Silver, total	7440-22-4 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5 E420/VA	Α	0.050	mg/L	1.08	1.07	1.29	1.14	<0.050
Strontium, total	7440-24-6 E420/VA	Α	0.00020	mg/L	0.104	0.105	0.114	0.105	<0.00020
Sulfur, total	7704-34-9 E420/VA	Α	0.50	mg/L	3.86	4.23	4.70	4.45	<0.50
Tellurium, total	13494-80-9 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6 E420/VA	Α	0.00030	mg/L	0.00293	0.00225	<0.00360 DLM	<0.00300 DLM	<0.00030
Tungsten, total	7440-33-7 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1 E420/VA	Α	0.000010	mg/L	0.000458	0.000474	0.000478	0.000483	<0.000010
Vanadium, total	7440-62-2 E420/VA	Α	0.00050	mg/L	0.00089	0.00089	0.00108	0.00078	<0.00050
Zinc, total	7440-66-6 E420/VA	Α	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium, total	7440-67-7 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals									
Aluminum, dissolved	7429-90-5 E421/VA	Α	0.0010	mg/L	0.0042	0.0075	0.0043	0.0058	
Antimony, dissolved	7440-36-0 E421/VA	Α	0.00010	mg/L	0.00013	0.00011	<0.00010	<0.00010	
Arsenic, dissolved	7440-38-2 E421/VA	Α	0.00010	mg/L	0.00018	0.00020	0.00020	0.00018	
Barium, dissolved	7440-39-3 E421/VA	Α	0.00010	mg/L	0.0323	0.0312	0.0366	0.0321	
Beryllium, dissolved	7440-41-7 E421/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8 E421/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	
Cadmium, dissolved	7440-43-9 E421/VA	Α	0.0000050	mg/L	0.0000076	0.0000068	0.0000057	0.0000061	
Calcium, dissolved	7440-70-2 E421/VA	Α	0.050	mg/L	25.3	25.7	25.9	25.9	
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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			Cl	ient sample ID	PD2-A	PD2-B	PD5	PD3	Travel Blank
			OI.	.c campio ib	1 DE-A	1 52-5	1.50	1 50	Traver Dialik
(Matrix: Water)									
			Client samp	ling date / time	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022	20-Oct-2022
					13:15	13:15	07:45	11:40	00:00
Analyte	CAS Number Method	Lab	LOR	Unit	FJ2202994-001	FJ2202994-002	FJ2202994-003	FJ2202994-004	FJ2202994-005
					Result	Result	Result	Result	Result
Dissolved Metals	5.00.00		0.000040		0.000010	0.000040	0.000010	0.000040	
Cesium, dissolved	7440-46-2 E421/VA	A	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, dissolved	7440-50-8 E421/VA	Α	0.00020	mg/L	0.00058	0.00061	0.00061	0.00058	
Iron, dissolved	7439-89-6 E421/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	
Lead, dissolved	7439-92-1 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2 E421/VA	Α	0.0010	mg/L	0.0012	0.0012	0.0013	0.0013	
Magnesium, dissolved	7439-95-4 E421/VA	Α	0.0050	mg/L	5.58	5.53	6.28	5.73	
Manganese, dissolved	7439-96-5 E421/VA	Α	0.00010	mg/L	0.00075	0.00091	0.00067	0.00067	
Mercury, dissolved	7439-97-6 E509-L/VA	Α	0.50	ng/L	<0.50	<0.50	<0.50	<0.50	
Molybdenum, dissolved	7439-98-7 E421/VA	Α	0.000050	mg/L	0.000792	0.000761	0.000778	0.000799	
Nickel, dissolved	7440-02-0 E421/VA	Α	0.00050	mg/L	0.00058	0.00059	0.00065	0.00059	
Phosphorus, dissolved	7723-14-0 E421/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7 E421/VA	Α	0.050	mg/L	0.431	0.421	0.440	0.422	
Rubidium, dissolved	7440-17-7 E421/VA	Α	0.00020	mg/L	0.00026	0.00030	0.00024	0.00028	
Selenium, dissolved	7782-49-2 E421/VA	Α	0.000050	mg/L	0.000256	0.000251	0.000253	0.000247	
Silicon, dissolved	7440-21-3 E421/VA	Α	0.050	mg/L	1.87	1.87	1.90	1.88	
Silver, dissolved	7440-22-4 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5 E421/VA	Α	0.050	mg/L	1.07	1.06	1.32	1.14	
Strontium, dissolved	7440-24-6 E421/VA	Α	0.00020	mg/L	0.103	0.104	0.105	0.106	
Sulfur, dissolved	7704-34-9 E421/VA	Α	0.50	mg/L	4.46	4.53	4.62	4.69	
Tellurium, dissolved	13494-80-9 E421/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, dissolved	7440-29-1 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, dissolved	7440-32-6 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	
Tungsten, dissolved	7440-33-7 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, dissolved	7440-61-1 E421/VA	Α	0.000010	mg/L	0.000422	0.000427	0.000390	0.000441	
Vanadium, dissolved	7440-62-2 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc, dissolved	7440-66-6 E421/VA	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

p-Matrix: Water Client sample ID						PD2-A	PD2-B	PD5	PD3	Travel Blank
(Matrix: Water)										
				Client samp	ling date / time	20-Oct-2022 13:15	20-Oct-2022 13:15	20-Oct-2022 07:45	20-Oct-2022 11:40	20-Oct-2022 00:00
Analyte	CAS Number	Method/L	.ab	LOR	Unit	FJ2202994-001	FJ2202994-002	FJ2202994-003	FJ2202994-004	FJ2202994-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Zirconium, dissolved	7440-67-7 E	421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	
Dissolved MeHg filtration location	E	EP537/VA		-	-	Field	Field	Field	Field	
Dissolved mercury filtration location	E	EP509-L/VA		-	-	Field	Field	Field	Field	
Dissolved metals filtration location	E	EP421/VA		-	-	Field	Field	Field	Field	
Speciated Metals										
Methylmercury (as MeHg), total	22967-92-6 E	536/VA	Α	0.00000002	mg/L	<0.00000002	0.000000023	0.000000148	0.000000065	<0.00000002
				0		0				0
Iron, ferrous [Fe II], dissolved	15438-31-0 E	E541/VA	Α	0.020	mg/L	<0.020	<0.020	<0.020	<0.020	
Methylmercury (as MeHg), dissolved	22967-92-6 E	537/VA	Α	0.00000002	mg/L	<0.00000002	<0.00000002	<0.000000020	<0.00000002	
				0		0	0		0	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202994** Page : 1 of 25

Amendment :2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone :--- :+1 250 261 5517

 Project
 : Surface Water MON8/9-With Metals
 Date Samples Received
 : 20-Oct-2022 15:28

 PO
 : 1200-25.03.02
 Issue Date
 : 25-Aug-2023 17:58

C-O-C number : 2022-Oct-Mon8/9-Day3

Sampler : PB

Site :

Quote number : VA22-ECOF100-004

No. of samples received :5
No. of samples analysed :5

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

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

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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: × =	Holding time exce	edance ; 🔻	/ = Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pro	eparation		Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Rec	7 Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD2-A	E298	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD2-B	E298	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD3	E298	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PD5	E298	20-Oct-2022	25-Oct-2022	28 days	5 days	4	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (lab preserved) Travel Blank	E298	20-Oct-2022	25-Oct-2022	3 days	5 days	* EHT	25-Oct-2022	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD2-A	E235.Cl	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PD2-B	E235.CI	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓

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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd



Matrix: Water					Ev	aluation: 🗴 =	Holding time exce	edance ; 🕦	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD3	E235.CI	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD5	E235.CI	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE Travel Blank	E235.CI	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lo	evel 0.001									
HDPE PD2-A	E378-U	20-Oct-2022	25-Oct-2022	3 days	5 days	x EHT	25-Oct-2022	3 days	5 days	x EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE PD2-B	E378-U	20-Oct-2022	25-Oct-2022	3 days	5 days	se	25-Oct-2022	3 days	5 days	*
						EHT				EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lo	evel 0.001									
HDPE										
PD3	E378-U	20-Oct-2022	25-Oct-2022	3 days	5 days	x EHT	25-Oct-2022	3 days	5 days	¥ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel 0.001									
HDPE	1	1 1		1			I	1		
PD5	E378-U	20-Oct-2022	25-Oct-2022	3 days	5 days	* EHT	25-Oct-2022	3 days	5 days	* EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lo	evel 0.001									
UDDE	1	1 1								
HDPE Travel Blank	E378-U	20-Oct-2022	25-Oct-2022	3 days	5 days	* EHT	25-Oct-2022	3 days	5 days	≭ EHT

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Client : Ecofish Research Ltd



nalyte Group	Method	Sampling Date	Ex	traction / Pr				Analys		
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		Times	Eva
			Date	Rec	Actual			Rec	Actual	
nions and Nutrients : Fluoride in Water by IC										
HDPE										
PD2-A	E235.F	20-Oct-2022	25-Oct-2022	28	5 days	✓	25-Oct-2022	28 days	5 days	✓
				days						
nions and Nutrients : Fluoride in Water by IC										
IDPE										
PD2-B	E235.F	20-Oct-2022	25-Oct-2022	28	5 days	✓	25-Oct-2022	28 days	5 days	✓
				days						
nions and Nutrients : Fluoride in Water by IC				1			•			
IDPE										
PD3	E235.F	20-Oct-2022	25-Oct-2022	28	5 days	✓	25-Oct-2022	28 days	5 days	✓
				days						
nions and Nutrients : Fluoride in Water by IC				,						
DPE							<u> </u>			
PD5	E235.F	20-Oct-2022	25-Oct-2022	28	5 days	✓	25-Oct-2022	28 days	5 days	✓
FD3	2200.1	20-001-2022	25-001-2022	days	Juays	•	25-061-2022	20 days	Juays	·
				uays						
ions and Nutrients : Fluoride in Water by IC										
IDPE	5005 5	00.0.4.0000	05.0.4.0000		F 1	,	05 0 4 0000	00 1	5 J	✓
Travel Blank	E235.F	20-Oct-2022	25-Oct-2022	28	5 days	✓	25-Oct-2022	28 days	5 days	✓
				days						
ions and Nutrients : Nitrate in Water by IC (Low Level)										
IDPE										
PD2-A	E235.NO3-L	20-Oct-2022	25-Oct-2022	3 days	5 days	*	25-Oct-2022	3 days	5 days	✓
						EHT				
ions and Nutrients : Nitrate in Water by IC (Low Level)										
IDPE										
PD2-B	E235.NO3-L	20-Oct-2022	25-Oct-2022	3 days	5 days	*	25-Oct-2022	3 days	5 days	✓
						EHT				
nions and Nutrients : Nitrate in Water by IC (Low Level)										
IDPE										
PD3	E235.NO3-L	20-Oct-2022	25-Oct-2022	3 days	5 days	*	25-Oct-2022	3 days	5 days	✓
				,.	'	EHT				
in and National Milanto in Material III (1 and 1 and 1										
nions and Nutrients : Nitrate in Water by IC (Low Level)										
IDPE PD5	E235.NO3-L	20-Oct-2022	25-Oct-2022	3 days	5 days	×	25-Oct-2022	2 days	5 days	1
רטט	E230.INU3-L	20-001-2022	20-001-2022	o days	o uays	*	20-001-2022	3 days	o uays	•

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Work Order : FJ2202994 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Anions and Nutrients : Nitrate in Water by IC (Low Level) HDPE E235.NO3-L 20-Oct-2022 1 25-Oct-2022 3 days × 25-Oct-2022 Travel Blank 5 days 3 days 5 days EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE PD2-A E235.NO2-L 20-Oct-2022 25-Oct-2022 3 days 5 days 25-Oct-2022 3 days 5 days EHT EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE PD2-B E235.NO2-L 20-Oct-2022 25-Oct-2022 25-Oct-2022 3 days 5 days 30 3 days 5 days æ EHT EHT Anions and Nutrients: Nitrite in Water by IC (Low Level) HDPE PD3 E235.NO2-L 20-Oct-2022 25-Oct-2022 3 days 5 days 25-Oct-2022 3 days 5 days EHT EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) **HDPE** PD5 E235.NO2-L 20-Oct-2022 25-Oct-2022 × 25-Oct-2022 5 days 30 3 days 3 days 5 days EHT EHT Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE E235.NO2-L 20-Oct-2022 Travel Blank 25-Oct-2022 3 days 5 days 25-Oct-2022 3 days 5 days EHT EHT **Anions and Nutrients : Reactive Silica by Colourimetry** HDPE PD2-A E392 20-Oct-2022 26-Oct-2022 28 days 6 days Anions and Nutrients : Reactive Silica by Colourimetry HDPE PD2-B E392 20-Oct-2022 26-Oct-2022 28 days 6 days ✓ Anions and Nutrients : Reactive Silica by Colourimetry HDPE PD3 E392 20-Oct-2022 26-Oct-2022 28 days 6 days 1

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Matrix: Water

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Anions and Nutrients : Sulfate in Water by IC

Amber glass dissolved (sulfuric acid)

Amber glass dissolved (sulfuric acid)

Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)

Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)

HDPE Travel Blank

PD2-A

PD2-B

Project : Surface Water MON8/9-With Metals



Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

25-Oct-2022

26-Oct-2022

26-Oct-2022

28 days

28 days 6 days

28 days 6 days

5 days

Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Anions and Nutrients: Reactive Silica by Colourimetry HDPE E392 20-Oct-2022 1 PD5 26-Oct-2022 28 days 6 days Anions and Nutrients: Reactive Silica by Colourimetry **HDPE** Travel Blank E392 20-Oct-2022 26-Oct-2022 28 days 6 days 1 Anions and Nutrients : Sulfate in Water by IC HDPE PD2-A E235.SO4 20-Oct-2022 25-Oct-2022 5 days 1 25-Oct-2022 28 days 5 days 28 days Anions and Nutrients : Sulfate in Water by IC HDPE E235.SO4 1 PD2-B 20-Oct-2022 25-Oct-2022 28 5 days 25-Oct-2022 28 days 5 days 1 days Anions and Nutrients : Sulfate in Water by IC **HDPE** PD3 E235.SO4 20-Oct-2022 25-Oct-2022 1 25-Oct-2022 1 5 days 28 days 5 days 28 days Anions and Nutrients : Sulfate in Water by IC HDPE E235.SO4 20-Oct-2022 1 5 days PD5 25-Oct-2022 28 5 days 25-Oct-2022 28 days 1 days

20-Oct-2022

20-Oct-2022

20-Oct-2022

25-Oct-2022

25-Oct-2022

25-Oct-2022

5 days

5 days

5 days

1

1

28 days

28

days

28 days

E235.SO4

E375-T

E375-T

✓

1

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Project : Surface Water MON8/9-With Metals



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

Method Sampling Date Extraction / Programation Method Sampling Date Extraction / Programation Pro	Matrix: Water					E	/aluation: 🗴 = I	Holding time excee	edance; •	= vvitnin	Holding Time
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Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) PDS E375-T 20-Oct-2022 25-Oct-2022 25-Oct-2022 28 5 days 5 days 7 26-Oct-2022 28 days 6 days 7 Anions and Nutrients : Total Nitrogen by Colourimetry Anions and Nutrients : Total Phosphorus by Colourimetry E366 20-Oct-2022 25-Oct-2022 25-Oct-2022 28 5 days 7 26-Oct-2022 28 days 6 days 7 26-Oct-2022 28 days 6 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days 7 26-Oct-2022 28 days 8 days	Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
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E375-T 20-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 6 days	Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
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Amber glass total (sulfuric acid) PD2-B E366 20-Oct-2022 25-Oct-2022 28					days						
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Amber glass total (sulfuric acid) E366 20-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 6 days ✓ Anions and Nutrients : Total Nitrogen by Colourimetry E366 20-Oct-2022 25-Oct-2022 3 days 5 days ★ 26-Oct-2022 28 days 1 days ✓ Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 20-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 1 days ✓ Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 20-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 6 days ✓ Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 20-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 6 days ✓	A CONTRACTOR OF				uays						
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Anions and Nutrients: Total Nitrogen by Colourimetry Amber glass total (lab preserved) Travel Blank E366 20-Oct-2022 25-Oct-2022 3 days 5 days EHT 26-Oct-2022 28 days 1 days ✓ Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) PD2-A E372-U 20-Oct-2022 25-Oct-2022 28 days 5 days ✓ 26-Oct-2022 28 days 6 days ✓ Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid)	1 50			20 001 2022		Jaays	·	20-001-2022	20 days	Jauys	•
Amber glass total (lab preserved) Travel Blank E366 20-Oct-2022 25-Oct-2022 3 days 5 days EHT 26-Oct-2022 28 days 1 days ✓ Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) E372-U 20-Oct-2022 25-Oct-2022 28 days 5 days ✓ 26-Oct-2022 28 days 6 days ✓ Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid)	Anione and Nutriente : Total Nitrogen by Calaurimetry				days						
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Amber glass total (sulfuric acid) PD2-A E372-U 20-Oct-2022 25-Oct-2022 28	Anions and Nutriants : Total Phosphorus by Colourimetry (0.002 mg/l.)										
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Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid)	· · · · · · · · · · · · · · · · · · ·	E372-U	20-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	6 days	✓
Amber glass total (sulfuric acid)						-				-	
Amber glass total (sulfuric acid)	Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L)										
	· · · · · · · · · · · · · · · · · · ·	E372-U	20-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	6 days	✓
days						-				-	

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Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) E372-U 20-Oct-2022 25-Oct-2022 1 PD3 5 days 26-Oct-2022 28 days 28 6 days days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (sulfuric acid) PD5 E372-U 20-Oct-2022 25-Oct-2022 28 5 days 1 26-Oct-2022 28 days 6 days ✓ days Anions and Nutrients: Total Phosphorus by Colourimetry (0.002 mg/L) Amber glass total (lab preserved) E372-U 20-Oct-2022 25-Oct-2022 5 days 26-Oct-2022 1 Travel Blank 3 days 30 28 days 1 days EHT Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L ✓ PD2-A 20-Oct-2022 26-Oct-2022 28 6 days 26-Oct-2022 28 days 6 days 1 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 20-Oct-2022 26-Oct-2022 1 26-Oct-2022 ✓ PD2-B 6 days 28 days 6 days 28 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) E509-L 20-Oct-2022 1 28 days PD3 26-Oct-2022 28 6 days 26-Oct-2022 6 days 1 days Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) PD5 E509-L 20-Oct-2022 26-Oct-2022 26-Oct-2022 6 days 28 days 6 days 28 days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) PD2-A E421 20-Oct-2022 25-Oct-2022 180 5 days 1 25-Oct-2022 180 5 days 1 days days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) E421 20-Oct-2022 25-Oct-2022 1 25-Oct-2022 1 PD2-B 5 days 5 days 180 180 days days

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) E421 20-Oct-2022 25-Oct-2022 1 PD3 5 days 25-Oct-2022 180 180 5 days days days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) PD5 E421 20-Oct-2022 25-Oct-2022 180 5 days 1 25-Oct-2022 6 days ✓ 180 days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 20-Oct-2022 25-Oct-2022 5 days 1 25-Oct-2022 28 days 5 days PD2-A 28 davs Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L PD2-B 20-Oct-2022 25-Oct-2022 28 5 days ✓ 25-Oct-2022 28 days 5 days 1 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) PD3 E358-L 20-Oct-2022 25-Oct-2022 1 25-Oct-2022 ✓ 5 days 28 days 5 days 28 days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 20-Oct-2022 1 PD5 25-Oct-2022 28 5 days 25-Oct-2022 28 days 5 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PD2-A E355-L 20-Oct-2022 25-Oct-2022 25-Oct-2022 5 days 28 days 5 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PD2-B E355-L 20-Oct-2022 25-Oct-2022 28 5 days 1 25-Oct-2022 28 days 5 days ✓ days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PD3 E355-L 20-Oct-2022 25-Oct-2022 1 25-Oct-2022 28 days 5 days 1 5 days 28 days

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 20-Oct-2022 25-Oct-2022 25-Oct-2022 1 PD5 5 days 28 days 5 days 28 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (lab preserved) Travel Blank E355-L 20-Oct-2022 25-Oct-2022 3 days 5 days 25-Oct-2022 28 days 0 days 1 EHT Physical Tests: Alkalinity Species by Titration HDPE PD2-A E290 20-Oct-2022 25-Oct-2022 5 days 1 25-Oct-2022 14 days 5 days 14 days Physical Tests : Alkalinity Species by Titration HDPE E290 1 PD2-B 20-Oct-2022 25-Oct-2022 5 days 25-Oct-2022 14 days 5 days 1 14 days Physical Tests: Alkalinity Species by Titration **HDPE** PD3 E290 20-Oct-2022 25-Oct-2022 1 25-Oct-2022 1 5 days 14 days 5 days 14 days Physical Tests: Alkalinity Species by Titration **HDPE** E290 20-Oct-2022 1 5 days PD5 25-Oct-2022 14 5 days 25-Oct-2022 14 days 1 days Physical Tests : Alkalinity Species by Titration HDPE Travel Blank E290 20-Oct-2022 25-Oct-2022 25-Oct-2022 5 days 14 days 5 days 14 days Physical Tests: Colour (True) by Spectrometer (5 CU) HDPE PD2-A E329 20-Oct-2022 25-Oct-2022 3 days 5 days 30 25-Oct-2022 3 days 5 days EHT EHT Physical Tests: Colour (True) by Spectrometer (5 CU) HDPE E329 20-Oct-2022 25-Oct-2022 25-Oct-2022 PD2-B 3 days 5 days × 3 days 5 days 30

EHT

EHT

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

Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
PD3	E329	20-Oct-2022	25-Oct-2022	3 days	5 days	* EHT	25-Oct-2022	3 days	5 days	* EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE PD5	E329	20-Oct-2022	25-Oct-2022	3 days	5 days	* EHT	25-Oct-2022	3 days	5 days	# EHT
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Travel Blank	E329	20-Oct-2022	25-Oct-2022	3 days	5 days	# EHT	25-Oct-2022	3 days	5 days	± EHT
Physical Tests : Conductivity in Water										
HDPE PD2-A	E100	20-Oct-2022	25-Oct-2022	28 days	5 days	√	25-Oct-2022	28 days	5 days	*
Physical Tests : Conductivity in Water										
HDPE PD2-B	E100	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	√
Physical Tests : Conductivity in Water										
PD3	E100	20-Oct-2022	25-Oct-2022	28 days	5 days	√	25-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
PD5	E100	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE Travel Blank	E100	20-Oct-2022	25-Oct-2022	28 days	5 days	✓	25-Oct-2022	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE PD2-A	E108	20-Oct-2022	25-Oct-2022	0.25 hrs	112 hrs	# EHTR-FM	25-Oct-2022	0.25 hrs	124 hrs	# EHTR-FM

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Project : Surface Water MON8/9-With Metals



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

Matrix: Water						valuation. * -	Holding time exce	edance,	– vvitriiri	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / P	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : pH by Meter										
HDPE										
PD2-B	E108	20-Oct-2022	25-Oct-2022	0.25	112 hrs	3E	25-Oct-2022	0.25	124 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE		1			<u> </u>			<u> </u>		
Travel Blank	E108	20-Oct-2022	25-Oct-2022	0.25	112 hrs	*	25-Oct-2022	0.25	124 hrs	×
Travol Blatik		20 000 2022	20 00. 2022	hrs		EHTR-FM	20 001 2022	hrs		EHTR-FM
				1113				1113		
Physical Tests : pH by Meter					<u> </u>	<u> </u>	I			
HDPE PD3	E108	20-Oct-2022	25-Oct-2022	0.05	114 hrs	*	25-Oct-2022	0.05	125 hrs	*
PD3	E100	20-001-2022	25-001-2022	0.25	114 1115		25-001-2022	0.25	125 1118	
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PD5	E108	20-Oct-2022	25-Oct-2022	0.25	118 hrs	*	25-Oct-2022	0.25	129 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE										
PD2-A	E162	20-Oct-2022					25-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE					<u> </u>					
PD2-B	E162	20-Oct-2022					25-Oct-2022	7 days	5 days	1
1525							20 00. 2022	. aays	o aayo	
Physical Tests : TDS by Gravimetry							I			
HDPE	E162	20-Oct-2022					25-Oct-2022	7 days	5 days	√
PD3	E102	20-Oct-2022					25-UCI-2022	7 days	5 days	•
Physical Tests : TDS by Gravimetry										
HDPE										
PD5	E162	20-Oct-2022					25-Oct-2022	7 days	5 days	✓
Physical Tests : TDS by Gravimetry				<u>'</u>						
HDPE		I		T						
Travel Blank	E162	20-Oct-2022					25-Oct-2022	7 days	5 days	✓
	I									

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Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date **Physical Tests: TSS by Gravimetry** HDPE E160 20-Oct-2022 PD2-A 25-Oct-2022 7 days 5 days Physical Tests: TSS by Gravimetry HDPE PD2-B E160 20-Oct-2022 25-Oct-2022 7 days 5 days 1 Physical Tests : TSS by Gravimetry HDPE PD3 E160 20-Oct-2022 25-Oct-2022 7 days 5 days **Physical Tests: TSS by Gravimetry** HDPE E160 20-Oct-2022 PD5 25-Oct-2022 7 days 5 days 1 **Physical Tests: TSS by Gravimetry HDPE** E160 20-Oct-2022 25-Oct-2022 5 days 1 Travel Blank 7 days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 20-Oct-2022 PD2-A 24-Nov-2022 7 days 35 24-Nov-2022 7 days 35 days EHT EHT days Speciated Metals : Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) PD2-B E541 20-Oct-2022 24-Nov-2022 7 days 24-Nov-2022 7 days 35 days 35 EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) PD3 E541 20-Oct-2022 24-Nov-2022 7 days 35 24-Nov-2022 7 days 35 days EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) 20-Oct-2022 PD5 E541 24-Nov-2022 24-Nov-2022 7 days 35 days 7 days 30 æ 35 EHT EHT days

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

Matrix: Water						raiuation. * –	Holding time excee	euance ,	• - vvitiiiii	Holding Till
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analy	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holdin	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD2-A	E537	20-Oct-2022	07-Nov-2022	180	18	✓	11-Nov-2022	180	4 days	✓
				days	days			days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD2-B	E537	20-Oct-2022	07-Nov-2022	180	18	✓	11-Nov-2022	180	4 days	✓
				days	days			days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD3	E537	20-Oct-2022	07-Nov-2022	180	18	✓	11-Nov-2022	180	4 days	✓
				days	days			days		
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)							<u> </u>			
PD5	E537	20-Oct-2022	07-Nov-2022	180	18	✓	11-Nov-2022	180	4 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)										
PD2-A	E536	20-Oct-2022	05-Nov-2022	180	16	✓	07-Nov-2022	180	18 days	✓
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS								,		
Amber glass total (hydrochloric acid)										
PD2-B	E536	20-Oct-2022	05-Nov-2022	180	16	✓	07-Nov-2022	180	18 days	✓
. 52.5				days	days			days		
Speciated Metals : Total Methylmerousy in Water by CCAES					,-			,-		
Speciated Metals : Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid)							I			
PD3	E536	20-Oct-2022	05-Nov-2022	180	16	✓	07-Nov-2022	180	18 days	✓
. 20		20 001 2022	20.131.2022	days	days	·		days		•
Consisted Matella Tatal Mathelian consist Water he COAFO				uays	days			aays		
Speciated Metals : Total Methylmercury in Water by GCAFS			l				I			
Amber glass total (hydrochloric acid) PD5	E536	20-Oct-2022	05-Nov-2022	180	16	√	07-Nov-2022	180	18 days	✓
FDS	2000	20-001-2022	03-1404-2022			,	07-1404-2022		10 days	•
				days	days			days		
Speciated Metals : Total Methylmercury in Water by GCAFS										
Amber glass total (hydrochloric acid)	E536	20-Oct-2022	05 Nov. 2022	4.5.5	4.5	√	07 Nov. 2022	4.5.5	10 4	✓
Travel Blank	E330	20-001-2022	05-Nov-2022	180	16	•	07-Nov-2022	180	18 days	*
				days	days			days		

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

Matrix: Water							Holding time exce			
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD2-A	E508-L	20-Oct-2022	27-Oct-2022	28	7 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD2-B	E508-L	20-Oct-2022	27-Oct-2022	28	7 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD3	E508-L	20-Oct-2022	27-Oct-2022	28	7 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PD5	E508-L	20-Oct-2022	27-Oct-2022	28	7 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
Travel Blank	E508-L	20-Oct-2022	27-Oct-2022	28	7 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PD2-A	E420	20-Oct-2022	25-Oct-2022	180	5 days	✓	26-Oct-2022	180	6 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PD2-B	E420	20-Oct-2022	25-Oct-2022	180	5 days	✓	26-Oct-2022	180	6 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PD3	E420	20-Oct-2022	25-Oct-2022	180	5 days	✓	26-Oct-2022	180	6 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PD5	E420	20-Oct-2022	25-Oct-2022	180	5 days	✓	26-Oct-2022	180	6 days	✓
	I	1		days				days		

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

Analyte Group	Method	Sampling Date	Exti	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
Travel Blank	E420	20-Oct-2022	25-Oct-2022	180	5 days	✓	26-Oct-2022	180	6 days	✓
				days				days		

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			Co	ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%, Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	712518	1	18	5.5	5.0	1
Ammonia by Fluorescence	E298	712921	2	37	5.4	5.0	<u> </u>
Chloride in Water by IC	E235.CI	712522	1	20	5.0	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	712528	1	8	12.5	5.0	<u> </u>
Conductivity in Water	E100	712519	1	18	5.5	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	<u> </u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	712946	1	20	5.0	5.0	<u>√</u>
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	712916	1	19	5.2	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	712527	1	9	11.1	5.0	<u> </u>
Fluoride in Water by IC	E235.F	712521	1	18	5.5	5.0	<u>√</u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	712523	1	20	5.0	5.0	<u> </u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	712524	1	20	5.0	5.0	<u>√</u>
pH by Meter	E108	712517	1	20	5.0	5.0	<u> </u>
Reactive Silica by Colourimetry	E392	716357	1	20	5.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	712525	1	18	5.5	5.0	<u> </u>
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	<u> </u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	712920	1	19	5.2	5.0	<u> </u>
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717310	1	20	5.0	5.0	<u> </u>
Total Metals in Water by CRC ICPMS	E420	712956	1	20	5.0	5.0	<u> </u>
Total Methylmercury in Water by GCAFS	E536	730278	2	42	4.7	5.0	<u> </u>
Total Nitrogen by Colourimetry	E366	712918	2	31	6.4	5.0	√
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	712917	2	27	7.4	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	712919	2	37	5.4	5.0	√
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	√
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	712518	1	18	5.5	5.0	1
Ammonia by Fluorescence	E298	712921	2	37	5.4	5.0	<u> </u>
Chloride in Water by IC	E235.CI	712522	1	20	5.0	5.0	<u> </u>
Colour (True) by Spectrometer (5 CU)	E329	712528	1	8	12.5	5.0	<u> </u>
Conductivity in Water	E100	712519	1	18	5.5	5.0	<u> </u>
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	712946	1	20	5.0	5.0	<u> </u>
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	

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Matrix: Water	Evaluation: x = QC frequency outside specification; √ = QC frequency within specification										
Quality Control Sample Type			Co	ount		Frequency (%)					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation				
Laboratory Control Samples (LCS) - Continued											
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	712916	1	19	5.2	5.0	1				
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	712527	1	9	11.1	5.0	✓				
Fluoride in Water by IC	E235.F	712521	1	18	5.5	5.0	✓				
Nitrate in Water by IC (Low Level)	E235.NO3-L	712523	1	20	5.0	5.0	✓				
Nitrite in Water by IC (Low Level)	E235.NO2-L	712524	1	20	5.0	5.0	✓				
pH by Meter	E108	712517	1	20	5.0	5.0	✓				
Reactive Silica by Colourimetry	E392	716357	1	20	5.0	5.0	✓				
Sulfate in Water by IC	E235.SO4	712525	1	18	5.5	5.0	✓				
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	✓				
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	712920	1	19	5.2	5.0	✓				
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717310	1	20	5.0	5.0	✓				
Total Metals in Water by CRC ICPMS	E420	712956	1	20	5.0	5.0	✓				
Total Methylmercury in Water by GCAFS	E536	730278	3	42	7.1	5.0	✓				
Total Nitrogen by Colourimetry	E366	712918	2	31	6.4	5.0	✓				
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	712917	2	27	7.4	5.0	✓				
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	712919	2	37	5.4	5.0	✓				
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓				
Method Blanks (MB)											
Alkalinity Species by Titration	E290	712518	1	18	5.5	5.0	✓				
Ammonia by Fluorescence	E298	712921	2	37	5.4	5.0	✓				
Chloride in Water by IC	E235.CI	712522	1	20	5.0	5.0	✓				
Colour (True) by Spectrometer (5 CU)	E329	712528	1	8	12.5	5.0	✓				
Conductivity in Water	E100	712519	1	18	5.5	5.0	✓				
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓				
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	✓				
Dissolved Metals in Water by CRC ICPMS	E421	712946	1	20	5.0	5.0	✓				
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	✓				
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	712916	1	19	5.2	5.0	✓				
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	712527	1	9	11.1	5.0	✓				
Fluoride in Water by IC	E235.F	712521	1	18	5.5	5.0	✓				
Nitrate in Water by IC (Low Level)	E235.NO3-L	712523	1	20	5.0	5.0	1				
Nitrite in Water by IC (Low Level)	E235.NO2-L	712524	1	20	5.0	5.0	✓				
Reactive Silica by Colourimetry	E392	716357	1	20	5.0	5.0	✓				
Sulfate in Water by IC	E235.SO4	712525	1	18	5.5	5.0	✓				
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	✓				
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	712920	1	19	5.2	5.0	✓				
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717310	1	20	5.0	5.0	✓				
Total Metals in Water by CRC ICPMS	E420	712956	1	20	5.0	5.0	✓				
Total Methylmercury in Water by GCAFS	E536	730278	3	42	7.1	5.0	✓				

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Quality Control Sample Type			Co	ount	Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued								
Total Nitrogen by Colourimetry	E366	712918	2	31	6.4	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	712917	2	27	7.4	5.0	√	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	712919	2	37	5.4	5.0	✓	
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	√	
Matrix Spikes (MS)								
Ammonia by Fluorescence	E298	712921	2	37	5.4	5.0	✓	
Chloride in Water by IC	E235.Cl	712522	1	20	5.0	5.0	✓	
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	715134	1	8	12.5	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	712946	1	20	5.0	5.0	√	
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	712916	1	19	5.2	5.0	✓	
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	712527	1	9	11.1	5.0	✓	
Fluoride in Water by IC	E235.F	712521	1	18	5.5	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	712523	1	20	5.0	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	712524	1	20	5.0	5.0	✓	
Reactive Silica by Colourimetry	E392	716357	1	20	5.0	5.0	✓	
Sulfate in Water by IC	E235.SO4	712525	1	18	5.5	5.0	✓	
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	712920	1	19	5.2	5.0	✓	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717310	1	20	5.0	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	712956	1	20	5.0	5.0	✓	
otal Methylmercury in Water by GCAFS	E536	730278	2	42	4.7	5.0	x	
Total Nitrogen by Colourimetry	E366	712918	2	31	6.4	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	712917	2	27	7.4	5.0	✓	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	712919	2	37	5.4	5.0	√	

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Methodology References and Summaries

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

ALS Environmental - Vancouver PH by Meter E108 APHA 4500-H (mod) ALS Environmental - Vancouver ALS Environmental - Vancouver ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaventhous are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Vancouver PH by Meter E108 Water APHA 4500-H (mod) PH is determined by potentiometric measurement with a pH electrode, and is concat a mbient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate and methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	onductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
PH by Meter E108 APHA 4500-H (mod) pH is determined by potentiometric measurement with a pH electrode, and is condat ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		Vancouver			
ALS Environmental - Vancouver E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	H by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					pH should be measured in the field within the recommended 15 minute hold time.
filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) ALS Environmental - ALS Environmental - With gravimetric measurement of the filter at 104 ± 1°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100°C, with gravimetric measurement of the filter at 100°C, with grav	2001 0 : 1		347.7	ADUA 0540 D (1)	
ALS Environmental - Vancouver ALS Environmental - Vancouver Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. TDS by Gravimetry Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	SS by Gravimetry	E160	Water	APHA 2540 D (mod)	. , , , , , , , , , , , , , , , , , , ,
Vancouver Vancouver brackish waters) may produce a positive bias by this method. Alternate ar methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			, , , , ,
methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , ,
filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant v with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
ALS Environmental - with gravimetric measurement of the residue.	DS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
Wall gravillotto indudition induded of the residue.					filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
Vancourver		ALS Environmental -			with gravimetric measurement of the residue.
valicouvei		Vancouver			
Chloride in Water by IC E235.CI Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	hloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			dotoston.
Vancouver		Vancouver			
Fluoride in Water by IC E235.F Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	luoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Nitrite in Water by IC (Low Level) E235.NO2-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection
ALS Environmental -		ALS Environmental -			400000000
Vancouver		Vancouver			
Nitrate in Water by IC (Low Level) E235.NO3-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Sulfate in Water by IC E235.SO4 Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /or detection.	ulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental -	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
	Vancouver			
Ammonia by Fluorescence	E298 ALS Environmental -	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
0.1. (7)	Vancouver	147.1	4 D114 0400 0 (1)	
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Vancouver	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 ALS Environmental -	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
	Vancouver			100 mg/L is a negative interioreror on this test
Total Metals in Water by CRC ICPMS	E420	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental - Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental -	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L ALS Environmental -	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	Vancouver E509-L ALS Environmental -	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
T + 1M # - 1	Vancouver	147.4	EDA 4000 (*** * 1)	
Total Methylmercury in Water by GCAFS	E536 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	E541 ALS Environmental - Vancouver	Water	APHA 3500-Fe B/James Ball et al (1999)	This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	АРНА 2340В	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Ion Balance using Total Metals	EC101A ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum (using total metals), Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Vancouver	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Kjeldahl Nitrogen (Calculation)	EC318 ALS Environmental - Vancouver	Water	BC MOE LABORATORY MANUAL (2005)	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental -	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	Vancouver EP355 ALS Environmental -	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	Vancouver EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	ALS Environmental -			
	Vancouver			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Dissolved Mercury Water Filtration (Low Level)	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCI.
	ALS Environmental -			
	Vancouver			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
			B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver			sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
				method.

ALS Canada Ltd.



QUALITY CONTROL REPORT

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Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received :20-Oct-2022 15:28

Sampler : PB

Site : VA22-ECOF100-004

No. of samples received : 5
No. of samples analysed : 5

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

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Victoria BC Canada V8W 2E1

Signatories

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

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	
Caitlin Macey	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
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Jayden Piattelli	Analyst	Vancouver Metals, Burnaby, British Columbia	
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Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia	
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General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 712517)											
YL2201885-001	Anonymous	рН		E108	0.10	pH units	8.17	8.19	0.196%	4%		
Physical Tests (QC	Lot: 712518)											
YL2201885-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	118	117	0.581%	20%		
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR		
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	118	117	0.581%	20%		
Physical Tests (QC	Lot: 712519)											
YL2201885-001	Anonymous	Conductivity		E100	2.0	μS/cm	7600	7600	0.00%	10%		
Physical Tests (QC	Lot: 712528)											
FJ2202994-001	PD2-A	Colour, true		E329	5.0	CU	6.3	6.1	0.2	Diff <2x LOR		
Physical Tests (QC	Lot: 714283)											
FJ2202955-001	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR		
Physical Tests (QC	Lot: 714302)											
FJ2202955-001	Anonymous	Solids, total dissolved [TDS]		E162	20	mg/L	318	305	4.18%	20%		
Anions and Nutrien	ts (QC Lot: 712521)											
FJ2203002-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.291	0.299	2.81%	20%		
Anions and Nutrien	ts (QC Lot: 712522)											
FJ2203002-001	Anonymous	Chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 712523)											
FJ2203002-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 712524)											
FJ2203002-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 712525)											
FJ2203002-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	3.08	3.00	2.55%	20%		
Anions and Nutrien	ts (QC Lot: 712527)											
FJ2202994-001	PD2-A	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 712918)											
FJ2202994-001	PD2-A	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.175	0.149	0.027	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 712919)											
FJ2202994-001	PD2-A	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0156	0.0160	0.0003	Diff <2x LOR		

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
	ts (QC Lot: 712920)										
FJ2202994-001	PD2-A	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 712921)										
FJ2202994-001	PD2-A	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 713226)										
FJ2202994-005	Travel Blank	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 713227)										
FJ2202994-005	Travel Blank	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 713228)										
FJ2202994-005	Travel Blank	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 716357)										
EO2209213-021	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	15.3	15.2	0.638%	20%	
Organic / Inorganic	Carbon (QC Lot: 71291)	6)									
FJ2202994-001	PD2-A	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	3.06	2.94	0.12	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 71291)	7)									
FJ2202994-001	PD2-A	Carbon, total organic [TOC]		E355-L	0.50	mg/L	3.01	2.99	0.02	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 71322	5)									
FJ2202994-005	Travel Blank	Carbon, total organic [TOC]		E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Total Metals (QC Lo	ot: 712956)										
FJ2202994-001	PD2-A	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.155	0.167	7.18%	20%	
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00032	0.00032	0.000005	Diff <2x LOR	
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0368	0.0384	4.18%	20%	
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
						-					
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Boron, total Cadmium, total	7440-42-8 7440-43-9	E420 E420	0.010 0.0000050	mg/L mg/L	<0.010 0.0000239	<0.010 0.0000264	0 0.0000025	Diff <2x LOR Diff <2x LOR	
		· ·				•					
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000239	0.0000264	0.0000025	Diff <2x LOR	
		Cadmium, total Calcium, total	7440-43-9 7440-70-2	E420 E420	0.0000050 0.050	mg/L mg/L	0.0000239 26.5	0.0000264 26.6	0.0000025 0.477%	Diff <2x LOR	
		Cadmium, total Calcium, total Cesium, total	7440-43-9 7440-70-2 7440-46-2	E420 E420 E420	0.0000050 0.050 0.000010	mg/L mg/L mg/L	0.0000239 26.5 0.000038	0.0000264 26.6 0.000039	0.0000025 0.477% 0.0000010	Diff <2x LOR 20% Diff <2x LOR	
		Cadmium, total Calcium, total Cesium, total Chromium, total	7440-43-9 7440-70-2 7440-46-2 7440-47-3	E420 E420 E420 E420	0.0000050 0.050 0.000010 0.00050	mg/L mg/L mg/L mg/L	0.0000239 26.5 0.000038 0.00051	0.0000264 26.6 0.000039 <0.00050	0.0000025 0.477% 0.0000010 0.00001	Diff <2x LOR 20% Diff <2x LOR Diff <2x LOR	
		Cadmium, total Calcium, total Cesium, total Chromium, total Cobalt, total	7440-43-9 7440-70-2 7440-46-2 7440-47-3 7440-48-4	E420 E420 E420 E420 E420	0.0000050 0.050 0.000010 0.00050 0.00010	mg/L mg/L mg/L mg/L mg/L	0.0000239 26.5 0.000038 0.00051 0.00012	0.0000264 26.6 0.000039 <0.00050 0.00014	0.0000025 0.477% 0.0000010 0.00001 0.00002	Diff <2x LOR 20% Diff <2x LOR Diff <2x LOR Diff <2x LOR	
		Cadmium, total Calcium, total Cesium, total Chromium, total Cobalt, total Copper, total	7440-43-9 7440-70-2 7440-46-2 7440-47-3 7440-48-4 7440-50-8	E420 E420 E420 E420 E420 E420	0.0000050 0.050 0.000010 0.00050 0.00010 0.00050	mg/L mg/L mg/L mg/L mg/L	0.0000239 26.5 0.000038 0.00051 0.00012 0.00094	0.0000264 26.6 0.000039 <0.00050 0.00014 0.00096	0.0000025 0.477% 0.0000010 0.00001 0.00002 0.00001	Diff <2x LOR 20% Diff <2x LOR Diff <2x LOR Diff <2x LOR Diff <2x LOR	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water	Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Total Metals (QC Lo	t: 712956) - continued												
FJ2202994-001	PD2-A	Magnesium, total	7439-95-4	E420	0.0050	mg/L	6.18	6.10	1.39%	20%			
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00710	0.00721	1.55%	20%			
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000825	0.000892	7.78%	20%			
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00101	0.00106	0.00005	Diff <2x LOR			
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR			
		Potassium, total	7440-09-7	E420	0.050	mg/L	0.477	0.479	0.002	Diff <2x LOR			
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00072	0.00072	0.0000004	Diff <2x LOR			
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000307	0.000268	0.000039	Diff <2x LOR			
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.09	2.18	4.44%	20%			
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Sodium, total	7440-23-5	E420	0.050	mg/L	1.08	1.08	0.360%	20%			
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.104	0.108	2.88%	20%			
		Sulfur, total	7704-34-9	E420	0.50	mg/L	3.86	4.02	0.16	Diff <2x LOR			
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00293	0.00296	0.00002	Diff <2x LOR			
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000458	0.000474	3.61%	20%			
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00089	0.00090	0.000004	Diff <2x LOR			
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR			
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
otal Metals (QC Lo	t: 717310)												
CG2214660-001	Anonymous	Mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR			
Dissolved Metals (C	QC Lot: 712946)												
-J2202982-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0011	0.0010	0.0001	Diff <2x LOR			
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00048	0.00048	0.000003	Diff <2x LOR			
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0168	0.0173	3.31%	20%			
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR			
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR			
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.078	0.079	0.0008	Diff <2x LOR			
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR			

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
issolved Metals (QC Lot: 712946) - con	tinued									
J2202982-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.050	mg/L	110	110	0.509%	20%	
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000056	0.000054	0.000001	Diff <2x LOR	
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00024	0.00025	0.000008	Diff <2x LOR	
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.136	0.138	1.23%	20%	
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	141	146	3.01%	20%	
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00010	<0.00010	0.000004	Diff <2x LOR	
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00276	0.00268	2.87%	20%	
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00874	0.00912	4.29%	20%	
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	0.267	0.247	0.020	Diff <2x LOR	
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	2.96	3.03	2.36%	20%	
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00203	0.00206	1.31%	20%	
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	121 µg/L	0.131	7.86%	20%	
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.05	1.07	1.50%	20%	
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	22.2	22.1	0.720%	20%	
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.764	0.764	0.0168%	20%	
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	226	222	1.93%	20%	
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000017	0.000018	0.0000004	Diff <2x LOR	
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00545	0.00560	2.60%	20%	
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.0115	0.0114	0.892%	20%	
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0063	0.0068	0.0005	Diff <2x LOR	
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
issolved Metals (C	QC Lot: 715134)										
J2202978-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Speciated Metals (C	QC Lot: 730278) - continu	ued									
FJ2202994-001	PD2-A	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.00000020 mg/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (0	QC Lot: 733465)										
FC2202619-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000060	0.000058	0.000002	Diff <2x LOR	
Speciated Metals (0	QC Lot: 733968)										
FJ2202978-004	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.00000020 mg/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (0	QC Lot: 756854)										
FJ2202949-001	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	0.046	0.046	0.0002	Diff <2x LOR	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 712518)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 712519)					
Conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 712528)					
Colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 714283)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 714302)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 712521)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 712522)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 712523)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 712524)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 712525)	44000 70.0 5005.004		,	.0.00	
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 712527)	14265-44-2 E378-U	0.004	ma/i	<0.0040	
Phosphate, ortho-, dissolved (as P)	14203-44-2 E370-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 712918)	7727-37-9 E366	0.03	ma/l	<0.030	
Nitrogen, total	1121-31-9 5300	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 712919)	7723-14-0 E372-U	0.002	ma/l	<0.0020	
Phosphorus, total	1123-14-U ES12-U	0.002	mg/L	~U.UU2U	
Anions and Nutrients (QCLot: 712920)	7723-14-0 E375-T	0.002	ma/l	<0.0020	
Phosphorus, total dissolved	1123-14-0 E313-1	0.002	mg/L	\0.0020	
Anions and Nutrients (QCLot: 712921)	7664-41-7 E298	0.005	ma/l	<0.0050	
Ammonia, total (as N)	7004-41-7 E298	0.005	mg/L	<0.0050	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



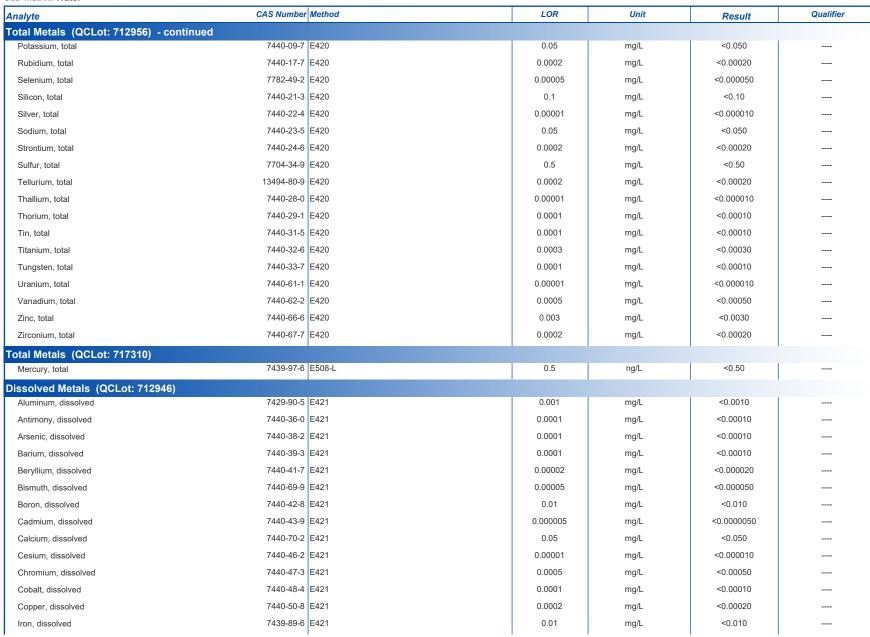




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Client: Ecofish Research Ltd



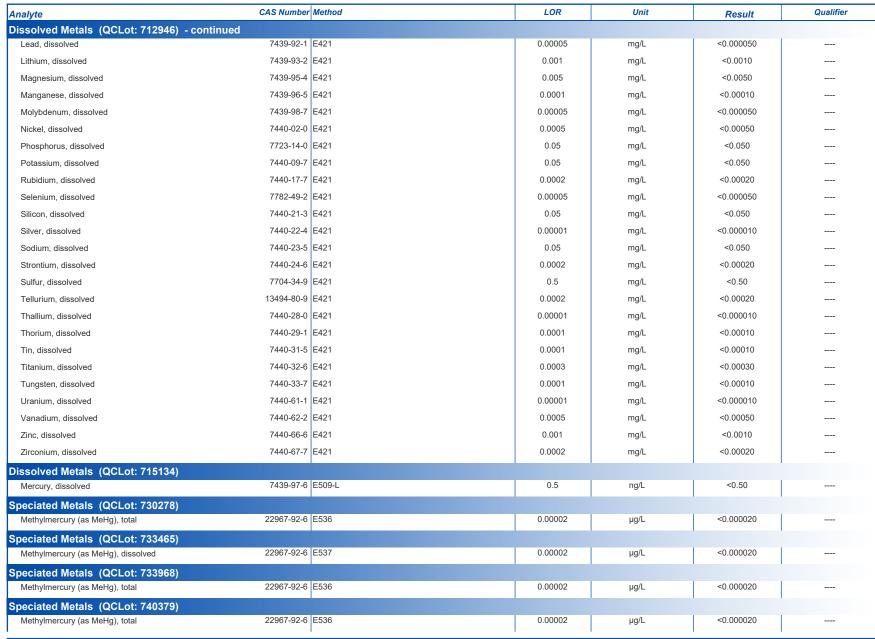




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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd







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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Speciated Metals (QCLot: 756854)					
Iron, ferrous [Fe II], dissolved	15438-31-0 E541	0.02	mg/L	<0.020	

Qualifiers

Qualifier	Description
MBRR	Initial MB for this submission had positive results for flagged analyte (data not shown). Low level samples were repeated with new QC (2nd MB results shown).
	High level results (>5x initial MB level) and non-detect results were reported and are defensible

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water				Laboratory Control Sample (LCS) Report					
				Spike Recovery (%) Recovery Limits (%)			/ Limits (%)		
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 712517)									
рН	E108		pH units	7 pH units	99.9	98.0	102		
Physical Tests (QCLot: 712518)									
Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	100	85.0	115		
Physical Tests (QCLot: 712519)									
Conductivity	E100	1	μS/cm	146.9 μS/cm	99.0	90.0	110		
Physical Tests (QCLot: 712528)									
Colour, true	E329	5	CU	100 CU	100	85.0	115		
Physical Tests (QCLot: 714283)									
Solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	90.3	85.0	115		
Physical Tests (QCLot: 714302)									
Solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	102	85.0	115		
Anions and Nutrients (QCLot: 712521)	16984-48-8 E235.F	0.02	m a /l		400	90.0	110	ı	
Fluoride	10904-40-0 E235.F	0.02	mg/L	1 mg/L	103	90.0	110		
Anions and Nutrients (QCLot: 712522) Chloride	16887-00-6 E235.CI	0.5	m a /l	400 #	400	90.0	110	I	
	10007-00-0 E235.CI	0.5	mg/L	100 mg/L	103	90.0	110		
Anions and Nutrients (QCLot: 712523)	14797-55-8 E235.NO3-L	0.005	ma/l	0.5//	404	90.0	110	I	
Nitrate (as N)	14797-33-0 E233.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110		
Anions and Nutrients (QCLot: 712524) Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110		
, ,	14737-00-0 E200.1102-E	0.001	mg/L	0.5 mg/L	96.5	30.0	110		
Anions and Nutrients (QCLot: 712525) Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/l	104	90.0	110		
	14000-70-0 1200.004	0.5	mg/L	100 mg/L	104	30.0			
Anions and Nutrients (QCLot: 712527) Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	0.03 mg/L	103	80.0	120		
	14200 44 2 2010 0	0.001	mg/L	0.00 Hig/L	103	55.5	120		
Anions and Nutrients (QCLot: 712918) Nitrogen, total	7727-37-9 E366	0.03	mg/L	0.5 mg/L	101	75.0	125		
		0.00	g, E	0.5 mg/L	101	. 5.0	.20		
Anions and Nutrients (QCLot: 712919) Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	0.05 mg/L	89.8	80.0	120		
		0.002	g, E	0.00 Hig/L	09.0	23.0	.20		
Anions and Nutrients (QCLot: 712920) Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	0.05 mg/L	89.8	80.0	120		
•	7720-14-0 2070-1	0.002	mg/L	0.05 mg/L	69.6	00.0	120		
Anions and Nutrients (QCLot: 712921) Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	0.2 mg/l	103	85.0	115		
Animonia, total (as N)	7004-41-7	0.003	IIIg/L	0.2 mg/L	103	03.0	113		

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Client: Ecofish Research Ltd



Sub-Matrix: Water			Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 713226)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	102	75.0	125	
Anions and Nutrients (QCLot: 713227)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	90.0	80.0	120	
Anions and Nutrients (QCLot: 713228)									'
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	107	85.0	115	
Anions and Nutrients (QCLot: 716357)									
Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	106	85.0	115	
Organic / Inorganic Carbon (QCLot: 712916)									
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	108	80.0	120	
Organic / Inorganic Carbon (QCLot: 712917)									
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	
Organic / Inorganic Carbon (QCLot: 713225)									'
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120	
Total Metals (QCLot: 712956)									'
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	95.5	80.0	120	
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	100.0	80.0	120	
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.7	80.0	120	
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	100	80.0	120	
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.9	80.0	120	
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	94.8	80.0	120	
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	93.6	80.0	120	
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	99.2	80.0	120	
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.7	80.0	120	
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.6	80.0	120	
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.0	80.0	120	
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.0	80.0	120	

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Client: Ecofish Research Ltd



Sub-Matrix: Water				Laboratory Control Sample (LCS) Report					
					Spike Recovery (%) Recovery Limits (%)				
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 712956) - continued									
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	96.2	80.0	120	
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.2	80.0	120	
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	96.4	80.0	120	
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100.0	80.0	120	
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	99.5	80.0	120	
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	92.9	80.0	120	
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.4	80.0	120	
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.8	80.0	120	
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.9	80.0	120	
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.2	80.0	120	
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	89.7	80.0	120	
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.9	80.0	120	
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	104	80.0	120	
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	96.7	80.0	120	
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	91.4	80.0	120	
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	97.6	80.0	120	
Total Metals (QCLot: 717310)									
Mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	112	80.0	120	
Dissolved Metals (QCLot: 712946)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.6	80.0	120	
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	101	80.0	120	
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	109	80.0	120	
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.5	80.0	120	
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.6	80.0	120	
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	106	80.0	120	
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.0	80.0	120	
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	97.0	80.0	120	
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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Dissolved Metals (QCLot: 712946) - con	tinued								
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	102	80.0	120	
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	104	80.0	120	
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.9	80.0	120	
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.0	80.0	120	
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.8	80.0	120	
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	97.1	80.0	120	
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	99.4	80.0	120	
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.6	80.0	120	
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	103	80.0	120	
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.8	80.0	120	
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.6	80.0	120	
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.6	80.0	120	
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.4	80.0	120	
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	102	80.0	120	
Speciated Metals (QCLot: 730278)									1
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	81.5	70.0	130	
Speciated Metals (QCLot: 733465)									1
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	83.2	70.0	130	
Speciated Metals (QCLot: 733968)									
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	79.0	70.0	130	
Speciated Metals (QCLot: 740379)									
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	81.8	70.0	130	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number M	lethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Speciated Metals (QCLot: 756854) - contin	nued								
Iron, ferrous [Fe II], dissolved	15438-31-0 E	541	0.02	mg/L	0.5 mg/L	103	80.0	120	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutr	ients (QCLot: 712521)									
FJ2203002-002	Anonymous	Fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	
Anions and Nutr	ients (QCLot: 712522)									
FJ2203002-002	Anonymous	Chloride	16887-00-6	E235.Cl	100 mg/L	100 mg/L	100	75.0	125	
Anions and Nutr	ients (QCLot: 712523)									
FJ2203002-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	
Anions and Nutr	ients (QCLot: 712524)									
FJ2203002-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.490 mg/L	0.5 mg/L	98.1	75.0	125	
Anions and Nutr	ients (QCLot: 712525)									
FJ2203002-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	98.1 mg/L	100 mg/L	98.1	75.0	125	
Anions and Nutr	ients (QCLot: 712527)									
FJ2202994-002	PD2-B	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0311 mg/L	0.03 mg/L	104	70.0	130	
Anions and Nutr	ients (QCLot: 712918)									
FJ2202994-002	PD2-B	Nitrogen, total	7727-37-9	E366	0.384 mg/L	0.4 mg/L	96.1	70.0	130	
Anions and Nutr	ients (QCLot: 712919)									
FJ2202994-002	PD2-B	Phosphorus, total	7723-14-0	E372-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	
Anions and Nutr	ients (QCLot: 712920)									
FJ2202994-002	PD2-B	Phosphorus, total dissolved	7723-14-0	E375-T	0.0478 mg/L	0.05 mg/L	95.7	70.0	130	
Anions and Nutr	ients (QCLot: 712921)									
FJ2202994-002	PD2-B	Ammonia, total (as N)	7664-41-7	E298	0.111 mg/L	0.1 mg/L	111	75.0	125	
Anions and Nutr	ients (QCLot: 713226)									
VA22C5507-001	Anonymous	Nitrogen, total	7727-37-9	E366	ND mg/L	2 mg/L	ND	70.0	130	
Anions and Nutr	ients (QCLot: 713227)									
VA22C5405-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.5 mg/L	ND	70.0	130	
Anions and Nutr	ients (QCLot: 713228)									
VA22C5405-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	MS-B
Anions and Nutr	ients (QCLot: 716357)									
EO2209213-022	Anonymous	Silicate (as SiO2)	7631-86-9	E392	ND mg/L	10 mg/L	ND	75.0	125	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spik	ke (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorgar	nic Carbon (QCLot: 71	12916)								
FJ2202994-002	PD2-B	Carbon, dissolved organic [DOC]		E358-L	5.04 mg/L	5 mg/L	101	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 71	12917)								
FJ2202994-002	PD2-B	Carbon, total organic [TOC]		E355-L	4.95 mg/L	5 mg/L	99.0	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 71	13225)								
VA22C5405-001	Anonymous	Carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130	
otal Metals (QC	Lot: 712956)									
FJ2202994-002	PD2-B	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	
		Antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	
		Arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	
		Bismuth, total	7440-69-9	E420	0.00981 mg/L	0.01 mg/L	98.1	70.0	130	
		Boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	94.8	70.0	130	
		Cadmium, total	7440-43-9	E420	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, total	7440-46-2	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	
		Chromium, total	7440-47-3	E420	0.0374 mg/L	0.04 mg/L	93.4	70.0	130	
		Cobalt, total	7440-48-4	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	
		Copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	
		Iron, total	7439-89-6	E420	1.84 mg/L	2 mg/L	92.1	70.0	130	
		Lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	
		Lithium, total	7439-93-2	E420	0.0984 mg/L	0.1 mg/L	98.4	70.0	130	
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, total	7439-96-5	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	
		Molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	
		Nickel, total	7440-02-0	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	
		Phosphorus, total	7723-14-0	E420	9.52 mg/L	10 mg/L	95.2	70.0	130	
		Potassium, total	7440-09-7	E420	3.84 mg/L	4 mg/L	96.1	70.0	130	
		Rubidium, total	7440-17-7	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	
		Selenium, total	7782-49-2	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	
		Silicon, total	7440-21-3	E420	9.10 mg/L	10 mg/L	91.0	70.0	130	
		Silver, total	7440-22-4	E420	0.00415 mg/L	0.004 mg/L	104	70.0	130	
		Sodium, total	7440-23-5	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	
	T.	Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	

Page : 20 of 22

Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spi	ke (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QC	CLot: 712956) - conti	inued								
FJ2202994-002	PD2-B	Sulfur, total	7704-34-9	E420	19.1 mg/L	20 mg/L	95.4	70.0	130	
		Tellurium, total	13494-80-9	E420	0.0375 mg/L	0.04 mg/L	93.8	70.0	130	
		Thallium, total	7440-28-0	E420	0.00390 mg/L	0.004 mg/L	97.5	70.0	130	
		Thorium, total	7440-29-1	E420	0.0223 mg/L	0.02 mg/L	112	70.0	130	
		Tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	
		Titanium, total	7440-32-6	E420	0.0358 mg/L	0.04 mg/L	89.5	70.0	130	
		Tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	
		Uranium, total	7440-61-1	E420	0.00419 mg/L	0.004 mg/L	105	70.0	130	
		Vanadium, total	7440-62-2	E420	0.0966 mg/L	0.1 mg/L	96.6	70.0	130	
		Zinc, total	7440-66-6	E420	0.360 mg/L	0.4 mg/L	90.1	70.0	130	
		Zirconium, total	7440-67-7	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	
Total Metals (QC	CLot: 717310)									
CG2214660-002	Anonymous	Mercury, total	7439-97-6	E508-L	4.87 ng/L	5 ng/L	97.4	70.0	130	
Dissolved Metals	(QCLot: 712946)									
FJ2202982-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.191 mg/L	0.2 mg/L	95.4	70.0	130	
		Antimony, dissolved	7440-36-0	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, dissolved	7440-41-7	E421	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	
		Bismuth, dissolved	7440-69-9	E421	0.00897 mg/L	0.01 mg/L	89.7	70.0	130	
		Boron, dissolved	7440-42-8	E421	0.078 mg/L	0.1 mg/L	78.0	70.0	130	
		Cadmium, dissolved	7440-43-9	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, dissolved	7440-46-2	E421	0.0111 mg/L	0.01 mg/L	111	70.0	130	
		Chromium, dissolved	7440-47-3	E421	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	
		Cobalt, dissolved	7440-48-4	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	
		Copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.3	70.0	130	
		Iron, dissolved	7439-89-6	E421	1.90 mg/L	2 mg/L	95.2	70.0	130	
		Lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	
		Lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	
		Nickel, dissolved	7440-02-0	E421	0.0364 mg/L	0.04 mg/L	91.0	70.0	130	
	1	Phosphorus, dissolved	7723-14-0	E421	10.4 mg/L	10 mg/L	104	70.0	130	

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Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 712946) -	continued								
FJ2202982-002	Anonymous	Potassium, dissolved	7440-09-7	E421	3.81 mg/L	4 mg/L	95.2	70.0	130	
		Rubidium, dissolved	7440-17-7	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	
		Selenium, dissolved	7782-49-2	E421	0.0450 mg/L	0.04 mg/L	112	70.0	130	
		Silicon, dissolved	7440-21-3	E421	9.27 mg/L	10 mg/L	92.7	70.0	130	
		Silver, dissolved	7440-22-4	E421	0.00408 mg/L	0.004 mg/L	102	70.0	130	
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	
		Tellurium, dissolved	13494-80-9	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	
		Thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	
		Thorium, dissolved	7440-29-1	E421	0.0215 mg/L	0.02 mg/L	108	70.0	130	
		Tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	
		Titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	
		Tungsten, dissolved	7440-33-7	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	
		Vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	
		Zinc, dissolved	7440-66-6	E421	0.358 mg/L	0.4 mg/L	89.4	70.0	130	
		Zirconium, dissolved	7440-67-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	
Dissolved Metals	(QCLot: 715134)									
FJ2202978-002	Anonymous	Mercury, dissolved	7439-97-6	E509-L	5.35 ng/L	5 ng/L	107	70.0	130	
Speciated Metals	(QCLot: 730278)									
FJ2202994-002	PD2-B	Methylmercury (as MeHg), total	22967-92-6	E536	0.00216 μg/L	0.0025 μg/L	86.2	60.0	140	
Speciated Metals	(QCLot: 733465)									
FJ2202994-001	PD2-A	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00152 μg/L	0.0025 μg/L	61.0	60.0	140	
Speciated Metals	(QCLot: 733968)									
FJ2202994-003	PD5	Methylmercury (as MeHg), total	22967-92-6	E536	0.00175 μg/L	0.0025 μg/L	70.0	60.0	140	
Speciated Metals	(QCLot: 756854)									
FJ2202949-002	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.355 mg/L	0.5 mg/L	71.1	70.0	130	

Qualifiers

Qualifier Description

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

Page : 22 of 22

Work Order: FJ2202994 Amendment 2
Client: Ecofish Research Ltd





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Canada Toll Free: 1 800 668 9878

Page of

Failure to domplete	REFER TO BAC	Released by:		□yes	Are samples for	Sav Candina and	Are samples tak	Drinking														ALS Sample #	ALS Lab Work Order#	LSD:	PO / AFE:	Job #:	ALS Account # / Quote #:		Contact:	Company:		Invoice To		City/Province:	Street		Phone:	Contact:	
Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY, By the use of this form the user acknowledges and agrees with the Terms and Conditions 1. If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form.	BACK-PAGE EDRALS LOCATIONS AND SAMPLING INFORMATION	Date: 2000	SHIPMENT RELEASE (client use)	I NO	Are samples for human consumption/ use?	ES ONO	Are samples taken from a Regulated DW System?	Drinking Water (DW) Samples (client use)		Travel Blank	PD3 Telephone: +1 250 261 5517			POMENT			PD2-B 「JCCUC	PD2-A Work Order Reference	Fort St. John		(This description will appear on the report)	Sample Identification and/or Coordinates	(Order# (ALS-use only):	,	1200-25.03.02	Surface water MON8/9- with metals	/ Quote #: VA22-ECOF100-004	Project Information	accountspayable@ecofishresearch.com	Ecofish Research Ltd.	Copy of Invoice with Report YES INO	Same as Report To ☐ YES ☐ NO	V9N 3P6	Courtenay, BC	600 Comox Rd	Company address below will appear on the final report	250-334-3042	Sarah Kennedy	Contact and company name below will appear on the final report
in this form LEGIBLY. By the u) System, please submit using	INFORMATION	OCT 2522 Time:	To the state of th	csuzanne@ecofishresearch.com	gmann@azimuthgroup.ca	Please sen		Notes / Specify Lin			317						466	rence Y			bear on the report)	ind/or Coordinates	A	 	ZD.	W		799	E	E		NO .	E	Е	m.			2	
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the user acknowledges an	HW		INITIAL SHIPMENT RECEPTION (ALS use only)	kganshorn@ecofishresearch.com	imcivor@azimuthgroup.ca	Please send Azimuth a copy of the data in their EDD format:	Excel COC only)	Notes / Specify Limits for result evaluation by selecting from drop-down below	•	20 007 22	250072	1)	170	17-17-62	200CT	1	25002175			1.50	(Additional-Att)	Date	Sean Zhang			¢		Oil and Gas Required Fields (client use)		accountspayable@ecofishresearch.com	Select Invoice Distribution: 2 EMAIL	Invoice Recipients	waterqualitylabdata@ecofishresearch.com		skennedy@ecofishresearch.com	tion: 🖸 EMAIL	Compare Results to Criteria on Report - provide details below if box checked	ts with CO/	Reports /
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ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2203009** Page : 1 of 8

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : --- Telephone : +1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received : 22-Oct-2022 13:00

PO : 1200-25.03.02 Date Analysis Commenced : 25-Oct-2022

C-O-C number : 2022-Oct-MON8/9-Day 2 Issue Date : 25-Aug-2023 17:58

Sampler : PB Site :

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

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

This Certificate of Analysis contains the following information:

Victoria BC Canada V8W 2E1

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Parnian Sane	Analyst	Metals, Burnaby, British Columbia	
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia	
Sukhman Khosa	Lab Assistant	Metals, Burnaby, British Columbia	
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia	

Page : 2 of 8

Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

>: greater than.

Page : 3 of 8

Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Qualifiers

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

Page : 4 of 8

Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water				Cli	ient sample ID	PC1	PR1	PR2	HD	
(Matrix: Water)										
				Client samp	ling date / time	21-Oct-2022 08:40	21-Oct-2022 08:00	21-Oct-2022 13:45	21-Oct-2022 13:15	
Analyte	CAS Number	/lethod/Lab		LOR	Unit	FJ2203009-001	FJ2203009-002	FJ2203009-003	FJ2203009-004	
						Result	Result	Result	Result	
Sample Preparation										
Dissolved Fe2 filtration location	EP541	/VA		-	-	Field	Field	Field	Field	
Physical Tests										
Alkalinity, bicarbonate (as CaCO3)	E290/		Α	1.0	mg/L	71.0	71.4	71.0	178	
Alkalinity, carbonate (as CaCO3)	E290/		Α	1.0	mg/L	<1.0	<1.0	<1.0	8.8	
Alkalinity, hydroxide (as CaCO3)	E290/		Α	1.0	mg/L	<1.0	<1.0	<1.0	<1.0	
Alkalinity, total (as CaCO3)	E290/	/A	Α	1.0	mg/L	71.0	71.4	71.0	186	
Colour, true	E329/		Α	5.0	CU	6.4	7.0	7.0	<5.0	
Conductivity	E100/	/A	Α	2.0	μS/cm	174	175	176	470	
Hardness (as CaCO3), dissolved	EC100	/VA		0.50	mg/L	81.2	82.3	84.4	214	
Hardness (as CaCO3), from total Ca/Mg	EC100	A/VA		0.50	mg/L	88.2	88.9	93.2	254	
рН	E108/	/A	Α	0.10	pH units	8.07	8.09	8.11	8.41	
Solids, total dissolved [TDS]	E162/	/A	Α	10	mg/L	104	112	100	296	
Solids, total suspended [TSS]	E160/	/A	Α	3.0	mg/L	<3.0	<3.0	<3.0	6.2	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7 E298/	/A	Α	0.0050	mg/L	0.0060	<0.0050	0.0231	0.0050	
Chloride	16887-00-6 E235.	CI/VA	Α	0.50	mg/L	<0.50	<0.50	<0.50	0.61	
Fluoride	16984-48-8 E235.	-/VA	Α	0.020	mg/L	0.037	0.036	0.035	0.099	
Kjeldahl nitrogen, total [TKN]	EC318	s/VA		0.050	mg/L	0.089	0.089	0.115	0.073	
Nitrate (as N)	14797-55-8 E235.	NO3-L/V	Α	0.0050	mg/L	0.0641	0.0640	0.0596	<0.0050	
Nitrite (as N)	14797-65-0 E235.I	NO2-L/V	Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
Nitrogen, total	7727-37-9 E366/	/A	Α	0.030	mg/L	0.153	0.153	0.175	0.073	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-		Α	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
Phosphorus, total	7723-14-0 E372-		Α	0.0020	mg/L	0.0042	0.0043	0.0066	0.0116	
Phosphorus, total dissolved	7723-14-0 E375-		Α	0.0020	mg/L	<0.0020	<0.0020	<0.0020	<0.0020	
Silicate (as SiO2)	7631-86-9 E392/		Α	0.50	mg/L	4.31	4.27	4.23	3.70	
Sulfate (as SO4)	14808-79-8 E235.		Α	0.30	mg/L	11.8	12.0	12.0	57.7	
Nitrate + Nitrite (as N)	EC235			0.0032	mg/L	0.0641	0.0640	0.0596	<0.0051	
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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PC1	PR1	PR2	HD	
(Matrix: Water)									
			Client samp	ling date / time	21-Oct-2022 08:40	21-Oct-2022 08:00	21-Oct-2022 13:45	21-Oct-2022 13:15	
Analyte	CAS Number Method/L	ab	LOR	Unit	FJ2203009-001	FJ2203009-002	FJ2203009-003	FJ2203009-004	
					Result	Result	Result	Result	
Organic / Inorganic Carbon									
Carbon, dissolved organic [DOC]	E358-L/VA	Α	0.50	mg/L	2.77	2.87	2.83	2.50	
Carbon, total organic [TOC]	E355-L/VA	Α	0.50	mg/L	2.82	2.91	3.02	1.92	
Ion Balance									
Anion sum	EC101/VA		0.10	meq/L	1.67	1.68	1.67	4.94	
Cation sum	EC101/VA		0.10	meq/L	1.68	1.70	1.74	4.44	
Ion balance (APHA)	EC101/VA		0.01	%	0.30	0.59	2.05	5.33	
Total Metals									
Aluminum, total	7429-90-5 E420/VA	Α	0.0030	mg/L	0.0432	0.0355	0.0574	0.222	
Antimony, total	7440-36-0 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00018	
Arsenic, total	7440-38-2 E420/VA	Α	0.00010	mg/L	0.00020	0.00022	0.00021	0.00025	
Barium, total	7440-39-3 E420/VA	Α	0.00010	mg/L	0.0304	0.0314	0.0335	0.121	
Beryllium, total	7440-41-7 E420/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, total	7440-69-9 E420/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, total	7440-42-8 E420/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	0.014	
Cadmium, total	7440-43-9 E420/VA	Α	0.0000050	mg/L	0.0000128	0.0000163	0.0000175	0.0000272	
Calcium, total	7440-70-2 E420/VA	Α	0.050	mg/L	25.7	25.6	26.8	68.3	
Cesium, total	7440-46-2 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000042	
Chromium, total	7440-47-3 E420/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, total	7440-48-4 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00013	
Copper, total	7440-50-8 E420/VA	Α	0.00050	mg/L	0.00070	0.00072	0.00088	0.00058	
Iron, total	7439-89-6 E420/VA	Α	0.010	mg/L	0.036	0.046	0.074	0.248	
Lead, total	7439-92-1 E420/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000121	
Lithium, total	7439-93-2 E420/VA	Α	0.0010	mg/L	0.0011	0.0011	0.0012	0.0086	
Magnesium, total	7439-95-4 E420/VA	Α	0.0050	mg/L	5.83	6.06	6.37	20.2	
Manganese, total	7439-96-5 E420/VA	Α	0.00010	mg/L	0.00197	0.00208	0.00314	0.00863	
Mercury, total	7439-97-6 E508-L/VA	Α	0.50	ng/L	<0.50	<0.50	0.50	0.80	
Molybdenum, total	7439-98-7 E420/VA	Α	0.000050	mg/L	0.000802	0.000824	0.000889	0.00450	
Nickel, total	7440-02-0 E420/VA	Α	0.00050	mg/L	0.00080	0.00076	0.00084	0.00127	
Phosphorus, total	7723-14-0 E420/VA	Α	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
Potassium, total	7440-09-7 E420/VA	Α	0.050	mg/L	0.429	0.439	0.474	0.792	
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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PC1	PR1	PR2	HD	
(Matrix: Water)									
			Client samp	ling date / time	21-Oct-2022 08:40	21-Oct-2022 08:00	21-Oct-2022 13:45	21-Oct-2022 13:15	
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2203009-001	FJ2203009-002	FJ2203009-003	FJ2203009-004	
					Result	Result	Result	Result	
Total Metals									
Rubidium, total	7440-17-7 E420/VA	Α	0.00020	mg/L	0.00038	0.00039	0.00044	0.00072	
Selenium, total	7782-49-2 E420/VA	Α	0.000050	mg/L	0.000249	0.000253	0.000240	0.00140	
Silicon, total	7440-21-3 E420/VA	Α	0.10	mg/L	2.13	2.24	2.25	2.36	
Silver, total	7440-22-4 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, total	7440-23-5 E420/VA	Α	0.050	mg/L	1.03	1.04	1.14	3.69	
Strontium, total	7440-24-6 E420/VA	Α	0.00020	mg/L	0.102	0.105	0.110	0.405	
Sulfur, total	7704-34-9 E420/VA	Α	0.50	mg/L	4.46	4.55	4.69	23.2	
Tellurium, total	13494-80-9 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, total	7440-28-0 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, total	7440-29-1 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, total	7440-31-5 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, total	7440-32-6 E420/VA	Α	0.00030	mg/L	0.00074	0.00082	0.00132	<0.00600 DLM	
Tungsten, total	7440-33-7 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, total	7440-61-1 E420/VA	Α	0.000010	mg/L	0.000423	0.000420	0.000444	0.000962	
Vanadium, total	7440-62-2 E420/VA	Α	0.00050	mg/L	<0.00050	<0.00050	0.00054	0.00106	
Zinc, total	7440-66-6 E420/VA	Α	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	
Zirconium, total	7440-67-7 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	<0.00020	0.00025	
Dissolved Metals									
Aluminum, dissolved	7429-90-5 E421/VA	А	0.0010	mg/L	0.0046	0.0046	0.0040	0.0020	
Antimony, dissolved	7440-36-0 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00014	
Arsenic, dissolved	7440-38-2 E421/VA	Α	0.00010	mg/L	0.00016	0.00018	0.00018	0.00014	
Barium, dissolved	7440-39-3 E421/VA	Α	0.00010	mg/L	0.0294	0.0291	0.0300	0.103	
Beryllium, dissolved	7440-41-7 E421/VA	Α	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8 E421/VA	Α	0.010	mg/L	<0.010	<0.010	<0.010	0.010	
Cadmium, dissolved	7440-43-9 E421/VA	Α	0.0000050	mg/L	0.0000070	0.0000079	0.0000084	0.0000055	
Calcium, dissolved	7440-70-2 E421/VA	Α	0.050	mg/L	23.6	23.7	24.4	55.8	
Cesium, dissolved	7440-46-2 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			CI	ient sample ID	PC1	PR1	PR2	HD	
(Matrix: Water)									
			·	ling date / time	21-Oct-2022 08:40	21-Oct-2022 08:00	21-Oct-2022 13:45	21-Oct-2022 13:15	
Analyte	CAS Number Method/L	ab	LOR	Unit	FJ2203009-001	FJ2203009-002	FJ2203009-003	FJ2203009-004	
					Result	Result	Result	Result	
Dissolved Metals Copper, dissolved	7440-50-8 E421/VA	A	0.00020	mg/L	0.00056	0.00057	0.00056	0.00033	
Iron, dissolved	7439-89-6 E421/VA	A	0.00020	mg/L	<0.010	<0.010	<0.010	<0.010	
Lead, dissolved	7439-89-8 E421/VA 7439-92-1 E421/VA	A	0.00050	ŭ	<0.00050	<0.00050	<0.00050	<0.00050	
Lithium, dissolved	7439-93-1 E421/VA 7439-93-2 E421/VA	A	0.000030	mg/L	<0.0010	<0.0010	0.0010	0.0070	
Magnesium, dissolved		A	0.0010	mg/L	5.42	5.62	5.69	18.2	
Manganese, dissolved	7439-95-4 E421/VA 7439-96-5 E421/VA	A	0.0000	mg/L mg/L	0.00045	0.00045	0.00038	0.00249	
Mercury, dissolved	7439-96-5 E509-L/VA	A	0.50	-	<0.50	<0.50	<0.50	<0.50	
Molybdenum, dissolved	7439-97-0 E303-E/VA 7439-98-7 E421/VA	A	0.000050	ng/L mg/L	0.000740	0.000701	0.000732	0.00368	
Nickel, dissolved	7440-02-0 E421/VA	A	0.00050	mg/L	0.000740	0.000761	0.000732	0.00083	
Phosphorus, dissolved	7723-14-0 E421/VA	A	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7 E421/VA	A	0.050	mg/L	0.406	0.407	0.416	0.660	
Rubidium, dissolved	7440-09-7 E421/VA	Α	0.00020	mg/L	0.00029	0.00030	0.00030	0.00027	
Selenium, dissolved	7782-49-2 E421/VA	A	0.00020	mg/L	0.00023	0.00035	0.00030	0.00027	
Silicon, dissolved	7440-21-3 E421/VA	Α	0.050	mg/L	2.03	1.98	1.94	1.74	
Silver, dissolved	7440-21-3 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5 E421/VA	Α	0.050	mg/L	0.970	0.954	0.985	3.36	
Strontium, dissolved	7440-24-6 E421/VA	Α	0.00020	mg/L	0.0944	0.0936	0.0970	0.330	
Sulfur, dissolved	7704-34-9 E421/VA	A	0.50	mg/L	4.05	4.05	3.93	20.5	
Tellurium, dissolved	13494-80-9 E421/VA	A	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0 E421/VA	Α	0.00020	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Thorium, dissolved	7440-29-1 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, dissolved	7440-31-3 E421/VA 7440-32-6 E421/VA	A	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	
Tungsten, dissolved	7440-33-7 E421/VA	A	0.00030	mg/L	<0.00030	<0.00030	<0.00010	<0.00010	
Uranium, dissolved	7440-53-7 E421/VA	A	0.00010	mg/L	0.000388	0.000384	0.000382	0.000763	
Vanadium, dissolved	7440-61-1 E-21/VA 7440-62-2 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.000760	
Zinc, dissolved	7440-66-6 E421/VA	A	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
Zirconium, dissolved	7440-66-7 E421/VA	A	0.00030	mg/L	<0.00030	<0.0000	<0.00030	<0.00030	
Dissolved MeHg filtration location	EP537/VA	/ /	-	- Ing/L	Field	Field	Field	Field	
Dissolved mercury filtration location	EP509-L/VA		_	-	Field	Field	Field	Field	
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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

Sub-Matrix: Water			Cli	ent sample ID	PC1	PR1	PR2	HD	
(Matrix: Water)									
			Client sampl	ing date / time	21-Oct-2022 08:40	21-Oct-2022 08:00	21-Oct-2022 13:45	21-Oct-2022 13:15	
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2203009-001	FJ2203009-002	FJ2203009-003	FJ2203009-004	
					Result	Result	Result	Result	
Dissolved Metals									
Dissolved metals filtration location	EP	P421/VA	-	-	Field	Field	Field	Field	
Speciated Metals									
Methylmercury (as MeHg), total	22967-92-6 E5	536/VA A	0.00000002 0	mg/L	<0.00000002	<0.00000002 0	<0.000000020	<0.00000002 0	
Iron, ferrous [Fe II], dissolved	15438-31-0 E5	541/VA A	0.020	mg/L	<0.020	<0.020	<0.020	<0.020	
Methylmercury (as MeHg), dissolved	22967-92-6 E5	537/VA A	0.00000002 0	mg/L	<0.00000002 0	<0.00000002 0	<0.000000020	<0.00000002 0	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2203009** Page : 1 of 22

Amendment :2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

: 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone :---- Telephone :+1 250 261 5517

Project :Surface Water MON8/9-With Metals Date Samples Received : 22-Oct-2022 13:00

C-O-C number : 2022-Oct-MON8/9-Day 2

Sampler : PB Site .

Quote number : VA22-ECOF100-004

No. of samples received :4
No. of samples analysed :4

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

Key

Address

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	/aluation: ≭ =	Holding time exce	edance ; 🔻	/ = Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) HD	E298	21-Oct-2022	25-Oct-2022	28 days	4 days	1	27-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PR2	E298	21-Oct-2022	25-Oct-2022	28 days	4 days	1	27-Oct-2022	28 days	6 days	1
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PC1	E298	21-Oct-2022	25-Oct-2022	28 days	5 days	1	27-Oct-2022	28 days	6 days	1
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) PR1	E298	21-Oct-2022	25-Oct-2022	28 days	5 days	✓	27-Oct-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE HD	E235.Cl	21-Oct-2022	25-Oct-2022	28 days	4 days	✓	25-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE PC1	E235.Cl	21-Oct-2022	25-Oct-2022	28 days	4 days	1	25-Oct-2022	28 days	4 days	1
Anions and Nutrients : Chloride in Water by IC										
HDPE PR2	E235.CI	21-Oct-2022	25-Oct-2022	28 days	4 days	✓	25-Oct-2022	28 days	4 days	✓

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Work Order : FJ2203009 Amendment 2
Client : Ecofish Research Ltd



Matrix: Water					Εν	aluation: 🗴 = l	Holding time excee	edance ; 🔻	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE PR1	E235.CI	21-Oct-2022	25-Oct-2022	28 days	4 days	4	25-Oct-2022	28 days	5 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE HD	E378-U	21-Oct-2022	25-Oct-2022	3 days	4 days	* EHT	25-Oct-2022	3 days	4 days	x EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE PR2	E378-U	21-Oct-2022	25-Oct-2022	3 days	4 days	* EHT	25-Oct-2022	3 days	4 days	* EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE PC1	E378-U	21-Oct-2022	25-Oct-2022	3 days	4 days	* EHT	25-Oct-2022	3 days	5 days	≭ EHT
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel 0.001									
HDPE PR1	E378-U	21-Oct-2022	25-Oct-2022	3 days	4 days	* EHT	25-Oct-2022	3 days	5 days	x EHT
Anions and Nutrients : Fluoride in Water by IC										
HDPE HD	E235.F	21-Oct-2022	25-Oct-2022	28 days	4 days	✓	25-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PC1	E235.F	21-Oct-2022	25-Oct-2022	28 days	4 days	✓	25-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PR2	E235.F	21-Oct-2022	25-Oct-2022	28 days	4 days	✓	25-Oct-2022	28 days	4 days	✓

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Matrix: Water					Εν	valuation: ≭ =	Holding time excee	edance ; 🖠	✓ = Within	Holding Tin
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analysis		
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PR1	E235.F	21-Oct-2022	25-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	5 days	✓
				days						
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE	5005 1100 1	04.0.4.0000	05.0.1.0000				05.0.1.000			,
HD	E235.NO3-L	21-Oct-2022	25-Oct-2022	3 days	4 days	*	25-Oct-2022	3 days	4 days	✓
						EHT				
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE	E005 NO0 1	04 0-1 0000	05 0-1 0000	0 4	4 -1	4-	05 0-1 0000	2 4	4 -1	,
PC1	E235.NO3-L	21-Oct-2022	25-Oct-2022	3 days	4 days	# EHT	25-Oct-2022	3 days	4 days	✓
						EHI				
Anions and Nutrients : Nitrate in Water by IC (Low Level)									, ,	
HDPE	E005 NO0 I	04 0 4 0000	05.0.1.0000			4.	05.0.1.000			
PR2	E235.NO3-L	21-Oct-2022	25-Oct-2022	3 days	4 days	*	25-Oct-2022	3 days	4 days	✓
						EHT				
Anions and Nutrients : Nitrate in Water by IC (Low Level)					ı					
HDPE	E005 NO0 I	04 0 4 0000	05.0.4.0000	0.1	4 1		05.0.4.0000	0.1	F 1	,
PR1	E235.NO3-L	21-Oct-2022	25-Oct-2022	3 days	4 days	*	25-Oct-2022	3 days	5 days	✓
						EHT				
Anions and Nutrients : Nitrite in Water by IC (Low Level)					ı					
HDPE	E005 NO0 I	24 0 -+ 2022	05.0.4.0000	0.1	4 1		05.0.4.0000	0.1	4 1	
HD	E235.NO2-L	21-Oct-2022	25-Oct-2022	3 days	4 days	≭ EHT	25-Oct-2022	3 days	4 days	# EHT
						ЕПІ				ЕПІ
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	E235.NO2-L	21-Oct-2022	25-Oct-2022	2 days	1 days	×	25-Oct-2022	2 days	1 days	*
PC1	E235.NO2-L	21-Oct-2022	25-UCI-2022	3 days	4 days	EHT	25-UCI-2022	3 days	4 days	EHT
						ЕПІ				ЕПІ
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	E225 NO2 1	24 Oat 2022	25 Oct 2022	2 days	1 days	*	25 Oct 2022	2 days	1 days	se .
PR2	E235.NO2-L	21-Oct-2022	25-Oct-2022	3 days	4 days	EHT	25-Oct-2022	3 days	4 days	EHT
						EHI				EHI
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	E225 NO. 1	04 Oat 0000	05 0-1 0000	0 4	4 -1	4-	05 0-1 0000	2 4	F 41	
PR1	E235.NO2-L	21-Oct-2022	25-Oct-2022	3 days	4 days	*	25-Oct-2022	3 days	5 days	*
						EHT				EHT

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Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Matrix: Water Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Anions and Nutrients: Reactive Silica by Colourimetry HDPE HD E392 21-Oct-2022 26-Oct-2022 28 days 5 days Anions and Nutrients: Reactive Silica by Colourimetry **HDPE** PC1 E392 21-Oct-2022 26-Oct-2022 28 days 5 days 1 Anions and Nutrients : Reactive Silica by Colourimetry HDPE PR1 E392 21-Oct-2022 26-Oct-2022 28 days 5 days Anions and Nutrients : Reactive Silica by Colourimetry HDPE E392 21-Oct-2022 PR2 26-Oct-2022 28 days 5 days 1 Anions and Nutrients : Sulfate in Water by IC **HDPE** HD E235.SO4 21-Oct-2022 25-Oct-2022 1 25-Oct-2022 1 4 days 28 days 4 days 28 days Anions and Nutrients : Sulfate in Water by IC HDPE E235.SO4 21-Oct-2022 1 4 days 1 PC1 25-Oct-2022 28 4 days 25-Oct-2022 28 days days Anions and Nutrients : Sulfate in Water by IC HDPE PR2 E235.SO4 21-Oct-2022 25-Oct-2022 25-Oct-2022 4 days 28 days 4 days 28 days Anions and Nutrients : Sulfate in Water by IC HDPE PR1 E235.SO4 21-Oct-2022 25-Oct-2022 28 4 days 1 25-Oct-2022 28 days 5 days ✓ days Anions and Nutrients: Total Dissolved Phosphorus by Colourimetry (0.002 mg/L) Amber glass dissolved (sulfuric acid) E375-T 21-Oct-2022 HD 25-Oct-2022 1 26-Oct-2022 28 days 5 days 1 4 days 28

days

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Matrix: Water	Evaluation: × = Holding time exceedance: ✓ = Within Holding Time

Wattrix. Water	I						i			
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys		
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
PR2	E375-T	21-Oct-2022	25-Oct-2022	28	4 days	✓	26-Oct-2022	28 days	5 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)										
PC1	E375-T	21-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	5 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)				<u> </u>						
PR1	E375-T	21-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	5 days	✓
				days					,	
Anions and Nutrients : Total Nitrogen by Colourimetry				,						
Amber glass total (sulfuric acid)							<u> </u>			
HD	E366	21-Oct-2022	25-Oct-2022	28	4 days	✓	27-Oct-2022	28 days	6 days	✓
110	2000	21 000 2022	20-001-2022	days	- days	,	27-000-2022	20 days	o days	•
				uays						
Anions and Nutrients : Total Nitrogen by Colourimetry				1	T			T	I	
Amber glass total (sulfuric acid)	E366	21-Oct-2022	25-Oct-2022		4 days	√	27-Oct-2022	28 days	6 days	✓
PR2	E300	21-001-2022	25-001-2022	28	4 days	•	27-OCI-2022	20 days	o days	•
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
PC1	E366	21-Oct-2022	25-Oct-2022	28	5 days	✓	27-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
PR1	E366	21-Oct-2022	25-Oct-2022	28	5 days	✓	27-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
HD	E372-U	21-Oct-2022	25-Oct-2022	28	4 days	✓	26-Oct-2022	28 days	5 days	✓
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
PR2	E372-U	21-Oct-2022	25-Oct-2022	28	4 days	✓	26-Oct-2022	28 days	5 days	✓
				days	′					
				,5						

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nalyte Group Container / Client Sample ID(s)	Method	Sampling Date			Analysis					
			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
• • • • • • • • • • • • • • • • • • • •			Date	Rec	Actual	Lvai	7 many old Bato	Rec	Actual	Lvai
nions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)			200							
Amber glass total (sulfuric acid)										
PC1	E372-U	21-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	5 days	✓
				days	,					
nions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
PR1	E372-U	21-Oct-2022	25-Oct-2022	28	5 days	✓	26-Oct-2022	28 days	5 days	✓
				days	,					
issolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ant)			,						
Pre-cleaned amber glass - dissolved (lab preserved))ptj									
HD	E509-L	21-Oct-2022	28-Oct-2022	28	7 days	✓	28-Oct-2022	28 days	7 days	1
		2.00.2022	20 001 2022	days	, aays		20 00. 2022	20 44,0	,	
in the desired Market Director of Market Dec (NATO (1 and Lovel LOD - 0.5)				days						
issolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ρt)			I			I			
Pre-cleaned amber glass - dissolved (lab preserved) PC1	E509-L	21-Oct-2022	28-Oct-2022	00	7 days	1	28-Oct-2022	28 days	7 days	✓
FCI	L303-L	21-001-2022	20-061-2022	28	1 days	•	20-001-2022	20 days	1 days	•
				days						
issolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ppt)			T						
Pre-cleaned amber glass - dissolved (lab preserved)	E509-L	21-Oct-2022	28-Oct-2022		7 -1	√	28-Oct-2022	00 -1	7 -1	1
PR1	E509-L	21-001-2022	20-001-2022	28	7 days	•	20-UCI-2022	28 days	7 days	•
				days						
issolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p	ppt)									
Pre-cleaned amber glass - dissolved (lab preserved)	5500.1	04.0.4.0000							i	,
PR2	E509-L	21-Oct-2022	28-Oct-2022	28	7 days	✓	28-Oct-2022	28 days	7 days	✓
				days						
issolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
PR2	E421	21-Oct-2022	29-Oct-2022	180	7 days	✓	29-Oct-2022	180	8 days	✓
				days				days		
issolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid)										
HD	E421	21-Oct-2022	29-Oct-2022	180	8 days	✓	29-Oct-2022	180	8 days	✓
				days				days		
				1			•			
issolved Metals : Dissolved Metals in Water by CRC ICPMS										
issolved Metals : Dissolved Metals in Water by CRC ICPMS IDPE dissolved (nitric acid)										

days

days

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Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) E421 21-Oct-2022 29-Oct-2022 1 8 days 29-Oct-2022 PR1 180 180 8 days days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) HD E358-L 21-Oct-2022 25-Oct-2022 28 4 days 1 26-Oct-2022 28 days 5 days ✓ days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) PR2 E358-L 21-Oct-2022 25-Oct-2022 4 days 1 26-Oct-2022 28 days 5 days 28 davs Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L PC1 21-Oct-2022 25-Oct-2022 28 5 days ✓ 26-Oct-2022 28 days 5 days 1 days Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 21-Oct-2022 25-Oct-2022 1 26-Oct-2022 ✓ PR1 5 days 28 days 5 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 21-Oct-2022 1 28 days HD 25-Oct-2022 28 4 days 26-Oct-2022 5 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PR2 E355-L 21-Oct-2022 25-Oct-2022 26-Oct-2022 4 days 28 days 5 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) 21-Oct-2022 PC1 E355-L 25-Oct-2022 28 5 days 1 26-Oct-2022 28 days 5 days ✓ days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 21-Oct-2022 25-Oct-2022 1 26-Oct-2022 1 PR1 5 days 28 days 5 days 28

days

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

Analyte Group Container / Client Sample ID(s) Physical Tests: Alkalinity Species by Titration HDPE	Method	Sampling Date						Analys	sis			
Physical Tests : Alkalinity Species by Titration			Duama nation						Analysis			
	I	1	Preparation	Holain	g Times	Eval	Analysis Date	Holding	g Times	Eval		
			Date	Rec	Actual			Rec	Actual			
HDPE												
HD	E290	21-Oct-2022	25-Oct-2022	14	4 days	✓	25-Oct-2022	14 days	4 days	✓		
				days								
Physical Tests : Alkalinity Species by Titration												
HDPE												
PR2	E290	21-Oct-2022	25-Oct-2022	14	4 days	✓	25-Oct-2022	14 days	4 days	✓		
				days								
Physical Tests : Alkalinity Species by Titration												
HDPE												
PC1	E290	21-Oct-2022	25-Oct-2022	14	4 days	✓	25-Oct-2022	14 days	5 days	✓		
				days								
Physical Tests : Alkalinity Species by Titration												
HDPE												
PR1	E290	21-Oct-2022	25-Oct-2022	14	4 days	✓	25-Oct-2022	14 days	5 days	✓		
				days								
Physical Tests : Colour (True) by Spectrometer (5 CU)												
HDPE												
HD	E329	21-Oct-2022	25-Oct-2022	3 days	4 days	æ	25-Oct-2022	3 days	4 days	*		
						EHT				EHT		
Physical Tests : Colour (True) by Spectrometer (5 CU)												
HDPE												
PR2	E329	21-Oct-2022	25-Oct-2022	3 days	4 days	*	25-Oct-2022	3 days	4 days	*		
						EHT				EHT		
Physical Tests : Colour (True) by Spectrometer (5 CU)												
HDPE												
PC1	E329	21-Oct-2022	25-Oct-2022	3 days	5 days	*	25-Oct-2022	3 days	5 days	*		
						EHT				EHT		
Physical Tests : Colour (True) by Spectrometer (5 CU)				1								
HDPE												
PR1	E329	21-Oct-2022	25-Oct-2022	3 days	5 days	æ	25-Oct-2022	3 days	5 days	*		
						EHT				EHT		
Physical Tests : Conductivity in Water												
HDPE												
HD	E100	21-Oct-2022	25-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	4 days	✓		
				days					-			

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

Matrix: Water						/aluation. * -	: × = Holding time exceedance ; ✓ = Within Holding Tin				
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	sis		
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Physical Tests : Conductivity in Water											
HDPE											
PR2	E100	21-Oct-2022	25-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	4 days	✓	
				days							
Physical Tests : Conductivity in Water											
HDPE											
PC1	E100	21-Oct-2022	25-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	5 days	✓	
				days							
Physical Tests : Conductivity in Water											
HDPE											
PR1	E100	21-Oct-2022	25-Oct-2022	28	4 days	✓	25-Oct-2022	28 days	5 days	✓	
				days							
Physical Tests : pH by Meter								1			
HDPE											
HD	E108	21-Oct-2022	25-Oct-2022	0.25	101 hrs	*	25-Oct-2022	0.25	105 hrs	*	
5				hrs		EHTR-FM		hrs		EHTR-FM	
Physical Tests : pH by Meter								10			
HDPE				<u> </u>	<u> </u>			T			
PR2	E108	21-Oct-2022	25-Oct-2022	0.25	101 hrs	32	25-Oct-2022	0.25	105 hrs	3 0	
1112	2100	21-001-2022	20-001-2022	hrs	1011113	EHTR-FM	20-001-2022	hrs	100 1113	EHTR-FM	
				1113		Littiviiii		1113		Litticia	
Physical Tests : pH by Meter				1	<u> </u>						
HDPE PC1	E108	21-Oct-2022	25-Oct-2022	0.05	106 hrs	*	25-Oct-2022	0.05	110 hrs	×	
PCI	E100	21-001-2022	25-UCI-2022	0.25	100 1118	EHTR-FM	25-001-2022	0.25 hrs	TIUTIIS	EHTR-FM	
				hrs		EHTK-FIVI		IIIS		EH I K-FIVI	
Physical Tests : pH by Meter											
HDPE	F460	04 0 4 0000	05.0.4.0000		4071		05.0.4.0000		444.1		
PR1	E108	21-Oct-2022	25-Oct-2022	0.25	107 hrs	#	25-Oct-2022	0.25	111 hrs	#	
				hrs		EHTR-FM		hrs		EHTR-FM	
Physical Tests : TDS by Gravimetry											
HDPE											
HD	E162	21-Oct-2022					25-Oct-2022	7 days	4 days	✓	
Physical Tests : TDS by Gravimetry											
HDPE											
PC1	E162	21-Oct-2022					25-Oct-2022	7 days	4 days	✓	
					1		<u> </u>	1			

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Matrix: Water Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date **Physical Tests: TDS by Gravimetry** HDPE PR1 E162 21-Oct-2022 25-Oct-2022 7 days 4 days **Physical Tests: TDS by Gravimetry HDPE** PR2 E162 21-Oct-2022 25-Oct-2022 7 days 4 days 1 **Physical Tests: TSS by Gravimetry** HDPE HD E160 21-Oct-2022 25-Oct-2022 4 days 7 days **Physical Tests: TSS by Gravimetry** HDPE E160 21-Oct-2022 PC1 25-Oct-2022 7 days 4 days 1 **Physical Tests: TSS by Gravimetry HDPE** PR1 E160 21-Oct-2022 25-Oct-2022 1 4 days 7 days **Physical Tests: TSS by Gravimetry** HDPE E160 21-Oct-2022 7 days 1 PR2 25-Oct-2022 4 days Speciated Metals : Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) HD E541 21-Oct-2022 24-Nov-2022 24-Nov-2022 7 days 7 days 34 days 34 EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 21-Oct-2022 PC1 24-Nov-2022 7 days 34 24-Nov-2022 7 days 34 days EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 21-Oct-2022 PR1 24-Nov-2022 24-Nov-2022 7 days 34 days 7 days 30 æ 34 EHT EHT days

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Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 21-Oct-2022 PR2 24-Nov-2022 7 days * 24-Nov-2022 34 days 34 7 days × EHT EHT days Speciated Metals : Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) HD E537 21-Oct-2022 07-Nov-2022 180 17 1 11-Nov-2022 180 4 days ✓ days days days **Speciated Metals: Dissolved Methylmercury in Water by GCAFS** Amber glass dissolved (hydrochloric acid) PC1 E537 21-Oct-2022 07-Nov-2022 1 11-Nov-2022 1 4 days 180 17 180 days days days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) PR1 E537 21-Oct-2022 07-Nov-2022 180 17 ✓ 11-Nov-2022 180 4 days 1 days days days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) PR2 E537 21-Oct-2022 07-Nov-2022 1 11-Nov-2022 4 days ✓ 180 17 180 days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) E536 21-Oct-2022 1 HD 05-Nov-2022 180 15 07-Nov-2022 180 17 days 1 days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) PC1 E536 21-Oct-2022 05-Nov-2022 07-Nov-2022 17 days 180 15 180 days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) PR1 E536 21-Oct-2022 05-Nov-2022 180 15 1 07-Nov-2022 180 17 days ✓ days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) PR2 E536 21-Oct-2022 05-Nov-2022 1 07-Nov-2022 ✓ 17 days 180 15 180 days days days

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

Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation		Analysis			
Container / Client Sample ID(s)			Preparation			Eval	Analysis Date			Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
HD	E508-L	21-Oct-2022	27-Oct-2022	28	6 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PC1	E508-L	21-Oct-2022	27-Oct-2022	28	6 days	✓	27-Oct-2022	28 days	0 days	✓
				days	,				'	
T (M () T (M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () 1 M () M () 1 M () M				aayo						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)	E508-L	21-Oct-2022	27-Oct-2022		6 days	√	27-Oct-2022	28 days	O days	1
PR1	E300-L	21-001-2022	27-001-2022	28	6 days	•	27-001-2022	20 days	0 days	•
				days						
Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)										
Pre-cleaned amber glass - total (lab preserved)										
PR2	E508-L	21-Oct-2022	27-Oct-2022	28	6 days	✓	27-Oct-2022	28 days	0 days	✓
				days						
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
HD	E420	21-Oct-2022	27-Oct-2022	180	6 days	✓	28-Oct-2022	180	7 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PC1	E420	21-Oct-2022	27-Oct-2022	180	6 days	✓	28-Oct-2022	180	7 days	1
				days	5 24,5		25 551 2022	days	. aayo	
				uays				uays		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)	F400	04.0.4.0000	07.0.4.0000		0.1		00.0.4.0000		7 1	,
PR1	E420	21-Oct-2022	27-Oct-2022	180	6 days	✓	28-Oct-2022	180	7 days	✓
				days				days		
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
PR2	E420	21-Oct-2022	27-Oct-2022	180	6 days	✓	28-Oct-2022	180	7 days	✓
				days				days		

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			C	ount			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	714265	1	19	5.2	5.0	1
Ammonia by Fluorescence	E298	714669	1	10	10.0	5.0	1
Chloride in Water by IC	E235.CI	714269	1	4	25.0	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	714273	1	4	25.0	5.0	1
Conductivity in Water	E100	714266	1	5	20.0	5.0	1
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	718309	1	15	6.6	5.0	1
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	714670	1	5	20.0	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714263	1	19	5.2	5.0	√
Fluoride in Water by IC	E235.F	714268	1	4	25.0	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	714270	1	5	20.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	714271	1	4	25.0	5.0	√
pH by Meter	E108	714264	1	19	5.2	5.0	1
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	√
Sulfate in Water by IC	E235.SO4	714272	1	5	20.0	5.0	1
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	1
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	714672	1	5	20.0	5.0	√
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	718376	1	10	10.0	5.0	<u>√</u>
Total Metals in Water by CRC ICPMS	E420	714046	1	19	5.2	5.0	√
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	1
Total Nitrogen by Colourimetry	E366	714668	1	10	10.0	5.0	√
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	714671	1	5	20.0	5.0	√
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	714673	1	5	20.0	5.0	√
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	714265	1	19	5.2	5.0	1
Ammonia by Fluorescence	E298	714669	1	10	10.0	5.0	√
Chloride in Water by IC	E235.CI	714269	1	4	25.0	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	714273	1	4	25.0	5.0	<u>√</u>
Conductivity in Water	E100	714266	1	5	20.0	5.0	√
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	718309	1	15	6.6	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	1

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Matrix: Water Quality Control Sample Type		Evaluation: * - QC frequency outside sp					ecification; ✓ = QC frequency within specification Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Evaluation				
	Wethod	QO LOT #	40	rioganar	Hotaar	Expected				
Laboratory Control Samples (LCS) - Continued Dissolved Organic Carbon by Combustion (Low Level)	E250 I	714670	1	5	20.0	5.0				
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E358-L	714263	1	19	5.2	5.0	<u>√</u>			
, , , , , , , , , , , , , , , , , ,	E378-U			4			√			
Fluoride in Water by IC Nitrate in Water by IC (Low Level)	E235.F	714268	1	5	25.0 20.0	5.0 5.0	<u>√</u>			
, , ,	E235.NO3-L	714270 714271	1	4	25.0	5.0	√			
Nitrite in Water by IC (Low Level)	E235.NO2-L						<u>√</u>			
pH by Meter	E108	714264	1	19	5.2	5.0	<u>√</u>			
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	<u>√</u>			
Sulfate in Water by IC	E235.SO4	714272	1	5	20.0	5.0	✓			
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	✓			
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	714672	1	5	20.0	5.0	✓			
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	718376	1	10	10.0	5.0	✓			
Total Metals in Water by CRC ICPMS	E420	714046	1	19	5.2	5.0	✓			
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	✓			
Total Nitrogen by Colourimetry	E366	714668	1	10	10.0	5.0	✓			
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	714671	1	5	20.0	5.0	✓			
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	714673	1	5	20.0	5.0	✓			
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓			
Method Blanks (MB)										
Alkalinity Species by Titration	E290	714265	1	19	5.2	5.0	✓			
Ammonia by Fluorescence	E298	714669	1	10	10.0	5.0	✓			
Chloride in Water by IC	E235.CI	714269	1	4	25.0	5.0	✓			
Colour (True) by Spectrometer (5 CU)	E329	714273	1	4	25.0	5.0	✓			
Conductivity in Water	E100	714266	1	5	20.0	5.0	✓			
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓			
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	✓			
Dissolved Metals in Water by CRC ICPMS	E421	718309	1	15	6.6	5.0	1			
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	1			
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	714670	1	5	20.0	5.0	1			
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714263	1	19	5.2	5.0	1			
Fluoride in Water by IC	E235.F	714268	1	4	25.0	5.0	1			
Nitrate in Water by IC (Low Level)	E235.NO3-L	714270	1	5	20.0	5.0				
Nitrite in Water by IC (Low Level)	E235.NO2-L	714271	1	4	25.0	5.0	<u> </u>			
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0				
Sulfate in Water by IC	E235.SO4	714272	1	5	20.0	5.0	<u> </u>			
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	<u> </u>			
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	714672	1	5	20.0	5.0	<u> </u>			
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	718376	1	10	10.0	5.0	<u> </u>			
Total Metals in Water by CRC ICPMS	E420	714046	1	19	5.2	5.0	<u> </u>			
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	<u> </u>			

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Matrix: Water		Evaluation	on: × = QC freque	ency outside sp	ecification; ✓ = 0	QC frequency wit	hin specification
Quality Control Sample Type			Co	ount			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Nitrogen by Colourimetry	E366	714668	1	10	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	714671	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	714673	1	5	20.0	5.0	✓
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	714669	1	10	10.0	5.0	✓
Chloride in Water by IC	E235.CI	714269	1	4	25.0	5.0	√
Dissolved Ferrous Iron in Water by Colour	E541	756854	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	718309	1	15	6.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	714670	1	5	20.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714263	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	714268	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	714270	1	5	20.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	714271	1	4	25.0	5.0	✓
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	714272	1	5	20.0	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	714672	1	5	20.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	718376	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	714046	1	19	5.2	5.0	✓
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	✓
Total Nitrogen by Colourimetry	E366	714668	1	10	10.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	714671	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	714673	1	5	20.0	5.0	√

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Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Vancouver			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	ALS Environmental -			pH should be measured in the field within the recommended 15 minute hold time.
7001 0 1 1	Vancouver) A / /	4 DU 4 05 40 D (1)	
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	ALS Environmental -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Vancouver			brackish waters) may produce a positive bias by this method. Alternate analysis
				methods are available for these types of samples.
TDS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
				filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
	ALS Environmental -			with gravimetric measurement of the residue.
	Vancouver			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental -	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
	Vancouver			
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Vancouver	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above
	ALS Environmental - Vancouver			100 mg/L is a negative interference on this test
Total Metals in Water by CRC ICPMS	E420	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental - Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS.
	ALS Environmental - Vancouver			Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L ALS Environmental -	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low	Vancouver E509-L	Water	APHA 3030B/EPA	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation
Level, LOR = 0.5 ppt)	ALS Environmental - Vancouver		1631E (mod)	using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental - Vancouver			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental - Vancouver			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	E541	Water	APHA 3500-Fe B/James Ball et al	This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample
	ALS Environmental - Vancouver		(1999)	filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters.
Dissolved Hardness (Calculated)	EC100	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	ALS Environmental - Vancouver			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Client : Ecofish Research Ltd



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and
				Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers
	ALS Environmental -			to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially
	Vancouver			calculated from dissolved Calcium and Magnesium concentrations, because it is a
				property of water due to dissolved divalent cations. Hardness from total Ca/Mg is
Ion Balance using Dissolved Metals	E0404	Water	APHA 1030E	normally comparable to Dissolved Hardness in non-turbid waters.
ion balance using bissolved Metals	EC101	vvalei	AFIA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	ALS Environmental -			used where available. Minor ions are included where data is present.
	Vancouver			Ion Balance cannot be calculated accurately for waters with very low electrical
	7 41100 4101			conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as
, ,,				N) + Nitrate (as N).
	ALS Environmental -			
	Vancouver			
Total Kjeldahl Nitrogen (Calculation)	EC318	Water	BC MOE	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total
			LABORATORY	Nitrogen - [Nitrite (as N) + Nitrate (as N)].
	ALS Environmental -		MANUAL (2005)	
	Vancouver			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
	ALS Environmental -			
	Vancouver			
Preparation for Total Organic Carbon by	EP355	Water		Preparation for Total Organic Carbon by Combustion
Combustion				
	ALS Environmental -			
	Vancouver			
Preparation for Dissolved Organic Carbon for	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion				
	ALS Environmental -			
Di di 6 Talahir	Vancouver	10/	ADIIA 4500 D. I.(
Digestion for Total Nitrogen in water	EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	ALS Environmental -			
	Vancouver			
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
, i	2. 0/2			
	ALS Environmental -			
	Vancouver			
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a
				persulfate digestion reagent.
	ALS Environmental -			
	Vancouver			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Discolved Marcury Water Filtration /Lew	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Dissolved Mercury Water Filtration (Low	EP509-L	water	AFTIA 3030B	water samples are intered (0.40 diff), and preserved with 1101.
Level)				
	ALS Environmental -			
	Vancouver			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hq and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
			B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver		(1999)	· · · · · · · · · · · · · · · · · · ·
	varicouver			sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
				method.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : **FJ2203009** Page : 1 of 18

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project :Surface Water MON8/9-With Metals Date Samples Received :22-Oct-2022 13:00

Sampler : PB

Site :

Quote number : VA22-ECOF100-004

No. of samples received : 4
No. of samples analysed : 4

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Position

Victoria BC Canada V8W 2E1

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Signatories

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

Signaturies	FOSILIOIT	Laboratory Department	
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Laboratory Department

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	atory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 714264)										
FJ2203009-001	PC1	рН		E108	0.10	pH units	8.07	8.10	0.371%	4%	
Physical Tests (QC	Lot: 714265)										
FJ2203009-001	PC1	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	71.0	71.6	0.823%	20%	
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	71.0	71.6	0.823%	20%	
Physical Tests (QC	Lot: 714266)										
FJ2203009-001	PC1	Conductivity		E100	2.0	μS/cm	174	176	0.685%	10%	
Physical Tests (QC	Lot: 714273)										
FJ2203009-001	PC1	Colour, true		E329	5.0	CU	6.4	5.9	0.5	Diff <2x LOR	
Physical Tests (QC	Lot: 714283)										
FJ2202955-001	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	
Physical Tests (QC	Lot: 714302)										
FJ2202955-001	Anonymous	Solids, total dissolved [TDS]		E162	20	mg/L	318	305	4.18%	20%	
Anions and Nutrien	ts (QC Lot: 714263)										
FJ2203009-001	PC1	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 714268)										
FJ2203009-001	PC1	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.037	0.036	0.001	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 714269)										
FJ2203009-001	PC1	Chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 714270)										
FJ2203009-001	PC1	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0641	0.0641	0.0796%	20%	
Anions and Nutrien	ts (QC Lot: 714271)										
FJ2203009-001	PC1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	its (QC Lot: 714272)										
FJ2203009-001	PC1	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	11.8	11.8	0.176%	20%	
	ts (QC Lot: 714668)										
FJ2203009-001	PC1	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.153	0.151	0.002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 714669)										
FJ2203009-001	PC1	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0060	0.0055	0.0005	Diff <2x LOR	

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Anions and Nutrient	s (QC Lot: 714672)										
FJ2203009-001	PC1	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 714673)										
FJ2203009-001	PC1	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0042	0.0049	0.0007	Diff <2x LOR	
Anions and Nutrient	s (QC Lot: 716537)										
EO2209213-024	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 714670										
FJ2203009-001	PC1	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.77	2.85	0.08	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 714671										
FJ2203009-001	PC1	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.82	3.11	0.29	Diff <2x LOR	
Total Metals (QC Lo	ot: 714046)										
FJ2203009-001	PC1	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0432	0.0523	18.9%	20%	
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00020	0.00023	0.00002	Diff <2x LOR	
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0304	0.0314	3.17%	20%	
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000128	0.0000122	0.0000006	Diff <2x LOR	
		Calcium, total	7440-70-2	E420	0.050	mg/L	25.7	25.0	2.70%	20%	
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00070	0.00069	0.000004	Diff <2x LOR	
		Iron, total	7439-89-6	E420	0.010	mg/L	0.036	0.035	0.001	Diff <2x LOR	
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0010	0.00002	Diff <2x LOR	
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	5.83	6.08	4.06%	20%	
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00197	0.00195	1.01%	20%	
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000802	0.000801	0.0734%	20%	
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00080	0.00074	0.00006	Diff <2x LOR	
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Potassium, total	7440-09-7	E420	0.050	mg/L	0.429	0.439	0.010	Diff <2x LOR	
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00038	0.00041	0.00003	Diff <2x LOR	
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000249	0.000275	0.000026	Diff <2x LOR	

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lo	ot: 714046) - continued										
FJ2203009-001	PC1	Silicon, total	7440-21-3	E420	0.10	mg/L	2.13	2.21	3.97%	20%	
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Sodium, total	7440-23-5	E420	0.050	mg/L	1.03	1.06	2.55%	20%	
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.102	0.107	4.48%	20%	
		Sulfur, total	7704-34-9	E420	0.50	mg/L	4.46	4.74	0.28	Diff <2x LOR	
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Titanium, total	7440-32-6	E420	0.00030	mg/L	0.00074	0.00052	0.00022	Diff <2x LOR	
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000423	0.000428	1.06%	20%	
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
Total Metals (QC Lo	ot: 718376)										
EO2208940-001	Anonymous	Mercury, total	7439-97-6	E508-L	0.50	ng/L	2.02	1.86	0.16	Diff <2x LOR	
Dissolved Metals (C	QC Lot: 718309)										
FJ2203009-001	PC1	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0046	0.0048	0.0002	Diff <2x LOR	
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00016	0.00017	0.000004	Diff <2x LOR	
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0294	0.0290	1.20%	20%	
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000070	0.0000087	0.0000017	Diff <2x LOR	
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	23.6	23.4	0.639%	20%	
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00056	0.00057	0.000010	Diff <2x LOR	
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		,	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
		Lithium, dissolved				-					

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 718309) - cont	inued									
FJ2203009-001	PC1	Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	5.42	5.63	3.86%	20%	
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00045	0.00043	0.00002	Diff <2x LOR	
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000740	0.000722	2.42%	20%	
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00061	0.00063	0.00001	Diff <2x LOR	
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.406	0.405	0.0007	Diff <2x LOR	
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00029	0.00034	0.00005	Diff <2x LOR	
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000218	0.000144	0.000074	Diff <2x LOR	
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.03	1.96	3.64%	20%	
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.970	0.960	0.964%	20%	
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0944	0.0947	0.289%	20%	
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.05	3.80	0.24	Diff <2x LOR	
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000388	0.000378	2.56%	20%	
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	
Dissolved Metals (QC Lot: 719532)										
EO2208953-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	1.00	ng/L	<1.00	<1.00	0	Diff <2x LOR	
Speciated Metals (QC Lot: 730278)										
-J2202994-001	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (QC Lot: 733465)										
FC2202619-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000060	0.000058	0.000002	Diff <2x LOR	
Speciated Metals (QC Lot: 733968)										
FJ2202978-004	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR	
Speciated Metals (G	QC Lot: 756854)										
FJ2202949-001	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	0.046	0.046	0.0002	Diff <2x LOR	

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 714265)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 714266)					
Conductivity	E100	1	μS/cm	<1.0	
Physical Tests (QCLot: 714273)					
Colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 714283)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 714302)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 714263)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 714268)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 714269)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 714270)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 714271)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 714272)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 714668)					
Nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 714669)					
Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 714672)					
Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 714673)					

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Client: Ecofish Research Ltd



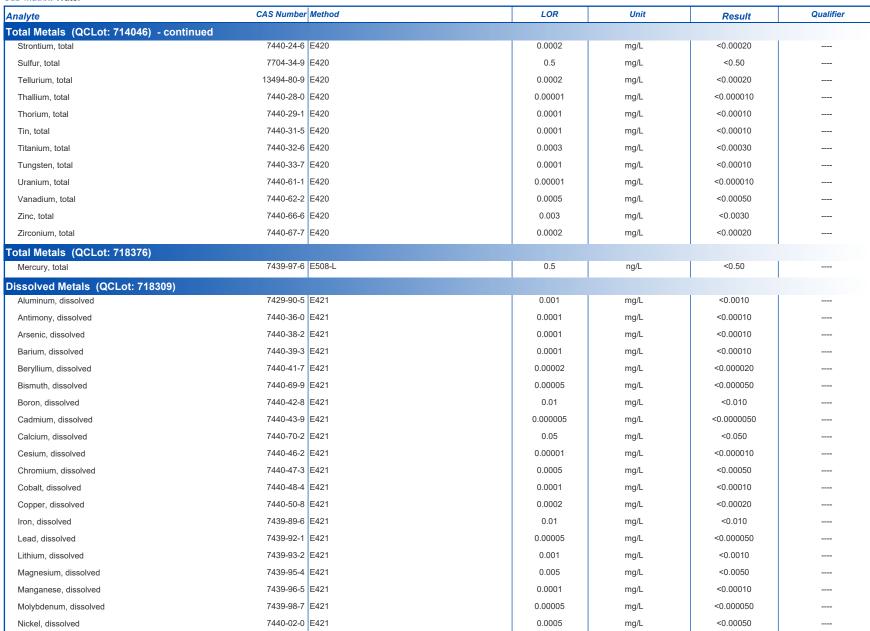




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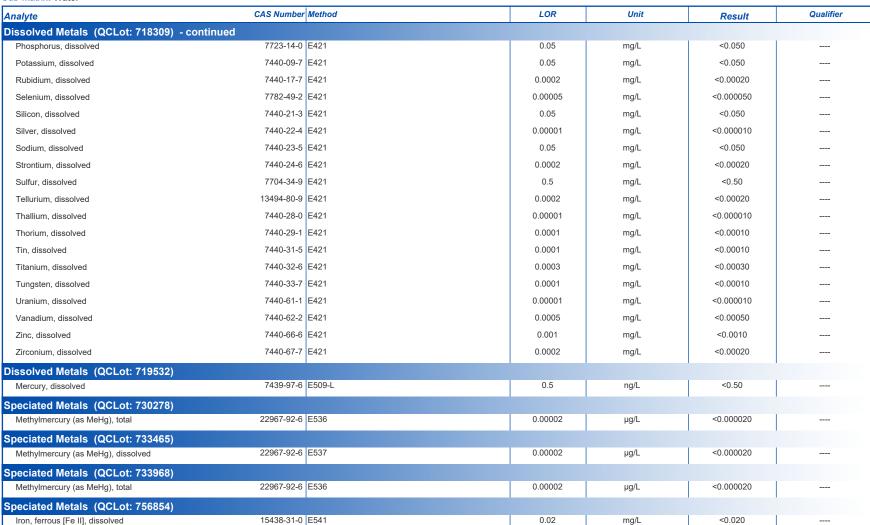




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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 714264)								
рН	E108		pH units	7 pH units	99.8	98.0	102	
Physical Tests (QCLot: 714265)								
Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	109	85.0	115	
Physical Tests (QCLot: 714266)								
Conductivity	E100	1	μS/cm	146.9 μS/cm	100	90.0	110	
Physical Tests (QCLot: 714273)								
Colour, true	E329	5	CU	100 CU	102	85.0	115	
Physical Tests (QCLot: 714283)								
Solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	90.3	85.0	115	
Physical Tests (QCLot: 714302)								
Solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	102	85.0	115	
Anions and Nutrients (QCLot: 714263)	14265-44-2 E378-U	0.001	m a /l	2.22 "	07.4	80.0	120	
Phosphate, ortho-, dissolved (as P)	14205-44-2 E376-U	0.001	mg/L	0.03 mg/L	97.1	80.0	120	
Anions and Nutrients (QCLot: 714268)	16984-48-8 E235.F	0.02	m a /l	4 "	07.7	90.0	110	
	10904-40-0 E233.F	0.02	mg/L	1 mg/L	97.7	90.0	110	
Anions and Nutrients (QCLot: 714269) Chloride	16887-00-6 E235.CI	0.5	ma/l	400 //	404	90.0	110	
	10887-00-0 E233.CI	0.5	mg/L	100 mg/L	101	90.0	110	
Anions and Nutrients (QCLot: 714270) Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	
	14737-33-0 E233.NG3-E	0.000	mg/L	2.5 Hig/L	101	30.0	110	
Anions and Nutrients (QCLot: 714271) Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/l	99.8	90.0	110	
	14707 00 0 12200.1402-2	0.001	g/L	0.5 mg/L	93.0	33.0	1 10	
Anions and Nutrients (QCLot: 714272) Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	103	90.0	110	
,	11000 10 0 2200100 1	0.0	9, =	100 mg/L	100	00.0	1.0	
Anions and Nutrients (QCLot: 714668) Nitrogen, total	7727-37-9 E366	0.03	mg/L	0.5 mg/L	100	75.0	125	
		0.00	9, =	0.0 mg/L	100	. 3.0	1.20	
Anions and Nutrients (QCLot: 714669) Ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	0.2 mg/L	100	85.0	115	
			g. –	5.2 mg/L	100		1.5	
Anions and Nutrients (QCLot: 714672) Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	0.05 mg/L	91.9	80.0	120	
	20.0	3.332	9, =	J.SO Hig/L	01.0	23.0	1	
Anions and Nutrients (QCLot: 714673) Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	0.05 mg/L	91.0	80.0	120	
, risspirated, ordin		0.002	9, =	0.00 Hig/L	31.0	30.0	1 .20	1

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Client: Ecofish Research Ltd



Sub-Matrix: Water	atrix: Water					Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie		
Anions and Nutrients (QCLot: 716537)											
Silicate (as SiO2)	7631-86-9	E392	0.5	mg/L	10 mg/L	105	85.0	115			
Organic / Inorganic Carbon (QCLot: 7146											
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120			
Organic / Inorganic Carbon (QCLot: 7146											
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120			
Total Metals (QCLot: 714046)											
Aluminum, total	7429-90-5		0.003	mg/L	2 mg/L	101	80.0	120			
Antimony, total	7440-36-0		0.0001	mg/L	1 mg/L	104	80.0	120			
Arsenic, total	7440-38-2		0.0001	mg/L	1 mg/L	106	80.0	120			
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120			
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	100	80.0	120			
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.9	80.0	120			
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120			
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120			
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120			
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120			
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120			
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120			
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120			
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120			
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.2	80.0	120			
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.6	80.0	120			
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120			
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120			
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120			
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120			
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	111	80.0	120			
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120			
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120			
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120			
Silicon, total	7440-21-3		0.1	mg/L	10 mg/L	106	80.0	120			
Silver, total	7440-22-4		0.00001	mg/L	0.1 mg/L	98.6	80.0	120			
Sodium, total	7440-23-5		0.05	mg/L	50 mg/L	103	80.0	120			
Strontium, total	7440-24-6		0.0002	mg/L	0.25 mg/L	109	80.0	120			
Strontium, total	1440-24-0	L+20	0.0002	IIIg/L	0.25 mg/L	109	00.0	120	1		

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number N	lethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Total Metals (QCLot: 714046) - continue	d										
Sulfur, total	7704-34-9 E	420	0.5	mg/L	50 mg/L	102	80.0	120			
Tellurium, total	13494-80-9 E	420	0.0002	mg/L	0.1 mg/L	105	80.0	120			
Thallium, total	7440-28-0 E	420	0.00001	mg/L	1 mg/L	101	80.0	120			
Thorium, total	7440-29-1 E	E420	0.0001	mg/L	0.1 mg/L	99.1	80.0	120			
Tin, total	7440-31-5 E	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120			
Titanium, total	7440-32-6 E	E420	0.0003	mg/L	0.25 mg/L	99.2	80.0	120			
Tungsten, total	7440-33-7 E	E420	0.0001	mg/L	0.1 mg/L	93.8	80.0	120			
Uranium, total	7440-61-1 E	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120			
Vanadium, total	7440-62-2 E	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120			
Zinc, total	7440-66-6 E	E420	0.003	mg/L	0.5 mg/L	103	80.0	120			
Zirconium, total	7440-67-7 E	E420	0.0002	mg/L	0.1 mg/L	98.6	80.0	120			
Total Metals (QCLot: 718376)								I			
Mercury, total	7439-97-6 E	508-L	0.5	ng/L	5 ng/L	100	80.0	120			
,					3						
Dissolved Metals (QCLot: 718309)											
Aluminum, dissolved	7429-90-5 E	421	0.001	mg/L	2 mg/L	97.4	80.0	120			
Antimony, dissolved	7440-36-0 E	421	0.0001	mg/L	1 mg/L	100	80.0	120			
Arsenic, dissolved	7440-38-2 E	421	0.0001	mg/L	1 mg/L	101	80.0	120			
Barium, dissolved	7440-39-3 E	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120			
Beryllium, dissolved	7440-41-7 E	421	0.00002	mg/L	0.1 mg/L	94.1	80.0	120			
Bismuth, dissolved	7440-69-9 E		0.00005	mg/L	1 mg/L	94.8	80.0	120			
Boron, dissolved	7440-42-8 E		0.01	mg/L	1 mg/L	89.2	80.0	120			
Cadmium, dissolved	7440-43-9 E		0.000005	mg/L	0.1 mg/L	97.3	80.0	120			
Calcium, dissolved	7440-70-2 E		0.05	mg/L	50 mg/L	94.7	80.0	120			
Cesium, dissolved	7440-46-2 E		0.00001	mg/L	0.05 mg/L	101	80.0	120			
Chromium, dissolved	7440-47-3 E		0.0005	mg/L	0.25 mg/L	94.3	80.0	120			
Cobalt, dissolved		421	0.0001	mg/L	0.25 mg/L	94.3	80.0	120			
Copper, dissolved	7440-50-8 E		0.0002	mg/L	0.25 mg/L	94.1	80.0	120			
Iron, dissolved	7439-89-6 E		0.01	mg/L	1 mg/L	101	80.0	120			
Lead, dissolved	7439-92-1 E		0.00005	mg/L	0.5 mg/L	96.8	80.0	120			
Lithium, dissolved	7439-93-2 E		0.001	mg/L	0.25 mg/L	92.9	80.0	120			
Magnesium, dissolved		E421	0.005	mg/L	50 mg/L	97.2	80.0	120			
Manganese, dissolved	7439-96-5 E		0.0001	mg/L	, and the second	96.5	80.0	120			
	7439-98-7 E		0.0001		0.25 mg/L		80.0	120			
Molybdenum, dissolved	7440-02-0 E		0.0005	mg/L	0.25 mg/L	99.6	80.0	120			
Nickel, dissolved				mg/L	0.5 mg/L	94.9					
Phosphorus, dissolved	7723-14-0 E	24Z I	0.05	mg/L	10 mg/L	101	80.0	120			

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Dissolved Metals (QCLot: 718309) - continu	ued										
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	97.3	80.0	120			
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	0.08	120			
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	98.2	80.0	120			
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120			
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.4	80.0	120			
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120			
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120			
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	80.4	80.0	120			
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120			
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.9	80.0	120			
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	93.1	80.0	120			
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	96.2	80.0	120			
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.8	80.0	120			
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	92.3	80.0	120			
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120			
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	96.8	80.0	120			
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.6	80.0	120			
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.4	80.0	120			
Mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	100	80.0	120			
Speciated Metals (QCLot: 730278)						,					
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	81.5	70.0	130			
Speciated Metals (QCLot: 733465)						,					
Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	83.2	70.0	130			
Speciated Metals (QCLot: 733968)											
Methylmercury (as MeHg), total	22967-92-6	E536	0.00002	μg/L	0.0025 μg/L	79.0	70.0	130			
Speciated Metals (QCLot: 756854)											
Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.02	mg/L	0.5 mg/L	103	80.0	120			

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water		inploof may be subject to blue. 145	g	<u> </u>		Matrix Snike	e (MS) Report			
Sub-Matrix. Water					Spi	ke	Recovery (%)		Limits (%)	
Laboratory sample	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	ients (QCLot: 714263)									
FJ2203009-002	PR1	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0315 mg/L	0.03 mg/L	105	70.0	130	
Anions and Nutr	ients (QCLot: 714268)									
FJ2203009-002	PR1	Fluoride	16984-48-8	E235.F	0.991 mg/L	1 mg/L	99.1	75.0	125	
Anions and Nutr	ients (QCLot: 714269)									
FJ2203009-002	PR1	Chloride	16887-00-6	E235.CI	102 mg/L	100 mg/L	102	75.0	125	
Anions and Nutr	ients (QCLot: 714270)									
FJ2203009-002	PR1	Nitrate (as N)	14797-55-8	E235.NO3-L	2.59 mg/L	2.5 mg/L	103	75.0	125	
Anions and Nutr	ients (QCLot: 714271)									
FJ2203009-002	PR1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.503 mg/L	0.5 mg/L	101	75.0	125	
Anions and Nutr	ients (QCLot: 714272)									
FJ2203009-002	PR1	Sulfate (as SO4)	14808-79-8	E235.SO4	104 mg/L	100 mg/L	104	75.0	125	
Anions and Nutr	ients (QCLot: 714668)									
FJ2203009-002	PR1	Nitrogen, total	7727-37-9	E366	0.394 mg/L	0.4 mg/L	98.5	70.0	130	
Anions and Nutr	ients (QCLot: 714669)									
FJ2203009-002	PR1	Ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	
Anions and Nutr	ients (QCLot: 714672)									
FJ2203009-002	PR1	Phosphorus, total dissolved	7723-14-0	E375-T	0.0438 mg/L	0.05 mg/L	87.6	70.0	130	
Anions and Nutr	ients (QCLot: 714673)									
FJ2203009-002	PR1	Phosphorus, total	7723-14-0	E372-U	0.0443 mg/L	0.05 mg/L	88.7	70.0	130	
Anions and Nutr	ients (QCLot: 716537)									
EO2209213-025	Anonymous	Silicate (as SiO2)	7631-86-9	E392	9.41 mg/L	10 mg/L	94.1	75.0	125	
Organic / Inorga	nic Carbon (QCLot: 714	670)								
FJ2203009-002	PR1	Carbon, dissolved organic [DOC]		E358-L	5.03 mg/L	5 mg/L	101	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 714	671)								
FJ2203009-002	PR1	Carbon, total organic [TOC]		E355-L	5.07 mg/L	5 mg/L	101	70.0	130	
Total Metals (QC	CLot: 714046)									
FJ2203009-002	PR1	Aluminum, total	7429-90-5	E420	0.186 mg/L	0.2 mg/L	92.8	70.0	130	

Page : 16 of 18

Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water			Matrix Spike (MS) Report							
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	CLot: 714046) - cont	inued								
FJ2203009-002	PR1	Antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	
		Arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, total	7440-41-7	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	
		Bismuth, total	7440-69-9	E420	0.00959 mg/L	0.01 mg/L	95.9	70.0	130	
		Boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	97.7	70.0	130	
		Cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, total	7440-46-2	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	
		Chromium, total	7440-47-3	E420	0.0396 mg/L	0.04 mg/L	99.1	70.0	130	
		Cobalt, total	7440-48-4	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	
		Copper, total	7440-50-8	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	
		Iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.4	70.0	130	
		Lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	
		Lithium, total	7439-93-2	E420	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, total	7439-96-5	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	
		Molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	
		Nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	
		Phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	
		Potassium, total	7440-09-7	E420	3.90 mg/L	4 mg/L	97.5	70.0	130	
		Rubidium, total	7440-17-7	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	
		Selenium, total	7782-49-2	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	
		Silicon, total	7440-21-3	E420	9.73 mg/L	10 mg/L	97.3	70.0	130	
		Silver, total	7440-22-4	E420	0.00418 mg/L	0.004 mg/L	104	70.0	130	
		Sodium, total	7440-23-5	E420	1.96 mg/L	2 mg/L	97.9	70.0	130	
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	
		Sulfur, total	7704-34-9	E420	20.8 mg/L	20 mg/L	104	70.0	130	
		Tellurium, total	13494-80-9	E420	0.0407 mg/L	0.04 mg/L	102	70.0	130	
		Thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	
		Thorium, total	7440-29-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	
		Tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	
		Titanium, total	7440-32-6	E420	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	
		Tungsten, total	7440-33-7	E420	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	
	1	Uranium, total	7440-61-1	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water	Matrix Spike (MS) Report									
					Spi	ike	Recovery (%)	Recovery	/ Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	Lot: 714046) - conti	nued								
FJ2203009-002	PR1	Vanadium, total	7440-62-2	E420	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	
		Zinc, total	7440-66-6	E420	0.396 mg/L	0.4 mg/L	99.0	70.0	130	
		Zirconium, total	7440-67-7	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	
Total Metals (QC	Lot: 718376)									
EO2208940-002	Anonymous	Mercury, total	7439-97-6	E508-L	4.35 ng/L	5 ng/L	87.0	70.0	130	
Dissolved Metals	(QCLot: 718309)									
FJ2203009-002	PR1	Aluminum, dissolved	7429-90-5	E421	0.187 mg/L	0.2 mg/L	93.6	70.0	130	
		Antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, dissolved	7440-41-7	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	
		Bismuth, dissolved	7440-69-9	E421	0.00854 mg/L	0.01 mg/L	85.4	70.0	130	
		Boron, dissolved	7440-42-8	E421	0.091 mg/L	0.1 mg/L	90.7	70.0	130	
		Cadmium, dissolved	7440-43-9	E421	0.00379 mg/L	0.004 mg/L	94.8	70.0	130	
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, dissolved	7440-46-2	E421	0.00975 mg/L	0.01 mg/L	97.5	70.0	130	
		Chromium, dissolved	7440-47-3	E421	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	
		Cobalt, dissolved	7440-48-4	E421	0.0181 mg/L	0.02 mg/L	90.7	70.0	130	
		Copper, dissolved	7440-50-8	E421	0.0181 mg/L	0.02 mg/L	90.4	70.0	130	
		Iron, dissolved	7439-89-6	E421	1.80 mg/L	2 mg/L	90.0	70.0	130	
		Lead, dissolved	7439-92-1	E421	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	
		Lithium, dissolved	7439-93-2	E421	0.0911 mg/L	0.1 mg/L	91.1	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, dissolved	7439-96-5	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	
		Molybdenum, dissolved	7439-98-7	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	
		Nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	
		Phosphorus, dissolved	7723-14-0	E421	10.0 mg/L	10 mg/L	100	70.0	130	
		Potassium, dissolved	7440-09-7	E421	3.78 mg/L	4 mg/L	94.5	70.0	130	
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	
		Selenium, dissolved	7782-49-2	E421	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	
		Silicon, dissolved	7440-21-3	E421	9.36 mg/L	10 mg/L	93.6	70.0	130	
		Silver, dissolved	7440-22-4	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	
		Sodium, dissolved	7440-23-5	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
	1	Sulfur, dissolved	7704-34-9	 E421	20.1 mg/L	20 mg/L	100	70.0	130	

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Work Order: FJ2203009 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water						Matrix Spi	ke (MS) Report			
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	oncentration Target		Low	High	Qualifier
Dissolved Metals	(QCLot: 718309) - co	ntinued								
FJ2203009-002	PR1	Tellurium, dissolved	13494-80-9	E421	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	
		Thallium, dissolved	7440-28-0	E421	0.00358 mg/L	0.004 mg/L	89.6	70.0	130	
		Thorium, dissolved	7440-29-1	E421	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	
		Tin, dissolved		E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	
		Titanium, dissolved	7440-32-6	E421	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	
		Tungsten, dissolved	7440-33-7	E421	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	
		Uranium, dissolved	7440-61-1	E421	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	
		Vanadium, dissolved	7440-62-2	E421	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	
		Zinc, dissolved	7440-66-6	E421	0.375 mg/L	0.4 mg/L	93.7	70.0	130	
		Zirconium, dissolved	7440-67-7	E421	0.0383 mg/L	0.04 mg/L	95.9	70.0	130	
Dissolved Metals	(QCLot: 719532)									
FC2202541-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	4.48 ng/L	5 ng/L	89.6	70.0	130	
Speciated Metals	(QCLot: 730278)									
FJ2202994-002	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00216 μg/L	0.0025 μg/L	86.2	60.0	140	
Speciated Metals	(QCLot: 733465)									
FJ2202994-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00152 μg/L	0.0025 μg/L	61.0	60.0	140	
Speciated Metals	(QCLot: 733968)									
FJ2202994-003	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00175 μg/L	0.0025 μg/L	70.0	60.0	140	
Speciated Metals	tals (QCLot: 756854)									
FJ2202949-002	Anonymous	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.355 mg/L	0.5 mg/L	71.1	70.0	130	



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COC Number: 2022-Oct-MON8/9- Day 2

Report To	Contact and company n	ame below will a	ppear on the final report	Т		Ponorte (1	Dagialanta		1																
Company:	Ecofish Research Ltd.		The second second	Selec	t Penort S	Reports / I						-				eques									
Contact:	Sarah Kennedy			Merc	e OC/OC	Format. [J]pDF I Reports with COA	☑ EXCEL ☑ E	EDD (DIGITAL)		utine [R															
Phone:	250-334-3042	·								day [P4]	if rece	ved by	3pm N	1-F - 2	0% rusi	h surcha	ırge mi	nimum			Perfect Control				
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Company	Copy of Invoice with Report ☐ YES ☑ NO pmpany: Ecofish Research Ltd.				Select Invoice Distribution:				Analysis Request																
	Contact: accountspayable@ecofishresearch.com				Email 1 or Fax accountspayable@ecofishresearch.com				indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) b) below	S ON HOLD STORAGE REQUIRED HAZARD (see notes)									
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Are samples for human consumption/ use? gmann@azimuthgroup				<u>p.ca</u>		imcivor@azimuthg	roup.ca		Gooler Custody Seals Intact: res v/A Sample Custody Seals Intact: res v/A INITIAL COOLER TEMPERATURES %																
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SHIPMENT RELEASE (client use)				kgansnorn@ecofishresearch.com INITIAL SHIPMENT RECEPTION (ALS use_only)					FINAL SHIPMENT RECEPTION (ALS use only)																
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	ch.com	□ YES ☑ NO
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9 R R R R R R R R R R	21-12+-33 13:15 Water	Ď9
9 R R R R R R R R R R R	21-0ct-22 13:45 Water	PR2
9 R R R R R R R R R	1-101-12 8:00 Water	PR1
R	31-001-22 8340 Water	PC1
Alk., Ec Silicate DOC, 1 NH3, T N, TOO IONBA Total M (0.0000 Dissolv (0.0000 Total M Hardne Dissolv (Low Lo	Date Time Sample Type (dd-mmm-yy)	ALS Sample # Sample Iden (ALS use only) (This descrip
IBER , pH, TE, diss or or or or or or or or or or or or or	ntact: Sean Zhang Sampler: Pat Beaupre	ALS Lab Work Order # (ALS use only):
os, Titho P solved dahi I b BC-C j by C g/L yl Hg g/L) CRC Total ls by Watan	Location:	LSD:
SS, cold P Nitro L GCAI CRC Car CBS m	Requisitioner:	PO / AFE: 1200-25.03.02
Anio our, gen, gen, Mg C ICF	Major/Minor Code: Routing Code:	Job #: Surface water MON8/9- with metals
Tot FS PMS	AFE/Cost Center: PO#	ALS Account # / Quote #: VA22-ECOF100-004
al	Oil and Gas Required Fields (client use)	Project Information
	Email 2	Contact: accountspayable@ecofishresearch.com
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	Email 1 or Fax accountspayable@ecofishresearch.com	Company: Ecofish Research Ltd.
Analysis Request	Select Invoice Distribution: 🖸 EMAIL 🔲 MAIL 📗 FAX	Capy of Invoice with Report ☐ YES ☑ NO
For all tests with rush TATs requested, please contact your AM to confirm availability.	Invoice Recipients	Invoice To Same as Report To YES 2 NO
Date and Time Required for all E&P TATs: dd-nnmm-yy hh:mm amipm	Email 3 waterqualitylabdata@ecofishresearch.com	Postal Code: V9N 3P6
mutine tests	Email 2 tkasubuchi@ecofishresearch.com	City/Province: Courtenay, BC
Same day [E2] if received by 10am M-S - 200% rush surcharge Additional	Email 1 or Fax skennedy@ecofishresearch.com	Street 600 Comox Rd.
Light for the day [P2] if received by 3pm M-F - 50% rush surcharge minimum	Select Distribution:	Company address below will appear on the final report
B day [P3] if received by 3pm M-F - 25% rush surcharge minimum	Compare Results to Criteria on Report - provide details below if box checked.	Phone: 250-334-3042
a day [P4] if received by 3pm M-F - 20% rush surcharge minimum	Merge QC/QCI Reports with COA ☑YES ☐ NO ☐V/A	Contact Sarah Kennedy
ZRoutine [R] If received by 3pm M-F - no surcharges apply	Select Report Format: ☑PDF ② EXCEL ☑ EDD (DIGITAL)	Ecofish Research Ltd.
Turnaround Time (TAT) Requested	Reports / Recipients	Report To Contact and company name below will appear on the final report

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

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

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

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2203012** Page : 1 of 8

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : --- Telephone : +1 250 261 5517

Project : Surface Water MON8/9-With Metals Date Samples Received : 22-Oct-2022 13:00

PO : 1200-25.03.02 Date Analysis Commenced : 25-Oct-2022

C-O-C number : 2022-Oct-MON8/9-Day 4 Issue Date : 25-Aug-2023 17:59

Sampler : PB Site :

Quote number : VA22-ECOF100-004

No. of samples received : 2
No. of samples analysed : 2

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

This Certificate of Analysis contains the following information:

Victoria BC Canada V8W 2E1

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department	
Brieanna Allen	Production/Validation Manager	Inorganics, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Parnian Sane	Analyst	Metals, Burnaby, British Columbia	
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia	

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Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
μS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

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

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

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

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (07/12/2022): This report has been amended and re-released to allow the reporting of additional analytical data.

Amendment (25/8/2023): This report has been amended following holding time evaluation corrections. All analysis results are as per the previous report.

>: greater than.

Page : 3 of 8

Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

Page : 4 of 8

Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



(Matrix: Water)					ent sample ID	PDI	Pine	 	
				Client samp	ling date / time	22-Oct-2022 09:10	22-Oct-2022 11:10	 	
Analyte	CAS Number	Method/La	b	LOR	Unit	FJ2203012-001	FJ2203012-002	 	
						Result	Result	 	
Sample Preparation									
Dissolved Fe2 filtration location		EP541/VA		-	-	Field	Field	 	
Physical Tests									
Alkalinity, bicarbonate (as CaCO3)		E290/VA	Α	1.0	mg/L	73.8	142	 	
Alkalinity, carbonate (as CaCO3)		E290/VA	Α	1.0	mg/L	<1.0	7.2	 	
Alkalinity, hydroxide (as CaCO3)		E290/VA	Α	1.0	mg/L	<1.0	<1.0	 	
Alkalinity, total (as CaCO3)		E290/VA	Α	1.0	mg/L	73.8	150	 	
Colour, true	E	E329/VA	Α	5.0	CU	6.1	<5.0	 	
Conductivity	E	E100/VA	Α	2.0	μS/cm	183	352	 	
Hardness (as CaCO3), dissolved	E	EC100/VA		0.50	mg/L	95.1	188	 	
Hardness (as CaCO3), from total Ca/Mg	E	EC100A/VA		0.50	mg/L	98.1	192	 	
рН	E	E108/VA	Α	0.10	pH units	8.17	8.43	 	
Solids, total dissolved [TDS]	E	E162/VA	Α	10	mg/L	106	220	 	
Solids, total suspended [TSS]	E	E160/VA	Α	3.0	mg/L	<3.0	<3.0	 	
Anions and Nutrients									
Ammonia, total (as N)	7664-41-7 E	E298/VA	Α	0.0050	mg/L	0.0120	<0.0050	 	
Chloride	16887-00-6 E	E235.CI/VA	Α	0.50	mg/L	<0.50	1.64	 	
Fluoride	16984-48-8 E	E235.F/VA	Α	0.020	mg/L	0.040	0.073	 	
Kjeldahl nitrogen, total [TKN]	E	EC318/VA		0.050	mg/L	0.132	0.082	 	
Nitrate (as N)	14797-55-8 E	E235.NO3-L/V	Α	0.0050	mg/L	0.0615	<0.0050	 	
Nitrite (as N)	14797-65-0 E	Α E235.NO2-L/V Δ	Α	0.0010	mg/L	<0.0010	<0.0010	 	
Nitrogen, total	7727-37-9 E	E366/VA	Α	0.030	mg/L	0.193	0.082	 	
Phosphate, ortho-, dissolved (as P)	14265-44-2 E	E378-U/VA	Α	0.0010	mg/L	<0.0010	<0.0010	 	
Phosphorus, total	7723-14-0 E		Α	0.0020	mg/L	0.0084	0.0040	 	
Phosphorus, total dissolved	7723-14-0 E		Α	0.0020	mg/L	0.0023 RRV	<0.0020	 	
Silicate (as SiO2)	7631-86-9 E		Α	0.50	mg/L	4.06	2.59	 	
Sulfate (as SO4)		E235.SO4/VA	Α	0.30	mg/L	12.9	28.5	 	
Nitrate + Nitrite (as N)		EC235.N+N/V		0.0032	mg/L	0.0615	<0.0051	 	
		4			9, =				

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Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			Cli	ient sample ID	PDI	Pine	 	
(Matrix: Water)								
			Client samp	ling date / time	22-Oct-2022 09:10	22-Oct-2022 11:10	 	
Analyte	CAS Number Method/L	.ab	LOR	Unit	FJ2203012-001	FJ2203012-002	 	
					Result	Result	 	
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]	E358-L/VA	Α	0.50	mg/L	2.57	1.28	 	
Carbon, total organic [TOC]	E355-L/VA	Α	0.50	mg/L	2.90	1.50	 	
Ion Balance								
Anion sum	EC101/VA		0.10	meq/L	1.75	3.64	 	
Cation sum	EC101/VA		0.10	meq/L	1.96	3.98	 	
Ion balance (APHA)	EC101/VA		0.01	%	5.66	4.46	 	
Total Metals								
Aluminum, total	7429-90-5 E420/VA	Α	0.0030	mg/L	0.0887	0.0499	 	
Antimony, total	7440-36-0 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Arsenic, total	7440-38-2 E420/VA	Α	0.00010	mg/L	0.00028	0.00020	 	
Barium, total	7440-39-3 E420/VA	Α	0.00010	mg/L	0.0373	0.129	 	
Beryllium, total	7440-41-7 E420/VA	Α	0.000020	mg/L	<0.000020	<0.000020	 	
Bismuth, total	7440-69-9 E420/VA	Α	0.000050	mg/L	<0.000050	<0.000050	 	
Boron, total	7440-42-8 E420/VA	Α	0.010	mg/L	<0.010	0.012	 	
Cadmium, total	7440-43-9 E420/VA	Α	0.0000050	mg/L	0.0000211	0.0000084	 	
Calcium, total	7440-70-2 E420/VA	Α	0.050	mg/L	28.1	53.0	 	
Cesium, total	7440-46-2 E420/VA	Α	0.000010	mg/L	0.000017	<0.000010	 	
Chromium, total	7440-47-3 E420/VA	Α	0.00050	mg/L	<0.00050	<0.00050	 	
Cobalt, total	7440-48-4 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Copper, total	7440-50-8 E420/VA	Α	0.00050	mg/L	0.00081	<0.00050	 	
Iron, total	7439-89-6 E420/VA	Α	0.010	mg/L	0.104	0.091	 	
Lead, total	7439-92-1 E420/VA	Α	0.000050	mg/L	0.000058	<0.000050	 	
Lithium, total	7439-93-2 E420/VA	Α	0.0010	mg/L	0.0014	0.0088	 	
Magnesium, total	7439-95-4 E420/VA	Α	0.0050	mg/L	6.78	14.5	 	
Manganese, total	7439-96-5 E420/VA	Α	0.00010	mg/L	0.00412	0.00268	 	
Mercury, total	7439-97-6 E508-L/VA	Α	0.50	ng/L	<0.50	<0.50	 	
Molybdenum, total	7439-98-7 E420/VA	Α	0.000050	mg/L	0.000863	0.00106	 	
Nickel, total	7440-02-0 E420/VA	Α	0.00050	mg/L	0.00095	0.00064	 	
Phosphorus, total	7723-14-0 E420/VA	Α	0.050	mg/L	<0.050	<0.050	 	
Potassium, total	7440-09-7 E420/VA	Α	0.050	mg/L	0.508	0.705	 	
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Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water			Cl	ient sample ID	PDI	Pine	 	
(Matrix: Water)								
				ling date / time	22-Oct-2022 09:10	22-Oct-2022 11:10	 	
Analyte	CAS Number Method/	Lab	LOR	Unit	FJ2203012-001	FJ2203012-002	 	
					Result	Result	 	
Total Metals	540044		0.00000		0.00050	0.0000		
Rubidium, total	7440-17-7 E420/VA	Α	0.00020	mg/L	0.00053	0.00038	 	
Selenium, total	7782-49-2 E420/VA	Α	0.000050	mg/L	0.000240	0.000374	 	
Silicon, total	7440-21-3 E420/VA	Α	0.10	mg/L	2.09	1.34	 	
Silver, total	7440-22-4 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	 	
Sodium, total	7440-23-5 E420/VA	Α	0.050	mg/L	1.24	4.58	 	
Strontium, total	7440-24-6 E420/VA	Α	0.00020	mg/L	0.110	0.206	 	
Sulfur, total	7704-34-9 E420/VA	Α	0.50	mg/L	5.01	11.2	 	
Tellurium, total	13494-80-9 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	 	
Thallium, total	7440-28-0 E420/VA	Α	0.000010	mg/L	<0.000010	<0.000010	 	
Thorium, total	7440-29-1 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Tin, total	7440-31-5 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Titanium, total	7440-32-6 E420/VA	Α	0.00030	mg/L	0.00161	0.00080	 	
Tungsten, total	7440-33-7 E420/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Uranium, total	7440-61-1 E420/VA	Α	0.000010	mg/L	0.000448	0.000444	 	
Vanadium, total	7440-62-2 E420/VA	Α	0.00050	mg/L	0.00084	<0.00050	 	
Zinc, total	7440-66-6 E420/VA	Α	0.0030	mg/L	<0.0030	<0.0030	 	
Zirconium, total	7440-67-7 E420/VA	Α	0.00020	mg/L	<0.00020	<0.00020	 	
Dissolved Metals								
Aluminum, dissolved	7429-90-5 E421/VA	Α	0.0010	mg/L	0.0045	0.0038	 	
Antimony, dissolved	7440-36-0 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Arsenic, dissolved	7440-38-2 E421/VA	Α	0.00010	mg/L	0.00019	0.00012	 	
Barium, dissolved	7440-39-3 E421/VA	Α	0.00010	mg/L	0.0304	0.115	 	
Beryllium, dissolved	7440-41-7 E421/VA	Α	0.000020	mg/L	<0.000020	<0.000020	 	
Bismuth, dissolved	7440-69-9 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	 	
Boron, dissolved	7440-42-8 E421/VA	Α	0.010	mg/L	<0.010	0.012	 	
Cadmium, dissolved	7440-43-9 E421/VA	Α	0.0000050	mg/L	0.0000070	<0.0000050	 	
Calcium, dissolved	7440-70-2 E421/VA	Α	0.050	mg/L	27.5	51.9	 	
Cesium, dissolved	7440-46-2 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	 	
Chromium, dissolved	7440-47-3 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	 	
Cobalt, dissolved	7440-48-4 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
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Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Nesults				_				
Sub-Matrix: Water			CI	ient sample ID	PDI	Pine	 	
(Matrix: Water)								
			Client samp	ling date / time	22-Oct-2022 09:10	22-Oct-2022 11:10	 	
Analyte	CAS Number Method/L	_ab	LOR	Unit	FJ2203012-001	FJ2203012-002	 	
					Result	Result	 	
Dissolved Metals								
Copper, dissolved	7440-50-8 E421/VA	Α	0.00020	mg/L	0.00062	0.00031	 	
Iron, dissolved	7439-89-6 E421/VA	Α	0.010	mg/L	<0.010	<0.010	 	
Lead, dissolved	7439-92-1 E421/VA	Α	0.000050	mg/L	<0.000050	<0.000050	 	
Lithium, dissolved	7439-93-2 E421/VA	Α	0.0010	mg/L	0.0011	0.0080	 	
Magnesium, dissolved	7439-95-4 E421/VA	Α	0.0050	mg/L	6.43	14.2	 	
Manganese, dissolved	7439-96-5 E421/VA	Α	0.00010	mg/L	0.00070	0.00140	 	
Mercury, dissolved	7439-97-6 E509-L/VA	Α	0.50	ng/L	<0.50	<0.50	 	
Molybdenum, dissolved	7439-98-7 E421/VA	Α	0.000050	mg/L	0.000765	0.000932	 	
Nickel, dissolved	7440-02-0 E421/VA	Α	0.00050	mg/L	0.00066	<0.00050	 	
Phosphorus, dissolved	7723-14-0 E421/VA	Α	0.050	mg/L	< 0.050	<0.050	 	
Potassium, dissolved	7440-09-7 E421/VA	Α	0.050	mg/L	0.447	0.672	 	
Rubidium, dissolved	7440-17-7 E421/VA	Α	0.00020	mg/L	0.00034	0.00032	 	
Selenium, dissolved	7782-49-2 E421/VA	Α	0.000050	mg/L	0.000286	0.000446	 	
Silicon, dissolved	7440-21-3 E421/VA	Α	0.050	mg/L	1.95	1.20	 	
Silver, dissolved	7440-22-4 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	 	
Sodium, dissolved	7440-23-5 E421/VA	Α	0.050	mg/L	1.18	4.62	 	
Strontium, dissolved	7440-24-6 E421/VA	Α	0.00020	mg/L	0.109	0.204	 	
Sulfur, dissolved	7704-34-9 E421/VA	Α	0.50	mg/L	4.60	10.3	 	
Tellurium, dissolved	13494-80-9 E421/VA	Α	0.00020	mg/L	<0.00020	<0.00020	 	
Thallium, dissolved	7440-28-0 E421/VA	Α	0.000010	mg/L	<0.000010	<0.000010	 	
Thorium, dissolved	7440-29-1 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Tin, dissolved	7440-31-5 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Titanium, dissolved	7440-32-6 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	 	
Tungsten, dissolved	7440-33-7 E421/VA	Α	0.00010	mg/L	<0.00010	<0.00010	 	
Uranium, dissolved	7440-61-1 E421/VA	Α	0.000010	mg/L	0.000400	0.000414	 	
Vanadium, dissolved	7440-62-2 E421/VA	Α	0.00050	mg/L	<0.00050	<0.00050	 	
Zinc, dissolved	7440-66-6 E421/VA	Α	0.0010	mg/L	<0.0010	<0.0010	 	
Zirconium, dissolved	7440-67-7 E421/VA	Α	0.00030	mg/L	<0.00030	<0.00030	 	
Dissolved MeHg filtration location	EP537/VA		_	- -	Field	Field	 	
Dissolved mercury filtration location	EP509-L/VA		_	_	Field	Field	 	
	330 2/ 4/1		I	l l				l l

Page : 8 of 8

Work Order : FJ2203012 Amendment 2
Client : Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Analytical Results

Sub-Matrix: Water			Cli	ent sample ID	PDI	Pine	 	
(Matrix: Water)								
			Client sampl	ling date / time	22-Oct-2022 09:10	22-Oct-2022 11:10	 	
Analyte	CAS Number	Method/Lab	LOR	Unit	FJ2203012-001	FJ2203012-002	 	
					Result	Result	 	
Dissolved Metals								
Dissolved metals filtration location	EP4	421/VA	-	-	Field	Field	 	
Speciated Metals								
Methylmercury (as MeHg), total	22967-92-6 E536	36/VA A	0.00000002 0	mg/L	<0.00000002	<0.00000002 0	 	
Iron, ferrous [Fe II], dissolved	15438-31-0 E54°	11/VA A	0.020	mg/L	<0.020	<0.020	 	
Methylmercury (as MeHg), dissolved	22967-92-6 E537	37/VA A	0.00000002 0	mg/L	<0.00000002 0	<0.00000002 0	 	

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

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2203012** Page : 1 of 18

Amendment :2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Victoria BC Canada V8W 2E1 Fort St. John, British Columbia Canada V1J 6P3

Telephone :---- Telephone :+1 250 261 5517

Project :Surface Water MON8/9-With Metals Date Samples Received : 22-Oct-2022 13:00

PO : 1200-25.03.02 Issue Date : 25-Aug-2023 17:59

C-O-C number : 2022-Oct-MON8/9-Day 4

Sampler : PB Site .

Quote number : VA22-ECOF100-004

No. of samples received :2
No. of samples analysed :2

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

- No Duplicate outliers occur.
- No Matrix Spike outliers occur.
- Method Blank value outliers occur please see following pages for full details.
- Laboratory Control Sample (LCS) outliers occur please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

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Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Water

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-718139-001		Ammonia, total (as N)	7664-41-7	E298	0.0099 B	0.005 mg/L	Blank result exceeds
						mg/L		permitted value

Result Qualifiers

 Qualifier
 Description

 B
 Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

Laboratory Control Sample (LCS) Recover	ries						
Total Metals	QC-MRG2-7175010	 Phosphorus, total	7723-14-0	E420	122 % MES	80.0-120%	Recovery greater than
	02						upper control limit

Result Qualifiers

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

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Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	aluation: 🗴 = I	Holding time exce	edance ; 🔻	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	Times Actual	Eval
			Date	Rec	Actual			Kec	Actual	
Anions and Nutrients : Ammonia by Fluorescence				1				T		
Amber glass total (sulfuric acid) PDI	E298	22-Oct-2022	27-Oct-2022	28	5 days	✓	28-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Pine	E298	22-Oct-2022	27-Oct-2022	28	5 days	✓	28-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Chloride in Water by IC										
HDPE PDI	E235.Cl	22-Oct-2022	25-Oct-2022	28	3 days	4	25-Oct-2022	28 days	3 days	1
FDI	L233.01	22-001-2022	25-061-2022	days	5 days	•	25-001-2022	20 days	5 days	•
Anions and Nutrients : Chloride in Water by IC				dayo						
HDPE										
Pine	E235.CI	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	evel 0.001									
HDPE	I	1 1					<u> </u>			
PDI	E378-U	22-Oct-2022	25-Oct-2022	3 days	3 days	✓	25-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	evel 0.001									
HDPE										
Pine	E378-U	22-Oct-2022	25-Oct-2022	3 days	3 days	✓	25-Oct-2022	3 days	3 days	✓

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

Matrix: Water					E	/aluation. ^ –	Holding time excee	euance , v	_ vviti iii i	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PDI	E235.F	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Pine	E235.F	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	3 days	✓
				days					,	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE				<u> </u>						
PDI	E235.NO3-L	22-Oct-2022	25-Oct-2022	3 days	3 days	✓	25-Oct-2022	3 days	3 days	✓
					,				- ,	
Asiana and National and Nitrata in Water had Officer Land										
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Pine	E235.NO3-L	22-Oct-2022	25-Oct-2022	3 days	3 days	√	25-Oct-2022	3 days	3 days	✓
Pille	L233.NO3-L	22-061-2022	25-001-2022	3 uays	3 uays	·	25-001-2022	3 days	3 uays	•
Anions and Nutrients : Nitrite in Water by IC (Low Level)				T	I			T		
HDPE	E00E NOO I	22 0-4 2022	05 0-4 0000	0 -1	0 4	✓	25 0-4 2022	0 -1	0 -1	✓
PDI	E235.NO2-L	22-Oct-2022	25-Oct-2022	3 days	3 days	•	25-Oct-2022	3 days	3 days	•
Anions and Nutrients : Nitrite in Water by IC (Low Level)					1					
HDPE						,				,
Pine	E235.NO2-L	22-Oct-2022	25-Oct-2022	3 days	3 days	✓	25-Oct-2022	3 days	3 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
PDI	E392	22-Oct-2022					26-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Reactive Silica by Colourimetry										
HDPE										
Pine	E392	22-Oct-2022					26-Oct-2022	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PDI	E235.SO4	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	3 days	✓
				days	,				,	
				,-						

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

Matrix: Water					EV	aluation: × =	Holding time excee	edance ; 🗸	= vvitnin	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
Pine	E235.SO4	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	3 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)					<u> </u>			[_
PDI	E375-T	22-Oct-2022	27-Oct-2022	28	5 days	✓	28-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (sulfuric acid)	F075 T	00.0.1.0055	07.0 . 0005							,
Pine	E375-T	22-Oct-2022	27-Oct-2022	28	5 days	✓	28-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)	F000	00.00.0000	07.0 : 2225							
PDI	E366	22-Oct-2022	27-Oct-2022	28	5 days	✓	28-Oct-2022	28 days	6 days	✓
				days						
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)	F200	22 Oct 2022	07 Oct 0000		E deve	√	30 Oot 3000	00 4	C deve	√
Pine	E366	22-Oct-2022	27-Oct-2022	28	5 days	•	28-Oct-2022	28 days	o days	∀
				days						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) PDI	E372-U	22-Oct-2022	27-Oct-2022	00	5 days	1	28-Oct-2022	28 days	6 days	√
רטו	E312-U	22-061-2022	21-UGI-2022	28 days	5 days	•	20-UUI-2U22	Zo uays	o days	▼
				uays						
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Pine	E372-U	22-Oct-2022	27-Oct-2022	00	5 days	1	28-Oct-2022	28 days	6 days	✓
Fille	E312-U	22-061-2022	21-001-2022	28 days	Juays	•	20-001-2022	20 uays	o uays	•
				uays						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)									
Pre-cleaned amber glass - dissolved (lab preserved) PDI	E509-L	22-Oct-2022	28-Oct-2022	20	6 days	1	28-Oct-2022	28 days	6 days	1
FUI	E309-L	22-061-2022	20-001-2022	28 days	o uays	•	20-001-2022	20 uays	o uays	▼
				uays						
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	ot)									
Pre-cleaned amber glass - dissolved (lab preserved) Pine	E509-L	22-Oct-2022	28-Oct-2022	00	6 days	1	28-Oct-2022	28 days	6 days	√
Fille	L009-L	22-001-2022	20-001-2022	28	o uays	•	20-00l-2022	zo uays	o uays	▼
				days						

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Physical Tests : Colour (True) by Spectrometer (5 CU)

HDPE

Pine

Project : Surface Water MON8/9-With Metals



Matrix: Water Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) 22-Oct-2022 E421 30-Oct-2022 1 PDI 8 days 31-Oct-2022 180 180 9 days days days Dissolved Metals: Dissolved Metals in Water by CRC ICPMS HDPE dissolved (nitric acid) Pine E421 22-Oct-2022 30-Oct-2022 180 8 days 1 31-Oct-2022 180 9 days ✓ days days Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) PDI E358-L 22-Oct-2022 27-Oct-2022 5 days 1 27-Oct-2022 28 days 5 days 28 davs Organic / Inorganic Carbon: Dissolved Organic Carbon by Combustion (Low Level) Amber glass dissolved (sulfuric acid) E358-L 22-Oct-2022 Pine 27-Oct-2022 28 5 days ✓ 27-Oct-2022 28 days 5 days 1 days Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) PDI E355-L 22-Oct-2022 27-Oct-2022 1 27-Oct-2022 ✓ 5 days 28 days 5 days 28 days Organic / Inorganic Carbon: Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) Amber glass total (sulfuric acid) E355-L 22-Oct-2022 1 Pine 27-Oct-2022 28 5 days 27-Oct-2022 28 days 5 days 1 days Physical Tests : Alkalinity Species by Titration **HDPE** PDI E290 22-Oct-2022 25-Oct-2022 25-Oct-2022 3 days 14 days 4 days 14 days Physical Tests: Alkalinity Species by Titration HDPE Pine E290 22-Oct-2022 25-Oct-2022 3 days 1 25-Oct-2022 14 days 4 days ✓ 14

22-Oct-2022

E329

days

3 days

3 days

25-Oct-2022

1

25-Oct-2022

3 days

3 days

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

Matrix: Water					E\	valuation. 🔻 –	Holding time exce	euance,	– vvitriii	i Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE										
PDI	E329	22-Oct-2022	25-Oct-2022	3 days	3 days	✓	25-Oct-2022	3 days	4 days	*
										EHT
Physical Tests : Conductivity in Water			1111							
HDPE										
PDI	E100	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : Conductivity in Water										
HDPE							I			
Pine	E100	22-Oct-2022	25-Oct-2022	28	3 days	✓	25-Oct-2022	28 days	4 days	✓
				days						
Physical Tests : pH by Meter										
HDPE							I			
Pine	E108	22-Oct-2022	25-Oct-2022	0.25	77 hrs	×	25-Oct-2022	0.25	84 hrs	×
Tille			20 000 2022	hrs	77 1110	EHTR-FM	20 000 2022	hrs	011110	EHTR-FM
Dhorinal Taylor and hor Mater				10				1110		
Physical Tests : pH by Meter HDPE				T	I		I			
PDI	E108	22-Oct-2022	25-Oct-2022	0.25	79 hrs	*	25-Oct-2022	0.25	86 hrs	*
FDI	L100	22-001-2022	20-001-2022	0.25 hrs	731113	EHTR-FM	25-001-2022	0.25 hrs	00 1113	EHTR-FM
				1115		LITTIC-I IVI		1115		LITTIC-I IVI
Physical Tests : TDS by Gravimetry					<u> </u>	<u> </u>	I	I		
HDPE	E162	22-Oct-2022					25-Oct-2022	7 days	3 days	✓
PDI	E102	22-001-2022					25-001-2022	7 days	3 days	•
Physical Tests : TDS by Gravimetry										
HDPE	E400	00.004.0000					05 04 0000	7	0 4	,
Pine	E162	22-Oct-2022					25-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PDI	E160	22-Oct-2022					25-Oct-2022	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
Pine	E160	22-Oct-2022					25-Oct-2022	7 days	3 days	✓

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Matrix: Water

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Total Metals: Total Metals in Water by CRC ICPMS

HDPE total (nitric acid)

PDI





Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analyte Group Method Sampling Date Analysis Container / Client Sample ID(s) **Holding Times** Preparation **Holding Times** Eval Analysis Date Eval Rec Actual Rec Actual Date Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) E541 22-Oct-2022 PDI 24-Nov-2022 7 days * 24-Nov-2022 33 days 33 7 days × EHT EHT days Speciated Metals: Dissolved Ferrous Iron in Water by Colour Amber glass dissolved (hydrochloric acid) Pine E541 22-Oct-2022 24-Nov-2022 7 days 33 24-Nov-2022 7 days 33 days EHT days EHT Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) PDI E537 22-Oct-2022 07-Nov-2022 1 11-Nov-2022 1 4 days 180 16 180 days days days Speciated Metals: Dissolved Methylmercury in Water by GCAFS Amber glass dissolved (hydrochloric acid) Pine E537 22-Oct-2022 07-Nov-2022 180 ✓ 11-Nov-2022 180 4 days 1 16 days days days Speciated Metals: Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) E536 22-Oct-2022 05-Nov-2022 1 07-Nov-2022 16 days 1 PDI 180 14 180 days days days Speciated Metals : Total Methylmercury in Water by GCAFS Amber glass total (hydrochloric acid) E536 22-Oct-2022 1 Pine 05-Nov-2022 180 14 07-Nov-2022 180 16 days 1 days days days Total Metals : Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - total (lab preserved) PDI E508-L 22-Oct-2022 27-Oct-2022 27-Oct-2022 5 days 28 days 0 days 28 days Total Metals: Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - total (lab preserved) Pine E508-L 22-Oct-2022 27-Oct-2022 28 5 days 1 27-Oct-2022 28 days 0 days ✓

22-Oct-2022

E420

days

180

days

5 days

1

28-Oct-2022

27-Oct-2022

6 days

180

days

1

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

							. reruning unite exteet	,		rieiunig riiii
Analyte Group	Method	Sampling Date	te Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Pine	E420	22-Oct-2022	27-Oct-2022	180	5 days	✓	28-Oct-2022	180	6 days	✓
				days				days		

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Quality Control Parameter Frequency Compliance

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

Quality Control Sample Type			С	ount)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	714167	1	14	7.1	5.0	1
Ammonia by Fluorescence	E298	718139	1	9	11.1	5.0	1
Chloride in Water by IC	E235.CI	714170	1	18	5.5	5.0	1
Colour (True) by Spectrometer (5 CU)	E329	714177	1	3	33.3	5.0	1
Conductivity in Water	E100	714168	1	4	25.0	5.0	1
Dissolved Ferrous Iron in Water by Colour	E541	756855	1	2	50.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	720452	1	16	6.2	5.0	1
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718134	1	12	8.3	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714178	1	4	25.0	5.0	√
Fluoride in Water by IC	E235.F	714169	1	4	25.0	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	714171	1	7	14.2	5.0	<u>√</u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	714172	1	8	12.5	5.0	<u>√</u>
pH by Meter	E108	714166	1	4	25.0	5.0	√
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	<u>√</u>
Sulfate in Water by IC	E235.SO4	714174	1	4	25.0	5.0	1
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	√
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	718138	1	4	25.0	5.0	1
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717494	1	20	5.0	5.0	<u>√</u>
Total Metals in Water by CRC ICPMS	E420	717501	1	10	10.0	5.0	1
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	1
Total Nitrogen by Colourimetry	E366	718136	1	4	25.0	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718135	1	12	8.3	5.0	<u>√</u>
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718137	1	4	25.0	5.0	√
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	√
Laboratory Control Samples (LCS)							-
Alkalinity Species by Titration	E290	714167	1	14	7.1	5.0	1
Ammonia by Fluorescence	E298	718139	1	9	11.1	5.0	√
Chloride in Water by IC	E235.Cl	714170	1	18	5.5	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	714177	1	3	33.3	5.0	√
Conductivity in Water	E100	714168	1	4	25.0	5.0	✓
Dissolved Ferrous Iron in Water by Colour	E541	756855	1	2	50.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	720452	1	16	6.2	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	√

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Matrix: Water Quality Control Sample Type		Evaluatio	ount	Frequency (%)	C frequency within specification		
	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Analytical Methods	ivietilod	QC LOI #	40	regular	Actual	Lxpecieu	Lvaluation
Laboratory Control Samples (LCS) - Continued		740404	4	10		5.0	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718134	1	12	8.3	5.0	√
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714178	1	4	25.0	5.0	✓
Fluoride in Water by IC	E235.F	714169	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	714171	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	714172	1	8	12.5	5.0	✓
pH by Meter	E108	714166	1	4	25.0	5.0	✓
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	714174	1	4	25.0	5.0	✓
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	718138	1	4	25.0	5.0	✓
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717494	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	717501	1	10	10.0	5.0	✓
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	✓
Total Nitrogen by Colourimetry	E366	718136	1	4	25.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718135	1	12	8.3	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718137	1	4	25.0	5.0	✓
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	714167	1	14	7.1	5.0	1
Ammonia by Fluorescence	E298	718139	1	9	11.1	5.0	√
Chloride in Water by IC	E235.CI	714170	1	18	5.5	5.0	√
Colour (True) by Spectrometer (5 CU)	E329	714177	1	3	33.3	5.0	√
Conductivity in Water	E100	714168	1	4	25.0	5.0	1
Dissolved Ferrous Iron in Water by Colour	E541	756855	1	2	50.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	720452	1	16	6.2	5.0	
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	<u> </u>
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718134	1	12	8.3	5.0	
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714178	1	4	25.0	5.0	
Fluoride in Water by IC	E235.F	714169	1	4	25.0	5.0	<u> </u>
Nitrate in Water by IC (Low Level)	E235.NO3-L	714171	1	7	14.2	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	714172	1	8	12.5	5.0	
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	714174	1	4	25.0	5.0	<u> </u>
TDS by Gravimetry	E162	714302	1	19	5.2	5.0	<u> </u>
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	718138	1	4	25.0	5.0	<u> </u>
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717494	1	20	5.0	5.0	
Total Metals in Water by CRC ICPMS	E420	717501	1	10	10.0	5.0	<u> </u>
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	

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Quality Control Sample Type			Co	ount	Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued								
Total Nitrogen by Colourimetry	E366	718136	1	4	25.0	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718135	1	12	8.3	5.0	✓	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718137	1	4	25.0	5.0	√	
TSS by Gravimetry	E160	714283	1	19	5.2	5.0	✓	
Matrix Spikes (MS)								
Ammonia by Fluorescence	E298	718139	1	9	11.1	5.0	✓	
Chloride in Water by IC	E235.CI	714170	1	18	5.5	5.0	√	
Dissolved Ferrous Iron in Water by Colour	E541	756855	1	2	50.0	5.0	√	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	719532	1	19	5.2	5.0	√	
Dissolved Metals in Water by CRC ICPMS	E421	720452	1	16	6.2	5.0	√	
Dissolved Methylmercury in Water by GCAFS	E537	733465	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	718134	1	12	8.3	5.0	✓	
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	714178	1	4	25.0	5.0	✓	
Fluoride in Water by IC	E235.F	714169	1	4	25.0	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	714171	1	7	14.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	714172	1	8	12.5	5.0	✓	
Reactive Silica by Colourimetry	E392	716537	1	20	5.0	5.0	✓	
Sulfate in Water by IC	E235.SO4	714174	1	4	25.0	5.0	✓	
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	718138	1	4	25.0	5.0	✓	
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L	717494	1	20	5.0	5.0	✓	
Total Metals in Water by CRC ICPMS	E420	717501	2	10	20.0	5.0	✓	
Total Methylmercury in Water by GCAFS	E536	730278	2	27	7.4	5.0	✓	
Fotal Nitrogen by Colourimetry	E366	718136	1	4	25.0	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	718135	1	12	8.3	5.0	✓	
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	718137	1	4	25.0	5.0	√	

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Project : Surface Water MON8/9-With Metals



Methodology References and Summaries

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

ALS Environmental - Vancouver PH by Meter E108 APHA 4500-H (mod) ALS Environmental - Vancouver ALS Environmental - Vancouver ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver TSS by Gravimetry E160 APHA 2540 D (mod) ALS Environmental - Vancouver Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaventhous are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Vancouver PH by Meter E108 Water APHA 4500-H (mod) PH is determined by potentiometric measurement with a pH electrode, and is concat a mbient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate and methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	onductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
PH by Meter E108 APHA 4500-H (mod) pH is determined by potentiometric measurement with a pH electrode, and is condat ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test in pH should be measured in the field within the recommended 15 minute hold time. TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		Vancouver			
ALS Environmental - Vancouver E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	H by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
TSS by Gravimetry E160 Water APHA 2540 D (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Suspended Solids (TSS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					pH should be measured in the field within the recommended 15 minute hold time.
filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of filtered solids. Samples containing very high dissolved solid content (i.e. seaved brackish waters) may produce a positive bias by this method. Alternate are methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) ALS Environmental - ALS Environmental - With gravimetric measurement of the filter at 104 ± 1°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100 ± 10°C, with gravimetric measurement of the filter at 100°C, with gravimetric measurement of the filter at 100°C, with grav	2001 0 : 1		347.7	ADUA 0540 D (1)	
ALS Environmental - Vancouver ALS Environmental - Vancouver Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. TDS by Gravimetry Barrier Solids. Samples containing very high dissolved solid content (i.e. seaw brackish waters) may produce a positive bias by this method. Alternate an methods are available for these types of samples. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.	SS by Gravimetry	E160	Water	APHA 2540 D (mod)	. , , , , , , , , , , , , , , , , , , ,
Vancouver Vancouver brackish waters) may produce a positive bias by this method. Alternate ar methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.		ALS Environmental -			, , , , ,
methods are available for these types of samples. TDS by Gravimetry E162 Water APHA 2540 C (mod) Total Dissolved Solids (TDS) are determined by filtering a sample through a glass filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant with gravimetric measurement of the residue.					, , ,
filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant v with gravimetric measurement of the residue.					, , , , , , , , , , , , , , , , , , , ,
ALS Environmental - with gravimetric measurement of the residue.	DS by Gravimetry	E162	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre
Wall gravinous interest and residue.					filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight,
Vancourver		ALS Environmental -			with gravimetric measurement of the residue.
valicouvei		Vancouver			
Chloride in Water by IC E235.CI Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			dotoston.
Vancouver		Vancouver			
Fluoride in Water by IC E235.F Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	luoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Nitrite in Water by IC (Low Level) E235.NO2-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection
ALS Environmental -		ALS Environmental -			400000000
Vancouver		Vancouver			
Nitrate in Water by IC (Low Level) E235.NO3-L Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /o detection.	litrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			
Sulfate in Water by IC E235.SO4 Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and /or detection.	ulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
ALS Environmental -		ALS Environmental -			
Vancouver		Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental -	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
	Vancouver			·
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Vancouver	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Reactive Silica by Colourimetry	E392 ALS Environmental - Vancouver	Water	APHA 4500-SiO2 E (mod)	Silicate (molybdate-reactive silica) is determined by the molybdosilicate-heteropoly blue colourimetric method using a discrete analyzer. Method Limitation: Arsenic (5+) above 100 mg/L is a negative interference on this test
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E508-L ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Total Methylmercury in Water by GCAFS	E536 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury in Water by GCAFS	E537 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	E541 ALS Environmental - Vancouver	Water	APHA 3500-Fe B/James Ball et al (1999)	This analysis is carried out using procedures adapted from APHA 3500-Fe B and Environ. Sci. Technol. 1999, 33, 5, 807–813. The procedure involves preliminary sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric method. Holding time is 7 days for 0.45um filtration or 6 months if samples have been filtered using 0.1um filters.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a
				property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
lon Balance using Dissolved Metals	EC101	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are
	ALS Environmental - Vancouver			used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
	ALS Environmental - Vancouver			
Total Kjeldahl Nitrogen (Calculation)	EC318	Water	BC MOE LABORATORY	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].
	ALS Environmental - Vancouver		MANUAL (2005)	
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298	Water	Wethou Reference	Sample preparation for Preserved Nutrients Water Quality Analysis.
,	ALS Environmental -			
Described for Table Constitution of the Constitution	Vancouver EP355	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Total Organic Carbon by Combustion		vvalei		Preparation for Total Organic Carbon by Combustion
	ALS Environmental -			
Preparation for Dissolved Organic Carbon for	Vancouver EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion	ALS Environmental -			
Digestion for Total Nitrogen in water	Vancouver EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
	ALS Environmental - Vancouver			
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	ALS Environmental - Vancouver			
Digestion for Dissolved Phosphorus in water	EP375	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
	ALS Environmental -			
	Vancouver			

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Dissolved Mercury Water Filtration (Low Level)	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)	ALS Environmental -			
	Vancouver			
Total Methylmercury Water Preparation	EP536	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Ferrous Iron in Water by Colour	EP541	Water	APHA 3500-Fe	This analysis is carried out using procedures adapted from APHA 3500-Fe B and "A
			B/James Ball et al	New Method for the Direct Determination of Dissolved Iron Concentration in Acid Mine
	ALS Environmental -		(1999)	Waters" published by James W. Ball et al (1999). The procedure involves preliminary
	Vancouver			sample filtration, and ferrous iron is determined using the "FerroZine" colourimetric
				method.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : FJ2203012 Page : 1 of 18

Amendment : 2

Client : Ecofish Research Ltd Laboratory : ALS Environmental - Fort St. John

Contact : Sarah Kennedy Account Manager : Sean Zhang

Address : 1220 - 1175 Douglas Street Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone :+1 250 261 5517

Project :Surface Water MON8/9-With Metals Date Samples Received :22-Oct-2022 13:00

PO : 1200-25.03.02 Date Analysis Commenced : 25-Oct-2022

Site ·

Quote number : VA22-ECOF100-004

No. of samples received : 2

No. of samples analysed : 2

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

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

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Victoria BC Canada V8W 2E1

Signatories

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

Signatories	Position	Laboratory Department	
Brieanna Allen	Production/Validation Manager	Vancouver Inorganics, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia	
Jayden Piattelli	Analyst	Vancouver Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia	
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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water	latrix: Water					Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC	Lot: 714166)												
FJ2203021-001	Anonymous	pH		E108	0.10	pH units	8.11	8.13	0.246%	4%			
Physical Tests (QC	Lot: 714167)												
FJ2203021-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)		E290	1.0	mg/L	184	185	0.530%	20%			
		Alkalinity, carbonate (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		Alkalinity, hydroxide (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR			
		Alkalinity, total (as CaCO3)		E290	1.0	mg/L	184	185	0.530%	20%			
Physical Tests (QC	Lot: 714168)												
FJ2203021-001	Anonymous	Conductivity		E100	2.0	μS/cm	1210	1200	0.996%	10%			
Physical Tests (QC	Lot: 714177)												
FJ2203012-001	PDI	Colour, true		E329	5.0	CU	6.1	6.5	0.4	Diff <2x LOR			
Physical Tests (QC	Lot: 714283)												
FJ2202955-001	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR			
Physical Tests (QC	Lot: 714302)												
FJ2202955-001	Anonymous	Solids, total dissolved [TDS]		E162	20	mg/L	318	305	4.18%	20%			
Anions and Nutrien	ts (QC Lot: 714169)												
FJ2203021-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.189	0.185	0.004	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 714170)												
FJ2203021-001	Anonymous	Chloride	16887-00-6	E235.CI	2.50	mg/L	<2.50	<2.50	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 714171)												
FJ2203021-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 714172)												
FJ2203021-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 714174)												
FJ2203021-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	554	554	0.0604%	20%			
Anions and Nutrien	ts (QC Lot: 714178)												
FJ2203012-001	PDI	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 716537)												
EO2209213-024	Anonymous	Silicate (as SiO2)	7631-86-9	E392	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR			
Anions and Nutrien	ts (QC Lot: 718136)												
FJ2203012-001	PDI	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.193	0.196	0.003	Diff <2x LOR			

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



							Labora	tory Duplicate (D	UP) Report		
nple II	iple ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
ot: 71	t: 718137)										
		Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0084	0.0080	0.0004	Diff <2x LOR	
ot: 71	t: 718138)										
		Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0023	0.0021	0.0002	Diff <2x LOR	
ot: 71	t: 718139)										
		Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0120	0.0121	0.00008	Diff <2x LOR	
QC L	QC Lot: 718	34)									
		Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.57	2.84	0.28	Diff <2x LOR	
QC L	QC Lot: 718	35)									
		Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.90	2.89	0.004	Diff <2x LOR	
l))										
ıs	<u> </u>	Mercury, total	7439-97-6	E508-L	0.50	ng/L	<0.00050 µg/L	<0.50	0	Diff <2x LOR	
))										
ıs	<u> </u>	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.00020	<0.00010	0.00010	Diff <2x LOR	
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	
		Calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
			7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
		· ·	7723-14-0	E420		0.050	0.050 mg/L	0.050 mg/L <0.050	0.050 mg/L <0.050 <0.050	0.050 mg/L <0.050 <0.050 0	0.050 mg/L <0.050 <0.050 0 Diff <2x LOR

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water	ub-Matrix: Water					Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Total Metals (QC Lo	ot: 717501) - continued												
VA22C5469-001	Anonymous	Rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR			
		Silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR			
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR			
		Strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
		Sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR			
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR			
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR			
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR			
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
Dissolved Metals (QC Lot: 719532)												
EO2208953-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	1.00	ng/L	<1.00	<1.00	0	Diff <2x LOR			
Dissolved Metals (QC Lot: 720452)												
FJ2203006-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0501	0.0488	2.64%	20%			
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0101	0.00998	1.06%	20%			
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00019	0.00015	0.00004	Diff <2x LOR			
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0838	0.0815	2.82%	20%			
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	0.000040	0.000040	0.0000007	Diff <2x LOR			
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR			
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR			
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000181	0.0000140	0.0000041	Diff <2x LOR			
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	11.5	11.4	0.565%	20%			
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000019	0.000017	0.000002	Diff <2x LOR			
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR			
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00013	0.00013	0.000002	Diff <2x LOR			
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0110	0.0107	2.62%	20%			

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Dissolved Metals (QC Lot: 720452) - cont	inued											
=J2203006-001	Anonymous	Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000108	0.000106	0.000002	Diff <2x LOR			
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0045	0.0045	0.00002	Diff <2x LOR			
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	4.69	4.49	4.24%	20%			
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00064	0.00058	0.00007	Diff <2x LOR			
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00274	0.00269	1.84%	20%			
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00478	0.00454	0.00023	Diff <2x LOR			
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR			
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.05	1.03	2.53%	20%			
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00078	0.00073	0.00005	Diff <2x LOR			
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00330	0.00346	4.51%	20%			
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.17	1.16	0.742%	20%			
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000025	0.000025	0.0000001	Diff <2x LOR			
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	0.152	0.143	0.009	Diff <2x LOR			
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0244	0.0238	2.65%	20%			
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.0	11.2	1.33%	20%			
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR			
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR			
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00196	0.00150	0.00047	Diff <2x LOR			
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR			
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000177	0.000179	0.726%	20%			
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR			
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0061	0.0061	0.00005	Diff <2x LOR			
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR			
peciated Metals (QC Lot: 730278)												
FJ2202994-001	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR			
Speciated Metals (QC Lot: 733465)												
-C2202619-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000060	0.000058	0.000002	Diff <2x LOR			
peciated Metals (
FJ2202978-004	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.000020	μg/L	<0.000000020 mg/L	<0.000020	0	Diff <2x LOR			
Speciated Metals (
FJ2203012-001	PDI	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR			

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 714167)					
Alkalinity, bicarbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, carbonate (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, hydroxide (as CaCO3)	E290	1	mg/L	<1.0	
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 714168)					
Conductivity	E100	1	μS/cm	1.1	
Physical Tests (QCLot: 714177)					
Colour, true	E329	5	CU	<5.0	
Physical Tests (QCLot: 714283)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Physical Tests (QCLot: 714302)					
Solids, total dissolved [TDS]	E162	10	mg/L	<10	
Anions and Nutrients (QCLot: 714169)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 714170)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 714171)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 714172)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 714174)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 714178)					
Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 716537)					
Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 718136)					
Nitrogen, total	7727-37-9 E366	0.03	mg/L	<0.030	
Anions and Nutrients (QCLot: 718137)					
Phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 718138)					

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Client: Ecofish Research Ltd

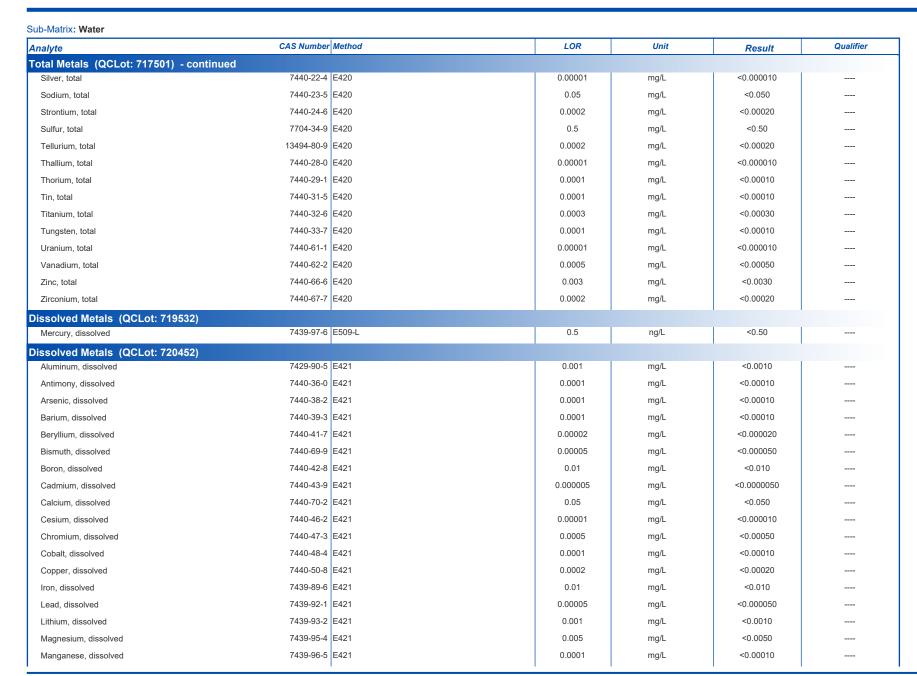






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Client: Ecofish Research Ltd





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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals





nalyte	CAS Number Method	LOR	Unit	Result	Qualifier
issolved Metals (QCLot: 720452) - cont	nued				
Molybdenum, dissolved	7439-98-7 E421	0.00005	mg/L	<0.000050	
Nickel, dissolved	7440-02-0 E421	0.0005	mg/L	<0.00050	
Phosphorus, dissolved	7723-14-0 E421	0.05	mg/L	<0.050	
Potassium, dissolved	7440-09-7 E421	0.05	mg/L	<0.050	
Rubidium, dissolved	7440-17-7 E421	0.0002	mg/L	<0.00020	
Selenium, dissolved	7782-49-2 E421	0.00005	mg/L	<0.000050	
Silicon, dissolved	7440-21-3 E421	0.05	mg/L	<0.050	
Silver, dissolved	7440-22-4 E421	0.00001	mg/L	<0.000010	
Sodium, dissolved	7440-23-5 E421	0.05	mg/L	<0.050	
Strontium, dissolved	7440-24-6 E421	0.0002	mg/L	<0.00020	
Sulfur, dissolved	7704-34-9 E421	0.5	mg/L	<0.50	
Tellurium, dissolved	13494-80-9 E421	0.0002	mg/L	<0.00020	
Thallium, dissolved	7440-28-0 E421	0.00001	mg/L	<0.000010	
Thorium, dissolved	7440-29-1 E421	0.0001	mg/L	<0.00010	
Tin, dissolved	7440-31-5 E421	0.0001	mg/L	<0.00010	
Titanium, dissolved	7440-32-6 E421	0.0003	mg/L	<0.00030	
Tungsten, dissolved	7440-33-7 E421	0.0001	mg/L	<0.00010	
Uranium, dissolved	7440-61-1 E421	0.00001	mg/L	<0.000010	
Vanadium, dissolved	7440-62-2 E421	0.0005	mg/L	<0.00050	
Zinc, dissolved	7440-66-6 E421	0.001	mg/L	<0.0010	
Zirconium, dissolved	7440-67-7 E421	0.0002	mg/L	<0.00020	
peciated Metals (QCLot: 730278)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 733465)					
Methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 733968)					
Methylmercury (as MeHg), total	22967-92-6 E536	0.00002	μg/L	<0.000020	
peciated Metals (QCLot: 756855)					
Iron, ferrous [Fe II], dissolved	15438-31-0 E541	0.02	mg/L	<0.020	

Qualifiers

Qualifier Description

B Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

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Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Laboratory Control Sample (LCS) Report

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

Privale Color Co	Sub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
Physical Tests (OCLot: 714168)		<u>.</u>			Spike	Recovery (%)	Recovery	Limits (%)	
Privale Priv	Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 714167)	Physical Tests (QCLot: 714166)								
Maillank jouling is QCO31 168 200 1 mg/L 500 mg/L 100 85.0 115 5 mg/L	рН	E108		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 714168)	Physical Tests (QCLot: 714167)								
Conductivity Final Property Final	Alkalinity, total (as CaCO3)	E290	1	mg/L	500 mg/L	109	85.0	115	
Physical Tests (QCLot: 714177)	Physical Tests (QCLot: 714168)								
Calour, free E329	Conductivity	E100	1	μS/cm	146.9 μS/cm	99.4	90.0	110	
Physical Tests (QCLot: 714283) Fig. Fi	Physical Tests (QCLot: 714177)								
Solids, total suspended [TSS]	Colour, true	E329	5	CU	100 CU	102	85.0	115	
Physical Tosts (QCLot: 714302) Solids, total dissolved (TDS) Solids, total dissolved (TD	Physical Tests (QCLot: 714283)								
Elec	Solids, total suspended [TSS]	E160	3	mg/L	150 mg/L	90.3	85.0	115	
Anions and Nutrients (QCLot: 714169) Fluoride 16984-48-8	Physical Tests (QCLot: 714302)								
Fluoride 16984-48-8 E235.F 0.02 mg/L 1 mg/L 104 90.0 110 Anions and Nutrients (QCLot: 714170) Chloride 16887-06 E235.Cl 0.5 mg/L 100 mg/L 105 90.0 110 Anions and Nutrients (QCLot: 714171) Nitrate (as N) 14797-58-8 E235.NO3-L 0.005 mg/L 0.5 mg/L 107 90.0 110 Anions and Nutrients (QCLot: 714172) Nitrite (as N) 14797-68-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 102 90.0 110 Anions and Nutrients (QCLot: 714174) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 109 90.0 110 Anions and Nutrients (QCLot: 714178) Phosphate, orthor, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Sulfate (as SiO2) 7631-86-9 5392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 5366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Solids, total dissolved [TDS]	E162	10	mg/L	1000 mg/L	102	85.0	115	
Fluoride 16984-48-8 [235.F 0.02 mg/L 1 mg/L 104 90.0 110									
Anions and Nutrients (QCLot: 714170) Chloride 16887-00-6 E235.Cl 0.5 mg/L 100 mg/L 105 90.0 110 Anions and Nutrients (QCLot: 714171) Nitrale (as N) 14797-55-8 E235.NO3-L 0.005 mg/L 2.5 mg/L 107 90.0 110 Anions and Nutrients (QCLot: 714172) Nitrale (as N) 14797-65-0 E235.NO2-L 0.001 mg/L 0.5 mg/L 102 90.0 110 Anions and Nutrients (QCLot: 714174) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 109 90.0 110 Anions and Nutrients (QCLot: 714178) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.0.3 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)									
Chloride 16887-00-6 E235.Cl 0.5 mg/L 100 mg/L 105 90.0 110	Fluoride	16984-48-8 E235.F	0.02	mg/L	1 mg/L	104	90.0	110	
Anions and Nutrients (QCLot: 714171) Nitrale (as N) 14797-558 E235 NO3-L 0.005 mg/L 2.5 mg/L 107 90.0 110 Anions and Nutrients (QCLot: 714172) Nitrite (as N) 14797-85-0 E235 NO2-L 0.001 mg/L 0.5 mg/L 102 90.0 110 Anions and Nutrients (QCLot: 714174) Sulfate (as SO4) 14808-79-8 E235 SO4 0.3 mg/L 100 mg/L 109 90.0 110 Anions and Nutrients (QCLot: 714178) Phosphate, orthor, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 714170)								
Nitrate (as N) 14797-55-8 235.NO3-L 0.005 mg/L 2.5 mg/L 107 90.0 110	Chloride	16887-00-6 E235.CI	0.5	mg/L	100 mg/L	105	90.0	110	
Anions and Nutrients (QCLot: 714172) Nitrie (as N) 1479-65-0	Anions and Nutrients (QCLot: 714171)								
Nitrite (as N)	Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	2.5 mg/L	107	90.0	110	
Anions and Nutrients (QCLot: 714174) Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 109 90.0 110 Anions and Nutrients (QCLot: 714178) Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 714172)								
Sulfate (as SO4) 14808-79-8 E235.SO4 0.3 mg/L 100 mg/L 109 90.0 110	Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	
Anions and Nutrients (QCLot: 714178) Phosphate, orthor, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 714174)								
Phosphate, ortho-, dissolved (as P) 14265-44-2 E378-U 0.001 mg/L 0.03 mg/L 90.8 80.0 120 Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	100 mg/L	109	90.0	110	
Anions and Nutrients (QCLot: 716537) Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)									
Silicate (as SiO2) 7631-86-9 E392 0.5 mg/L 10 mg/L 105 85.0 115 Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	0.03 mg/L	90.8	80.0	120	
Anions and Nutrients (QCLot: 718136) Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 716537)								
Nitrogen, total 7727-37-9 E366 0.03 mg/L 0.5 mg/L 97.8 75.0 125 Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Silicate (as SiO2)	7631-86-9 E392	0.5	mg/L	10 mg/L	105	85.0	115	
Anions and Nutrients (QCLot: 718137) Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 718136)								
Phosphorus, total 7723-14-0 E372-U 0.002 mg/L 0.05 mg/L 88.5 80.0 120 Anions and Nutrients (QCLot: 718138)	Nitrogen, total	7727-37-9 E366	0.03	mg/L	0.5 mg/L	97.8	75.0	125	
Anions and Nutrients (QCLot: 718138)	Anions and Nutrients (QCLot: 718137)								
		7723-14-0 E372-U	0.002	mg/L	0.05 mg/L	88.5	80.0	120	
Phosphorus, total dissolved 7723-14-0 E375-T 0.002 mg/L 0.05 mg/L 90.4 80.0 120	Anions and Nutrients (QCLot: 718138)								
	Phosphorus, total dissolved	7723-14-0 E375-T	0.002	mg/L	0.05 mg/L	90.4	80.0	120	

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Analyte Anions and Nutrients (QCLot: 718139) Ammonia, total (as N) Organic / Inorganic Carbon (QCLot: 718134)	CAS Number 7664-41-7		LOR	Unit	Spike Concentration	Recovery (%)		Limits (%)	00-15
Anions and Nutrients (QCLot: 718139) Ammonia, total (as N)			LOR	Unit	Concentration	1.00	1000		0
Ammonia, total (as N)	7664-41-7	E298			Concentration	LUS	Low	High	Qualifier
	7664-41-7	E298							
Organic / Inorganic Carbon (QCLot: 718134)			0.005	mg/L	0.2 mg/L	90.1	85.0	115	
Organic / Inorganic Carbon (QCLot: 718134)									
Carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	98.1	80.0	120	
Organic / Inorganic Carbon (QCLot: 718135)									
Carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	100	80.0	120	
Total Metals (QCLot: 717494)									
Mercury, total	7439-97-6	E508-L	0.5	ng/L	5 ng/L	112	80.0	120	
Total Metals (QCLot: 717501)									
Aluminum, total	7429-90-5		0.003	mg/L	2 mg/L	117	80.0	120	
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	120	80.0	120	
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	114	80.0	120	
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	108	80.0	120	
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	110	80.0	120	
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	111	80.0	120	
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	108	80.0	120	
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	115	80.0	120	
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	114	80.0	120	
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	114	80.0	120	
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	109	80.0	120	
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	116	80.0	120	
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	116	80.0	120	
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	111	80.0	120	
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	115	80.0	120	
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	# 122	80.0	120	MES
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	115	80.0	120	
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	113	80.0	120	
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	109	80.0	120	
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Laboratory Co	ontrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifie
Total Metals (QCLot: 717501) - continu	ed							
Sodium, total	7440-23-5 E420	0.05	mg/L	50 mg/L	115	80.0	120	
Strontium, total	7440-24-6 E420	0.0002	mg/L	0.25 mg/L	111	80.0	120	
Sulfur, total	7704-34-9 E420	0.5	mg/L	50 mg/L	115	80.0	120	
Tellurium, total	13494-80-9 E420	0.0002	mg/L	0.1 mg/L	115	80.0	120	
Thallium, total	7440-28-0 E420	0.00001	mg/L	1 mg/L	106	80.0	120	
Thorium, total	7440-29-1 E420	0.0001	mg/L	0.1 mg/L	99.3	80.0	120	
Tin, total	7440-31-5 E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	
Titanium, total	7440-32-6 E420	0.0003	mg/L	0.25 mg/L	108	80.0	120	
Tungsten, total	7440-33-7 E420	0.0001	mg/L	0.1 mg/L	109	80.0	120	
Uranium, total	7440-61-1 E420	0.00001	mg/L	0.005 mg/L	112	80.0	120	
Vanadium, total	7440-62-2 E420	0.0005	mg/L	0.5 mg/L	118	80.0	120	
Zinc, total	7440-66-6 E420	0.003	mg/L	0.5 mg/L	105	80.0	120	
Zirconium, total	7440-67-7 E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	
Mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	5 ng/L	100	80.0	120	
Dissolved Metals (QCLot: 720452)								
Aluminum, dissolved	7429-90-5 E421	0.001	mg/L	2 mg/L	112	80.0	120	
Antimony, dissolved	7440-36-0 E421	0.0001	mg/L	1 mg/L	109	80.0	120	
Arsenic, dissolved	7440-38-2 E421	0.0001	mg/L	1 mg/L	112	80.0	120	
Barium, dissolved	7440-39-3 E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	
Beryllium, dissolved	7440-41-7 E421	0.00002	mg/L	0.1 mg/L	104	80.0	120	
Bismuth, dissolved	7440-69-9 E421	0.00005	mg/L	1 mg/L	108	80.0	120	
Boron, dissolved	7440-42-8 E421	0.01	mg/L	1 mg/L	100	80.0	120	
Cadmium, dissolved	7440-43-9 E421	0.000005	mg/L	0.1 mg/L	110	80.0	120	
Calcium, dissolved	7440-70-2 E421	0.05	mg/L	50 mg/L	103	80.0	120	
Cesium, dissolved	7440-46-2 E421	0.00001	mg/L	0.05 mg/L	106	80.0	120	
Chromium, dissolved	7440-47-3 E421	0.0005	mg/L	0.25 mg/L	107	80.0	120	
Cobalt, dissolved	7440-48-4 E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	
Copper, dissolved	7440-50-8 E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	
Iron, dissolved	7439-89-6 E421	0.01	mg/L	1 mg/L	102	80.0	120	
Lead, dissolved	7439-92-1 E421	0.00005	mg/L	0.5 mg/L	107	80.0	120	
Lithium, dissolved	7439-93-2 E421	0.001	mg/L	0.25 mg/L	104	80.0	120	
Magnesium, dissolved	7439-95-4 E421	0.005	mg/L	50 mg/L	107	80.0	120	
Manganese, dissolved	7439-96-5 E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	
Molybdenum, dissolved	7439-98-7 E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	
Nickel, dissolved	7440-02-0 E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Sub-Matrix: Water						Laboratory Co.	ntrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number M	ethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 720452) - cont	inued								
Phosphorus, dissolved	7723-14-0 E	421	0.05	mg/L	10 mg/L	108	80.0	120	
Potassium, dissolved	7440-09-7 E	421	0.05	mg/L	50 mg/L	110	80.0	120	
Rubidium, dissolved	7440-17-7 E4	421	0.0002	mg/L	0.1 mg/L	108	80.0	120	
Selenium, dissolved	7782-49-2 E	421	0.00005	mg/L	1 mg/L	109	80.0	120	
Silicon, dissolved	7440-21-3 E4	421	0.05	mg/L	10 mg/L	111	80.0	120	
Silver, dissolved	7440-22-4 E	421	0.00001	mg/L	0.1 mg/L	101	80.0	120	
Sodium, dissolved	7440-23-5 E4	421	0.05	mg/L	50 mg/L	112	80.0	120	
Strontium, dissolved	7440-24-6 E4	421	0.0002	mg/L	0.25 mg/L	106	80.0	120	
Sulfur, dissolved	7704-34-9 E	421	0.5	mg/L	50 mg/L	106	80.0	120	
Tellurium, dissolved	13494-80-9 E4	421	0.0002	mg/L	0.1 mg/L	104	80.0	120	
Thallium, dissolved	7440-28-0 E4	421	0.00001	mg/L	1 mg/L	110	80.0	120	
Thorium, dissolved	7440-29-1 E4	421	0.0001	mg/L	0.1 mg/L	106	80.0	120	
Tin, dissolved	7440-31-5 E4	421	0.0001	mg/L	0.5 mg/L	106	80.0	120	
Titanium, dissolved	7440-32-6 E4	421	0.0003	mg/L	0.25 mg/L	104	80.0	120	
Tungsten, dissolved	7440-33-7 E4	421	0.0001	mg/L	0.1 mg/L	104	80.0	120	
Uranium, dissolved	7440-61-1 E4	421	0.00001	mg/L	0.005 mg/L	110	80.0	120	
Vanadium, dissolved	7440-62-2 E4	421	0.0005	mg/L	0.5 mg/L	111	80.0	120	
Zinc, dissolved	7440-66-6 E4	421	0.001	mg/L	0.5 mg/L	112	80.0	120	
Zirconium, dissolved	7440-67-7 E4	421	0.0002	mg/L	0.1 mg/L	102	80.0	120	
Speciated Metals (QCLot: 730278)									
Methylmercury (as MeHg), total	22967-92-6 E	536	0.00002	μg/L	0.0025 μg/L	81.5	70.0	130	
Speciated Metals (QCLot: 733465)									
Methylmercury (as MeHg), dissolved	22967-92-6 E	537	0.00002	μg/L	0.0025 μg/L	83.2	70.0	130	
Speciated Metals (QCLot: 733968)									
Methylmercury (as MeHg), total	22967-92-6 E	536	0.00002	μg/L	0.0025 μg/L	79.0	70.0	130	
Speciated Metals (QCLot: 756855)									
Iron, ferrous [Fe II], dissolved	15438-31-0 E	541	0.02	mg/L	0.5 mg/L	103	80.0	120	
<u> </u>									

Qualifiers

Qualifier Description

MES Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered

acceptable as per OMOE & CCME).

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd

Project : Surface Water MON8/9-With Metals



Matrix Spike (MS) Report

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

Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	ents (QCLot: 714169									
FJ2203012-002	Pine	Fluoride	16984-48-8	E235.F	1.00 mg/L	1 mg/L	100	75.0	125	
Anions and Nutri	ents (QCLot: 714170									
FJ2203012-002	Pine	Chloride	16887-00-6	E235.CI	104 mg/L	100 mg/L	104	75.0	125	
Anions and Nutri	ents (QCLot: 714171)								
FJ2203012-002	Pine	Nitrate (as N)	14797-55-8	E235.NO3-L	2.68 mg/L	2.5 mg/L	107	75.0	125	
Anions and Nutri	ents (QCLot: 714172)								
FJ2203012-002	Pine	Nitrite (as N)	14797-65-0	E235.NO2-L	0.489 mg/L	0.5 mg/L	97.9	75.0	125	
Anions and Nutri	ents (QCLot: 714174)								
FJ2203012-002	Pine	Sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	
Anions and Nutri	ents (QCLot: 714178									
FJ2203012-002	Pine	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0280 mg/L	0.03 mg/L	93.3	70.0	130	
Anions and Nutri	ents (QCLot: 716537	7)								
EO2209213-025	Anonymous	Silicate (as SiO2)	7631-86-9	E392	9.41 mg/L	10 mg/L	94.1	75.0	125	
Anions and Nutri	ents (QCLot: 718136									
FJ2203012-002	Pine	Nitrogen, total	7727-37-9	E366	0.406 mg/L	0.4 mg/L	101	70.0	130	
Anions and Nutri	ents (QCLot: 718137)								
FJ2203012-002	Pine	Phosphorus, total	7723-14-0	E372-U	0.0469 mg/L	0.05 mg/L	93.9	70.0	130	
Anions and Nutri	ents (QCLot: 718138									
FJ2203012-002	Pine	Phosphorus, total dissolved	7723-14-0	E375-T	0.0474 mg/L	0.05 mg/L	94.7	70.0	130	
Anions and Nutri	ents (QCLot: 718139)								
FJ2203012-002	Pine	Ammonia, total (as N)	7664-41-7	E298	0.0958 mg/L	0.1 mg/L	95.8	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 7	(18134)								
FJ2203012-002	Pine	Carbon, dissolved organic [DOC]		E358-L	4.97 mg/L	5 mg/L	99.4	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 7	18135)								
FJ2203012-002	Pine	Carbon, total organic [TOC]		E355-L	4.73 mg/L	5 mg/L	94.6	70.0	130	
Total Metals (QC	Lot: 717494)									
CG2214734-001	Anonymous	Mercury, total	7439-97-6	E508-L	5.15 ng/L	5 ng/L	103	70.0	130	

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spi	ike	Recovery (%)	Recovery	/ Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Fotal Metals (QC	CLot: 717501)									
VA22C5469-002	Anonymous	Aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.6	70.0	130	
		Barium, total	7440-39-3	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	
VA22C5469-002	Anonymous	Antimony, total	7440-36-0	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	
		Arsenic, total	7440-38-2	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	
		Beryllium, total	7440-41-7	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	
		Bismuth, total	7440-69-9	E420	0.0102 mg/L	0.01 mg/L	102	70.0	130	
		Boron, total	7440-42-8	E420	0.097 mg/L	0.1 mg/L	96.8	70.0	130	
		Cadmium, total	7440-43-9	E420	0.00419 mg/L	0.004 mg/L	105	70.0	130	
		Calcium, total	7440-70-2	E420	4.08 mg/L	4 mg/L	102	70.0	130	
		Cesium, total	7440-46-2	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	
		Chromium, total	7440-47-3	E420	0.0419 mg/L	0.04 mg/L	105	70.0	130	
		Cobalt, total	7440-48-4	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	
		Copper, total	7440-50-8	E420	0.0215 mg/L	0.02 mg/L	107	70.0	130	
		Iron, total	7439-89-6	E420	2.05 mg/L	2 mg/L	102	70.0	130	
		Lead, total	7439-92-1	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	
		Lithium, total	7439-93-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	
		Magnesium, total	7439-95-4	E420	1.06 mg/L	1 mg/L	106	70.0	130	
		Manganese, total	7439-96-5	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	
		Molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	
		Nickel, total	7440-02-0	E420	0.0430 mg/L	0.04 mg/L	108	70.0	130	
		Phosphorus, total	7723-14-0	E420	10.6 mg/L	10 mg/L	106	70.0	130	
		Potassium, total	7440-09-7	E420	4.22 mg/L	4 mg/L	106	70.0	130	
		Rubidium, total	7440-17-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	
		Selenium, total	7782-49-2	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	
		Silicon, total	7440-21-3	E420	9.83 mg/L	10 mg/L	98.3	70.0	130	
		Silver, total	7440-22-4	E420	0.00431 mg/L	0.004 mg/L	108	70.0	130	
		Sodium, total	7440-23-5	E420	2.09 mg/L	2 mg/L	104	70.0	130	
		Strontium, total	7440-24-6	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	
		Sulfur, total	7704-34-9	E420	21.0 mg/L	20 mg/L	105	70.0	130	
		Tellurium, total	13494-80-9	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	
		Thallium, total	7440-28-0	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	
		Thorium, total	7440-29-1	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	
		Tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	
		Titanium, total	7440-32-6	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	
	1	Tungsten, total	7440-33-7	E420	0.0200 mg/L	0.02 mg/L	99.8	70.0	130	

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



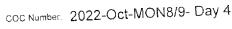
Sub-Matrix: Water							Matrix Spi	ke (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
	Lot: 717501) - continu	ed								
VA22C5469-002	Anonymous	Uranium, total	7440-61-1	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	
		Vanadium, total	7440-62-2	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	
		Zinc, total	7440-66-6	E420	0.412 mg/L	0.4 mg/L	103	70.0	130	
		Zirconium, total	7440-67-7	E420	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	
Dissolved Metals	(QCLot: 719532)									
FC2202541-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	4.48 ng/L	5 ng/L	89.6	70.0	130	
Dissolved Metals	(QCLot: 720452)									
FJ2203006-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.210 mg/L	0.2 mg/L	105	70.0	130	
		Antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	
		Arsenic, dissolved	7440-38-2	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	
		Beryllium, dissolved	7440-41-7	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	
		Bismuth, dissolved	7440-69-9	E421	0.00937 mg/L	0.01 mg/L	93.7	70.0	130	
		Boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	93.7	70.0	130	
		Cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	101	70.0	130	
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		Cesium, dissolved	7440-46-2	E421	0.00993 mg/L	0.01 mg/L	99.3	70.0	130	
		Chromium, dissolved	7440-47-3	E421	0.0402 mg/L	0.04 mg/L	100	70.0	130	
		Cobalt, dissolved	7440-48-4	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	
		Copper, dissolved	7440-50-8	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	
		Iron, dissolved	7439-89-6	E421	1.96 mg/L	2 mg/L	98.0	70.0	130	
		Lead, dissolved	7439-92-1	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	
		Lithium, dissolved	7439-93-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
		Manganese, dissolved	7439-96-5	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	
		Molybdenum, dissolved	7439-98-7	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	
		Nickel, dissolved	7440-02-0	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	
		Phosphorus, dissolved	7723-14-0	E421	10.7 mg/L	10 mg/L	107	70.0	130	
		Potassium, dissolved	7440-09-7	E421	4.07 mg/L	4 mg/L	102	70.0	130	
		Rubidium, dissolved	7440-17-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	
		Selenium, dissolved	7782-49-2	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	
		Silicon, dissolved	7440-21-3	E421	9.54 mg/L	10 mg/L	95.4	70.0	130	
		Silver, dissolved	7440-22-4	E421	0.00418 mg/L	0.004 mg/L	104	70.0	130	
		Sodium, dissolved	7440-23-5	E421	2.07 mg/L	2 mg/L	104	70.0	130	
		Strontium, dissolved	7440-24-6	 E421	ND mg/L	0.02 mg/L	ND	70.0	130	

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Work Order: FJ2203012 Amendment 2
Client: Ecofish Research Ltd



Sub-Matrix: Water							Matrix Spil	ke (MS) Report		
					Spi	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals	(QCLot: 720452) - co	ontinued								
FJ2203006-002	Anonymous	Sulfur, dissolved	7704-34-9	E421	19.9 mg/L	20 mg/L	99.5	70.0	130	
		Tellurium, dissolved	13494-80-9	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	
		Thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	
		Thorium, dissolved	7440-29-1	E421	0.0216 mg/L	0.02 mg/L	108	70.0	130	
		Tin, dissolved	7440-31-5	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	
		Titanium, dissolved	7440-32-6	E421	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	
		Tungsten, dissolved	7440-33-7	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	
		Uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	
		Vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	
		Zinc, dissolved	7440-66-6	E421	0.420 mg/L	0.4 mg/L	105	70.0	130	
		Zirconium, dissolved	7440-67-7	E421	0.0413 mg/L	0.04 mg/L	103	70.0	130	
Speciated Metals	(QCLot: 730278)									
FJ2202994-002	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00216 μg/L	0.0025 μg/L	86.2	60.0	140	
Speciated Metals	(QCLot: 733465)									
FJ2202994-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00152 μg/L	0.0025 μg/L	61.0	60.0	140	
Speciated Metals	(QCLot: 733968)									
FJ2202994-003	Anonymous	Methylmercury (as MeHg), total	22967-92-6	E536	0.00175 μg/L	0.0025 μg/L	70.0	60.0	140	
Speciated Metals	(QCLot: 756855)									
FJ2203012-002	Pine	Iron, ferrous [Fe II], dissolved	15438-31-0	E541	0.452 mg/L	0.5 mg/L	90.5	70.0	130	





Report To

Company:

Contact:

Phone:

Street:

City/Province:

Postal Code:

invoice To

www.aisglobal.com

Ecofish Research Ltd.

Sarah Kennedy

600 Comox Rd.

Courtenay, BC

Same as Report To

V9N 3P6

250-334-3042

Contact and company name below will appear on the final report

YES INO

Company address below will appear on the final report

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

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1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form. Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

APPENDIX B2: PORE WATER CHEMISTRY ALS REPORTS



CERTIFICATE OF ANALYSIS

Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 19-Aug-2022 15:52

Date Analysis Commenced : 24-Aug-2022

Issue Date : 31-Aug-2022 10:50

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

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

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia

Page : 2 of 3 Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

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

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

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

Sample Comments

F10000000 004	Sample	Client Id	Comment
FJ2202226-001 PD1 Low level Dissovled mercury analyses listed on submitted Chain of Custody but required 100ml ultra mercury glass bottles not received. Testing will be removed. Please contact your Account manager if any changes are required.	FJ2202226-001	PD1	Low level Dissovled mercury analyses listed on submitted Chain of Custody but required 100ml ultra mercury glass bottles not received. Testing will be removed. Please contact your Account manager if any changes are required.

>: greater than.

Page : 3 of 3 Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Results

Sub-Matrix: Water		Cli	ient sample ID	PD1	 	
(Matrix: Water)						
		Client samp	ling date / time	[19-Aug-2022]	 	
Analyte CAS Number	Method	LOR	Unit	FJ2202226-001	 	
			İ	Result	 	
Physical Tests						
alkalinity, total (as CaCO3)	E290	1.0	mg/L	340	 	
conductivity	E100	2.0	μS/cm	661	 	
hardness (as CaCO3), dissolved	EC100	0.60	mg/L	386	 	
pH	E108	0.10	pH units	8.28	 	
solids, total suspended [TSS]	E160	3.0	mg/L	<3.0	 	
Anions and Nutrients						
bromide 24959-67-9	E235.Br-L	0.050	mg/L	<0.050	 	
chloride 16887-00-6	E235.CI	0.50	mg/L	<0.50	 	
fluoride 16984-48-8	E235.F	0.020	mg/L	0.065	 	
nitrate (as N) 14797-55-8	E235.NO3-L	0.0050	mg/L	0.0196	 	
nitrite (as N) 14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	 	
sulfate (as SO4) 14808-79-8	E235.SO4	0.30	mg/L	51.4	 	
Organic / Inorganic Carbon						
carbon, dissolved organic [DOC]	E358-L	0.50	mg/L	11.9	 	
carbon, total organic [TOC]	E355-L	0.50	mg/L	11.6	 	
Ion Balance						
anion sum	EC101	0.10	meq/L	7.87	 	
cation sum	EC101	0.10	meq/L	7.91	 	
ion balance (APHA)	EC101	0.010	%	0.253	 	
Dissolved Metals						
mercury, dissolved 7439-97-6	E509	0.0000050	mg/L	<0.000050	 	
calcium, dissolved 7440-70-2	E421	0.050	mg/L	114	 	
magnesium, dissolved 7439-95-4	E421	0.0050	mg/L	24.6	 	
dissolved mercury filtration location	EP509	-	-	Field	 	
dissolved metals filtration location	EP421	-	-	Laboratory	 	

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



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

Sampler : KG
Site :--Quote number : Q75925
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 9

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John. British Columbia Canada V1J 6P3

Telephone : 778-370-3279
Date Samples Received : 19-Aug-2022 15:52
Issue Date : 31-Aug-2022 10:46

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers: Quality Control Samples

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

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analysis Holding Time Compliance

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

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

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

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

Matrix: Water					Ev	/aluation: 🗴 =	Holding time exce	edance ; 🛚	/ = Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
PD1	E235.Br-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD1	E235.CI	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PD1	E235.F	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
PD1	E235.NO3-L	19-Aug-2022	25-Aug-2022	3 days	6 days	*	25-Aug-2022	3 days	0 days	✓
						EHT				
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
PD1	E235.NO2-L	19-Aug-2022	25-Aug-2022				25-Aug-2022	3 days	6 days	*
										EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD1	E235.SO4	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
PD1	E509	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	7 days	✓
	-							-		

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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



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

									Holding I
Method	Sampling Date	Ext	traction / Pr	eparation		Analysis			
		Preparation	Holding Times		Eval	Analysis Date	Holding Times		Eval
		Date	Rec	Actual			Rec	Actual	
_									
E421	19-Aug-2022	24-Aug-2022				25-Aug-2022	180 days	7 days	✓
/el)									
E358-L	19-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	10 days	✓
ion (Low Level)									
E355-L	19-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	10 days	✓
E290	19-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	6 days	✓
E100	19-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	6 days	✓
E108	19-Aug-2022	25-Aug-2022				25-Aug-2022	0.25 hrs	0.58 hrs	# EHTR-F
E160	19-Aug-2022					25-Aug-2022	7 days	6 days	✓
	E421 /el) E358-L ion (Low Level) E355-L E290 E100	E421 19-Aug-2022 rel) E358-L 19-Aug-2022 ion (Low Level) E355-L 19-Aug-2022 E290 19-Aug-2022 E100 19-Aug-2022	Preparation Date Preparation Date Preparation Date Preparation Date Preparation Date Preparation Pre	Preparation Date Holding Rec	Preparation	Preparation Holding Times Eval Rec Actual	Preparation Date Holding Times Rec Actual Analysis Date	Preparation Holding Times Eval Analysis Date Holding Rec Actual Rec	Preparation Date Holding Times Rec Actual Analysis Date Holding Times Rec Actual

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Quality Control Parameter Frequency Compliance

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

Matrix: Water Quality Control Sample Type			tion: × = QC frequ	ount	· ·	Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)						7	
Alkalinity Species by Titration	E290	618211	1	7	14.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	618220	1	3	33.3	5.0	√
Chloride in Water by IC	E235.CI	618216	1	9	11.1	5.0	√
Conductivity in Water	E100	618212	1	13	7.6	5.0	<u> </u>
Dissolved Mercury in Water by CVAAS	E509	619772	1	20	5.0	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	8	12.5	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	15	6.6	5.0	√
Fluoride in Water by IC	E235.F	618215	1	9	11.1	5.0	√
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	9	11.1	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	9	11.1	5.0	1
pH by Meter	E108	618210	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	618219	1	9	11.1	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	618875	1	20	5.0	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	618211	1	7	14.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	618220	1	3	33.3	5.0	√
Chloride in Water by IC	E235.CI	618216	1	9	11.1	5.0	1
Conductivity in Water	E100	618212	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	619772	1	20	5.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	8	12.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	618215	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	9	11.1	5.0	✓
pH by Meter	E108	618210	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	618219	1	9	11.1	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	15	6.6	5.0	✓
TSS by Gravimetry	E160	618875	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	618211	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	618220	1	3	33.3	5.0	✓
Chloride in Water by IC	E235.CI	618216	1	9	11.1	5.0	✓
Conductivity in Water	E100	618212	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	619772	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	8	12.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	15	6.6	5.0	✓

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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

C frequency outside		

Matrix: Water	on. • – QC frequency outside specification, • – QC frequency within specification.							
Quality Control Sample Type			Co	ount	Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued								
Fluoride in Water by IC	E235.F	618215	1	9	11.1	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	9	11.1	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	9	11.1	5.0	✓	
Sulfate in Water by IC	E235.SO4	618219	1	9	11.1	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	15	6.6	5.0	✓	
TSS by Gravimetry	E160	618875	1	20	5.0	5.0	✓	
Matrix Spikes (MS)								
Bromide in Water by IC (Low Level)	E235.Br-L	618220	1	3	33.3	5.0	✓	
Chloride in Water by IC	E235.CI	618216	1	9	11.1	5.0	✓	
Dissolved Mercury in Water by CVAAS	E509	619772	1	20	5.0	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	616443	1	8	12.5	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	15	6.6	5.0	✓	
Fluoride in Water by IC	E235.F	618215	1	9	11.1	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	618217	1	9	11.1	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	618218	1	9	11.1	5.0	✓	
Sulfate in Water by IC	E235.SO4	618219	1	9	11.1	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	15	6.6	5.0	✓	
					-			

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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC (Low Level)	E235.Br-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			·

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 : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAAS	E509 Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration	EP509	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
	Vancouver -			
	Environmental			



QUALITY CONTROL REPORT

Page

Laboratory

Address

Telephone

Issue Date

Account Manager

Date Samples Received

Date Analysis Commenced

: 1 of 7

: Brent Mack

:778-370-3279

:24-Aug-2022

: 11007 Alaska Road

: 19-Aug-2022 15:52

:31-Aug-2022 10:48

: Fort St. John - Environmental

Fort St. John, British Columbia Canada V1J 6P3

Work Order FJ2202226

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

Sampler :KG Site Quote number :Q75925 No. of samples received : 1

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

This Quality Control Report contains the following information:

: 1

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples analysed

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

Signatories	Position	Laboratory Department	
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia	
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia	
Owen Cheng		Vancouver Metals, Burnaby, British Columbia	
Sam Silveira	Lab Assistant	Vancouver Metals, Burnaby, British Columbia	

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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

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

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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

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: Azimuth Consulting Group Inc. Client : Site C MMP - Pore Water Project



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 618210)										
FJ2202227-001	Anonymous	рН		E108	0.10	pH units	7.90	7.88	0.253%	4%	
Physical Tests (QC	Lot: 618211)										
FJ2202227-001	Anonymous	alkalinity, total (as CaCO3)		E290	1.0	mg/L	62.0	61.6	0.647%	20%	
Physical Tests (QC	Lot: 618212)										
-J2202227-001	Anonymous	conductivity		E100	2.0	μS/cm	192	191	0.887%	10%	
Physical Tests (QC	Lot: 618875)										
FJ2202204-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	38.8	39.2	1.02%	20%	
Anions and Nutrien	ts (QC Lot: 618215)										
-J2202226-001	PD1	fluoride	16984-48-8	E235.F	0.020	mg/L	0.065	0.068	0.003	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 618216)										
J2202226-001	PD1	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 618217)										
-J2202226-001	PD1	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0196	0.0184	0.0011	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 618218)										
FJ2202226-001	PD1	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 618219)										
FJ2202226-001	PD1	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	51.4	51.4	0.0366%	20%	
Anions and Nutrien	ts (QC Lot: 618220)										
-J2202226-001	PD1	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
rganic / Inorganic	Carbon (QC Lot: 62266	5)									
-J2202199-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	51.4	51.5	0.243%	20%	
Organic / Inorganic	Carbon (QC Lot: 62266	6)									
-J2202199-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	49.3	51.9	5.09%	20%	
issolved Metals (0	QC Lot: 616443)										
-J2202227-002	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	27.5	29.1	5.69%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.43	6.68	3.84%	20%	
Dissolved Metals (C	QC Lot: 619772)										
FJ2202215-003	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	

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Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 618211)						
alkalinity, total (as CaCO3)		E290	1	mg/L	<1.0	
Physical Tests (QCLot: 618212)						
conductivity		E100	1	μS/cm	1.0	
Physical Tests (QCLot: 618875)						
solids, total suspended [TSS]		E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 618215)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 618216)						
chloride	16887-00-6	E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 618217)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 618218)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 618219)						
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 618220)						
bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	
Organic / Inorganic Carbon (QCLot: 622665)						
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 622666)						
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 616443)						
calcium, dissolved	7440-70-2		0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 619772)						
mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	

Page : 5 of 7
Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number Me	ethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Physical Tests (QCLot: 618210)											
pH	E1	08		pH units	7 pH units	100	98.0	102			
Physical Tests (QCLot: 618211)											
alkalinity, total (as CaCO3)	E2	90	1	mg/L	500 mg/L	110	85.0	115			
Physical Tests (QCLot: 618212)											
conductivity	E1	00	1	μS/cm	146.9 μS/cm	98.8	90.0	110			
Physical Tests (QCLot: 618875)											
solids, total suspended [TSS]	E1	60	3	mg/L	150 mg/L	102	85.0	115			
Anions and Nutrients (QCLot: 618215)											
fluoride	16984-48-8 E2	35.F	0.02	mg/L	1 mg/L	99.0	90.0	110			
Anions and Nutrients (QCLot: 618216)	10007.00.0 50	0.5.01									
chloride	16887-00-6 E2	35.Cl	0.5	mg/L	100 mg/L	102	90.0	110			
Anions and Nutrients (QCLot: 618217)	44707.55.0 50	05 N 00 I	0.005								
nitrate (as N)	14797-55-8 E2	35.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110			
Anions and Nutrients (QCLot: 618218)	14797-65-0 E2	05 NO0 I	0.004	(I			00.0	440			
nitrite (as N)	14797-65-0 E2	35.NO2-L	0.001	mg/L	0.5 mg/L	99.5	90.0	110			
Anions and Nutrients (QCLot: 618219)	44000 70 0 50	25.004	0.0	(I	400 #	400	00.0	440			
sulfate (as SO4)	14808-79-8 E2	35.504	0.3	mg/L	100 mg/L	103	90.0	110			
Anions and Nutrients (QCLot: 618220)	24959-67-9 E2	25 De I	0.05	m a /l	0.5	07.0	85.0	115			
bromide	24959-07-9 E2	33.DI-L	0.05	mg/L	0.5 mg/L	97.8	65.0	115			
Organic / Inorganic Carbon (QCLot: 622665) carbon, dissolved organic [DOC]	E3:	58-L	0.5	mg/L	8.57 mg/L	99.4	80.0	120			
, , , , , , , , , , , , , , , , , , ,			0.0	9, =	0.07 Hig/L	30.4	33.3	.20			
Organic / Inorganic Carbon (QCLot: 622666) carbon, total organic [TOC]	E3	55-L	0.5	mg/L	8.57 mg/L	105	80.0	120			
					0.07 mg/L	100					
Dissolved Metals (QCLot: 616443)											
calcium, dissolved	7440-70-2 E4	21	0.05	mg/L	50 mg/L	98.2	80.0	120			
magnesium, dissolved	7439-95-4 E4	21	0.005	mg/L	50 mg/L	95.9	80.0	120			
mercury, dissolved	7439-97-6 E5	09	0.000005	mg/L	0.0001 mg/L	98.4	80.0	120			

Page : 6 of 7
Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Sp	ike	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ients (QCLot: 618215)									
VA22B9818-001	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 618216)									
VA22B9818-001	Anonymous	chloride	16887-00-6	E235.Cl	105 mg/L	100 mg/L	105	75.0	125	
Anions and Nutri	ients (QCLot: 618217)									
VA22B9818-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	
Anions and Nutri	ients (QCLot: 618218)									
VA22B9818-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.512 mg/L	0.5 mg/L	102	75.0	125	
Anions and Nutri	ients (QCLot: 618219)									
VA22B9818-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125	
Anions and Nutri	ients (QCLot: 618220)									
VA22B9818-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.523 mg/L	0.5 mg/L	105	75.0	125	
Organic / Inorga	nic Carbon (QCLot: 622	665)								
FJ2202199-002	Anonymous	carbon, dissolved organic [DOC]		E358-L	ND mg/L	5 mg/L	ND	70.0	130	
Organic / Inorga	nic Carbon (QCLot: 622	666)								
FJ2202199-002	Anonymous	carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 616443)									
FJ2202227-003	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 619772)									
FJ2202215-004	Anonymous	mercury, dissolved	7439-97-6	E509	0.0000995 mg/L	0.0001 mg/L	99.5	70.0	130	

Page : 7 of 7 Work Order : FJ2202226

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water





Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here (lab use only)

COC Number:

COC #: 2022AUG POREWATER

Page 1 of 1

Canada Toll Free: 1 800 668 9878

	www.aisglobal.com																	
Report To	Contact and compa	any name below will appear on the final report		Report Format	/ Distribution		Select Se	vice Lev	el Below	- Please	confirm	all E&P	TATs wit	th your AM	- surcharge	s will ap	ply	
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Phone:	604-730-1220		☑ Compare Result	ts to Criteria on Report -	provide details belo	ow if box checked	PRIORITY usiness Days	3	day [F	23]			FRGENCY	Sar	me Day,	Week	end or	
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Street:	2902 West Braodway		Email 1 or Fax	gmann@azimuthg	roup.ca		Date and Time Required for all E&P TATs: dd-mmm-yy hh.mm						mm					
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REFER TO BAC	K PAGE FOR ALS LOCATI	ONS AND/SAMPLING INFORMATION		WHI	TE - LABORATO	RY COPY YEL			OPY									OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

^{1.} If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

No. of samples received : 1

No. of samples analysed : 1

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 23-Aug-2022 18:55

Date Analysis Commenced : 25-Aug-2022

Issue Date : 21-Sep-2022 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Erin Sanchez		Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia

Page : 2 of 4

Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μg/L	micrograms per litre
μS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 4 Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Results

Sub-Matrix: Water			CI	ient sample ID	PD3			
			OI.	iem sample ib	PD3		 	
(Matrix: Water)								
			Client samp	ling date / time	23-Aug-2022		 	
					13:20			
Analyte	CAS Number	Method	LOR	Unit	FJ2202288-001		 	
					Result		 	
Physical Tests								
alkalinity, total (as CaCO3)		E290	1.0	mg/L	296		 	
conductivity		E100	2.0	μS/cm	519		 	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	307		 	
pH		E108	0.10	pH units	8.48		 	
solids, total suspended [TSS]		E160	3.0	mg/L	<7.5		 	
Anions and Nutrients								
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050		 	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50		 	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.073		 	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0205		 	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010		 	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	20.4		 	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	11.7		 	
carbon, total organic [TOC]		E355-L	0.50	mg/L	10.2		 	
Ion Balance								
anion sum		EC101	0.10	meq/L	6.34		 	
cation sum		EC101	0.10	meq/L	6.43		 	
ion balance (APHA)		EC101	0.010	%	0.705		 	
Dissolved Metals								
mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	3.44		 	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	88.4		 	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	21.0		 	
dissolved MeHg filtration location		EP537	-	-	Field		 	
dissolved mercury filtration location		EP509-L	-	-	Field		 	
dissolved metals filtration location		EP421	-	-	Laboratory		 	
Speciated Metals								
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000332		 	
			1			1	I	

Please refer to the General Comments section for an explanation of any qualifiers detected.

Page : 4 of 4 Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water





QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

Sampler : KG
Site :--Quote number : Q75925
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 9

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279
Date Samples Received : 23-Aug-2022 18:55
Issue Date : 21-Sep-2022 16:25

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



Page : 3 of 9
Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Matrix: Water Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date Holding Times Eval Preparation Actual Rec Actual Date Rec Anions and Nutrients : Bromide in Water by IC (Low Level) HDPE E235.Br-L 23-Aug-2022 1 PD3 25-Aug-2022 25-Aug-2022 28 days 2 days Anions and Nutrients : Chloride in Water by IC **HDPE** PD3 E235.CI 23-Aug-2022 25-Aug-2022 25-Aug-2022 28 days 2 days ✓ ----Anions and Nutrients: Fluoride in Water by IC **HDPE** PD3 E235.F 23-Aug-2022 25-Aug-2022 25-Aug-2022 28 days 2 days Anions and Nutrients: Nitrate in Water by IC (Low Level) **HDPE** PD3 E235.NO3-L 23-Aug-2022 25-Aug-2022 3 days 2 davs 1 25-Aug-2022 3 days 0 davs Anions and Nutrients : Nitrite in Water by IC (Low Level) HDPE PD3 E235.NO2-L 23-Aug-2022 25-Aug-2022 25-Aug-2022 3 days 2 days Anions and Nutrients : Sulfate in Water by IC **HDPE** 25-Aug-2022 E235.SO4 23-Aug-2022 PD3 25-Aug-2022 28 days 2 days --------Dissolved Metals: Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) Pre-cleaned amber glass - dissolved (lab preserved) PD3 E509-L 23-Aug-2022 31-Aug-2022 ✓ 31-Aug-2022 28 days 8 days

Page : 4 of 9
Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

viatrix: water					Ε'	valuation. 🔻 –	Holding time exce	edance,	– vvitriir	Holding 11
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PD3	E421	23-Aug-2022	25-Aug-2022				26-Aug-2022	180	3 days	✓
								days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Le	evel)									
Amber glass dissolved (sulfuric acid)										
PD3	E358-L	23-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combus	tion (Low Level)									
Amber glass total (sulfuric acid)										
PD3	E355-L	23-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD3	E290	23-Aug-2022	25-Aug-2022				25-Aug-2022	14 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD3	E100	23-Aug-2022	25-Aug-2022				25-Aug-2022	28 days	2 days	✓
Physical Tests : pH by Meter						I				
HDPE	E400		05.4 0000				05.4 0000			
PD3	E108	23-Aug-2022	25-Aug-2022				25-Aug-2022	0.25	1.94	*
								hrs	hrs	EHTR-F
Physical Tests : TSS by Gravimetry										
HDPE	E400	00. 4 0000					07.4			
PD3	E160	23-Aug-2022					27-Aug-2022	7 days	4 days	*
peciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)	E507	00 4 0000	00.0 0000				07.00000			
PD3	E537	23-Aug-2022	02-Sep-2022	180	10	✓	07-Sep-2022	180	5 days	✓
				days	days			days		

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended Rec. HT: ALS recommended hold time (see units).

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Quality Control Sample Type					Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)					•		
Alkalinity Species by Titration	E290	617919	1	15	6.6	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	617925	1	2	50.0	5.0	√
Chloride in Water by IC	E235.Cl	617924	1	9	11.1	5.0	√
Conductivity in Water	E100	617920	1	9	11.1	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	<u> </u>
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	1
Fluoride in Water by IC	E235.F	617923	1	7	14.2	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	617926	1	9	11.1	5.0	<u> </u>
Nitrite in Water by IC (Low Level)	E235.NO2-L	617927	1	9	11.1	5.0	✓
pH by Meter	E108	617918	1	17	5.8	5.0	1
Sulfate in Water by IC	E235.SO4	617928	1	7	14.2	5.0	<u> </u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	1
TSS by Gravimetry	E160	621936	1	20	5.0	5.0	1
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	617919	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	617925	1	2	50.0	5.0	<u>√</u>
Chloride in Water by IC	E235.Cl	617924	1	9	11.1	5.0	
Conductivity in Water	E100	617920	1	9	11.1	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	√
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	√
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	√
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	_
Fluoride in Water by IC	E235.F	617923	1	7	14.2	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	617926	1	9	11.1	5.0	_
Nitrite in Water by IC (Low Level)	E235.NO2-L	617927	1	9	11.1	5.0	√
pH by Meter	E108	617918	1	17	5.8	5.0	<u> </u>
Sulfate in Water by IC	E235.SO4	617928	1	7	14.2	5.0	_
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	1
TSS by Gravimetry	E160	621936	1	20	5.0	5.0	√
Method Blanks (MB)							_
Alkalinity Species by Titration	E290	617919	1	15	6.6	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	617925	1	2	50.0	5.0	<u> </u>
Chloride in Water by IC	E235.Cl	617924	1	9	11.1	5.0	✓
Conductivity in Water	E100	617920	1	9	11.1	5.0	<u>√</u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

Evaluation: × = QC frequency outside specification: ✓ = QC frequency within specification

Matrix: Water	Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.								
Quality Control Sample Type			Co	ount		Frequency (%,)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Method Blanks (MB) - Continued									
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	✓		
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	✓		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	✓		
Fluoride in Water by IC	E235.F	617923	1	7	14.2	5.0	✓		
Nitrate in Water by IC (Low Level)	E235.NO3-L	617926	1	9	11.1	5.0	✓		
Nitrite in Water by IC (Low Level)	E235.NO2-L	617927	1	9	11.1	5.0	✓		
Sulfate in Water by IC	E235.SO4	617928	1	7	14.2	5.0	✓		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	✓		
TSS by Gravimetry	E160	621936	1	20	5.0	5.0	✓		
Matrix Spikes (MS)									
Bromide in Water by IC (Low Level)	E235.Br-L	617925	1	2	50.0	5.0	✓		
Chloride in Water by IC	E235.CI	617924	1	9	11.1	5.0	✓		
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓		
Dissolved Metals in Water by CRC ICPMS	E421	618486	1	13	7.6	5.0	✓		
Dissolved Methylmercury in Water by GCAFS	E537	627800	1	16	6.2	5.0	✓		
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	✓		
Fluoride in Water by IC	E235.F	617923	1	7	14.2	5.0	✓		
Nitrate in Water by IC (Low Level)	E235.NO3-L	617926	1	9	11.1	5.0	✓		
Nitrite in Water by IC (Low Level)	E235.NO2-L	617927	1	9	11.1	5.0	✓		
Sulfate in Water by IC	E235.SO4	617928	1	7	14.2	5.0	✓		
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	✓		

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC (Low Level)	E235.Br-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			'
		1		

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Project : Site C MMP - Pore Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCI, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
lon Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion

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Client : Azimuth Consulting Group Inc.
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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion				
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	Vancouver -			
	Environmental			
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Pore Water

PO :BCH-22-01

C-O-C number : 2022Aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples analysed : 1

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Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 23-Aug-2022 18:55

Date Analysis Commenced : 25-Aug-2022

Issue Date : 21-Sep-2022 16:25

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Erin Sanchez		Vancouver Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia	
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Project : Site C MMP - Pore Water



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 617918)											
FJ2202288-001	PD3	pH		E108	0.10	pH units	8.48	8.49	0.118%	4%		
Physical Tests (QC	Lot: 617919)											
FJ2202288-001	PD3	alkalinity, total (as CaCO3)		E290	1.0	mg/L	296	284	3.93%	20%		
Physical Tests (QC	Lot: 617920)											
FJ2202288-001	PD3	conductivity		E100	2.0	μS/cm	519	517	0.386%	10%		
Physical Tests (QC	Lot: 621936)											
FJ2202291-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR		
Anions and Nutrien	its (QC Lot: 617923)											
FJ2202288-001	PD3	fluoride	16984-48-8	E235.F	0.020	mg/L	0.073	0.069	0.004	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 617924)											
FJ2202288-001	PD3	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 617925)											
FJ2202288-001	PD3	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 617926)											
FJ2202288-001	PD3	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0205	0.0190	0.0015	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 617927)											
FJ2202288-001	PD3	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR		
Anions and Nutrien	its (QC Lot: 617928)											
FJ2202288-001	PD3	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	20.4	20.4	0.235%	20%		
Organic / Inorganic	Carbon (QC Lot: 6226	665)										
FJ2202199-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	51.4	51.5	0.243%	20%		
Organic / Inorganic	Carbon (QC Lot: 6226	566)										
FJ2202199-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	49.3	51.9	5.09%	20%		
Dissolved Metals (QC Lot: 618486)											
FJ2202295-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	34.9	36.0	3.28%	20%		
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	7.69	7.91	2.83%	20%		
Dissolved Metals (QC Lot: 626630)											
FC2201927-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR		
Speciated Metals (-											
FC2201977-001	Anonymous	methylmercury (as MeHg),	22967-92-6	E537	0.000020	μg/L	0.000126	0.000143	12.2%	30%		
		dissolved										

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 617919)					
alkalinity, total (as CaCO3)	E290	1	mg/L	1.3	
Physical Tests (QCLot: 617920)					
conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 621936)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 617923)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 617924)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 617925)					
bromide	24959-67-9 E235.Br-L	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 617926)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 617927)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 617928)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Organic / Inorganic Carbon (QCLot: 622665)					
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 622666)					
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 618486)					
calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 626630)					
mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
Speciated Metals (QCLot: 627800)					
methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	

Page : 5 of 7
Work Order : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report					
			Spike	Recovery (%)	Recovery Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 617918)										
рН		E108		pH units	7 pH units	100	98.0	102		
Physical Tests (QCLot: 617919)										
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	108	85.0	115		
Physical Tests (QCLot: 617920)										
conductivity		E100	1	μS/cm	146.9 μS/cm	97.4	90.0	110		
Physical Tests (QCLot: 621936)										
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	92.2	85.0	115		
Anions and Nutrients (QCLot: 617923)										
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.2	90.0	110		
Anions and Nutrients (QCLot: 617924)										
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	102	90.0	110		
Anions and Nutrients (QCLot: 617925)										
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115		
Anions and Nutrients (QCLot: 617926)										
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110		
Anions and Nutrients (QCLot: 617927)										
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110		
Anions and Nutrients (QCLot: 617928)										
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	105	90.0	110		
Organic / Inorganic Carbon (QCLot: 622665)										
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	99.4	80.0	120		
Organic / Inorganic Carbon (QCLot: 622666)										
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120		
Dissolved Metals (QCLot: 618486)										
calcium, dissolved	7440-70-2		0.05	mg/L	50 mg/L	100	80.0	120		
magnesium, dissolved	7439-95-4		0.005	mg/L	50 mg/L	99.9	80.0	120		
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	107	80.0	120		
Speciated Metals (QCLot: 627800)										
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	89.2	70.0	130		

 Page
 : 6 of 7

 Work Order
 : FJ2202288

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report						
					Spike		Recovery (%)	Recovery Limits (%)			
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier	
Anions and Nutr	ients (QCLot: 617923)										
VA22B9754-001	Anonymous	fluoride	16984-48-8	E235.F	0.975 mg/L	1 mg/L	97.5	75.0	125		
Anions and Nutr	ients (QCLot: 617924)										
VA22B9754-001	Anonymous	chloride	16887-00-6	E235.CI	102 mg/L	100 mg/L	102	75.0	125		
Anions and Nutr	ients (QCLot: 617925)										
VA22B9754-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.497 mg/L	0.5 mg/L	99.4	75.0	125		
Anions and Nutr	ients (QCLot: 617926)										
VA22B9754-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125		
Anions and Nutr	ients (QCLot: 617927)										
VA22B9754-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.479 mg/L	0.5 mg/L	95.9	75.0	125		
Anions and Nutr	ients (QCLot: 617928)										
VA22B9754-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	100 mg/L	ND	75.0	125		
Organic / Inorga	nic Carbon (QCLot: 622	665)									
FJ2202199-002	Anonymous	carbon, dissolved organic [DOC]		E358-L	ND mg/L	5 mg/L	ND	70.0	130		
Organic / Inorga	nic Carbon (QCLot: 622	666)									
FJ2202199-002	Anonymous	carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130		
Dissolved Metals	(QCLot: 618486)										
VA22B9732-001	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130		
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130		
Dissolved Metals	s (QCLot: 626630)										
FC2201927-002	Anonymous	mercury, dissolved	7439-97-6	E509-L	4.56 ng/L	5 ng/L	91.1	70.0	130		
Speciated Metals	(QCLot: 627800)										
FJ2202286-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00214 µg/L	0.0025 μg/L	85.6	60.0	140		

Page : 7 of 7 Work Order : FJ2202288



ALS Environmentat

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number:

COC #: 2022AUG POREWATER

Page

1 of 1

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	www.alsglobal.com																		
Report To	Contact and company		pear on the final report		Report Format / Distribution Select				Select Service Level Below - Please confirm all E&P YATs with your AM - surcharges will apply										
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Street:	2902 West Braodway			Email 1 or Fax	gmann@azimutho	group.ca		Date and Time Required for all E&P TATs:											
City/Province:	Vancouver			Email 2	imcivor@azimuth	group.ca		For tests that can not be performed according to the service level selected, you will be contacted.											
Postal Code:	V6K 2G8			Email 3	kganshorn@ecofi	shresearch.com			Analysis Request										
Invoice To	Same as Report To	✓ YES	□ NO		Invoice Di	stribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below										T T
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	Azimuth Consulting Group	Inc.		Email 1 or Fax	gmann@azimutho	group.ca		 	3				<u> </u>	$\overline{}$		+-			-
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ALS Lab Wor	k Order # (lab use only)			ALS Contact:	Sneha Sansare	Sampler:	Kevin Ganshori	Methyl 0.02 ng/	f Mercury i IR = 0.5 ng	Cond., pH,				<u> </u>	Work C	Order F	Refere	ence PRR	Ž
ALS Sample #	Sampl	e Identification	and/or Coordinates		Date	Time	T	PS (olved N I. LOR	D, Sf	ness				1 02		,	-00	
(lab use only)	(This	description will a	appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	Dissolve GCAFS	Dissol Level.	Anions,	Hardness	DOC	70C	ONBAL		11年 日止		· = 1 111	
	PRT						Water	R	R	R	R	R	R	P				{ ·	6
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	PD4	Call Ou					Water	R	R	R	R	R				1 /#/ EV EV	W 17' I		<u> </u>
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	PB3-FB?	# of Cod	olers Air		2011100	13700	Water					R	R	R					6
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	P 05-B -		•				Water	R	R	R	R	R	R	R					6
							Water	R	R	R	R	R	R	R					6
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Drinking	Water (DW) Samples ¹ (cli	ent use)	Special Instructions /	Specify Criteria to a	add on report by clic tronic COC only)	king on the drop	-down list below					E CO			S RECEI				
Are samples take	n from a Regulated DW Syste	em?	Pioses refe					Frozen							bservatio		Yes	☐ No	
YES VNO				paramet	F100-004 (MMP Po ers/detection limit	re water Quali s	ty) for	Ice Pac			Ice C	ubes	Ш	Custo	dy seal i	intact	Yes	☐ No	
Are samples for human drinking water use?						*		Cooling Initiated								TÜDEOAD			
☐ YES ☑ NO					ŀ				INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPER								EK LEMPEK	TURES C	
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Environmental

Chain of Custody (COC) / Analytical **Request Form**

Canada Toll Free: 1 800 668 9878

COC Number:

COC #: 2022AUG **POREWATER**

Affix ALS barcode label here

	www.alsglobal.com	<u>n</u>	, , , , , , , , , , , , , , , , , , ,					<u> </u>		180		3 T							
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Street:	2902 West Braodway			Email 1 or Fax	Email 1 or Fax gmann@azimuthgroup.ca				Date and Time Required for all E&P TATs:							in the state of th			
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(lab use only)		his description will	appear on the report)	· .	(dd-mmm-yy)	(hh:mm)	Sample Type	Dissolve GCAFS	Dissol Level,	Anions,	Hardness	200	100	S					
	PRT						Water	R	R	R	R	R	R	R			. W.	∤ 	6
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				(elec	tronic COC only)			Frozer						SIF	Observat	ions	Yes	N	
	en from a Regulated DW	System?	Please refer		F100-004 (MMP P		ity) for	Ice Pa	cks		Ice (Cubes		Cust	tody seal	intact	Yes	□ N	• 📮
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SHIPMENT RELEASE (client use) Released by: Date: Time:			Page 15	INITIAL SHIPME	NT RECEPTION	N (lab use only)													
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REFER TO PACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION																OCTOBER 2015 FRON			



CERTIFICATE OF ANALYSIS

Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 4

 No. of samples analysed
 : 4

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 27-Aug-2022

Issue Date : 26-Sep-2022 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Jennifer Nguyen	Lab Analyst	Metals, Burnaby, British Columbia	
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia	
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, Burnaby, British Columbia	

Page : 2 of 4
Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
%	percent
μg/L	micrograms per litre
μS/cm	Microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	Description
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within
	hold time.
RRV	Reported result verified by repeat analysis.

>: greater than.

Page : 3 of 4
Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Results

Sub-Matrix: Water			Cli	ient sample ID	PD1-A	PD3-FB	PD5-A	PD1-B	
(Matrix: Water)									
			Client samp	ling date / time	24-Aug-2022 16:15	24-Aug-2022 16:15	24-Aug-2022 09:55	24-Aug-2022 16:15	
Analyte	CAS Number	Method	LOR	Unit	FJ2202312-001	FJ2202312-002	FJ2202312-003	FJ2202312-004	
					Result	Result	Result	Result	
Physical Tests		5000	1.0		207		200	000	
alkalinity, total (as CaCO3)		E290	1.0	mg/L	287	<1.0	329	292	
conductivity		E100	2.0	μS/cm	613	<2.0	603	633	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	352	<0.60	345	360	
pH		E108	0.10	pH units	8.24	5.08	8.33	8.32	
solids, total suspended [TSS]		E160	3.0	mg/L	6.1	<3.0	<3.0	8.7	
Anions and Nutrients									
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	
chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0.80	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.086	<0.020	0.062	0.082	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0197	0.0095 HTD, RRV	0.0191	0.0189	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	73.8	<0.30	23.9	70.7	
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	12.5	<0.50	16.0	16.0	
carbon, total organic [TOC]		E355-L	0.50	mg/L	12.3	<0.50	18.6	15.2	
Ion Balance									
anion sum		EC101	0.10	meq/L	7.28	<0.10	7.10	7.31	
cation sum		EC101	0.10	meq/L	7.21	<0.10	7.31	7.38	
ion balance (APHA)		EC101	0.010	%	0.483	<0.010	1.46	0.476	
Dissolved Metals									
mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	5.32	<0.50	8.27	7.16	
calcium, dissolved	7440-70-2	E421	0.050	mg/L	101	<0.050	98.1	104	
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	24.2	<0.0050	24.3	24.3	
dissolved MeHg filtration location		EP537	-	-	Field	Field	Field	Field	
dissolved mercury filtration location		EP509-L	-	-	Field	Field	Field	Field	
dissolved metals filtration location		EP421	-	-	Laboratory	Laboratory	Laboratory	Laboratory	
Speciated Metals									
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000165	<0.000020	0.000545	0.000342	

Please refer to the General Comments section for an explanation of any qualifiers detected.

Page : 4 of 4 Work Order : FJ2202312





QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone

Project Site C MMP - Pore Water

:4

PO BCH-22-01

C-O-C number : 2022aug Porewater

Sampler : KG Site Quote number : Q75925 No. of samples received : 4 No. of samples analysed

Page : 1 of 14

Laboratory : Fort St. John - Environmental

Account Manager · Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45 Issue Date : 26-Sep-2022 11:43

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



Page : 3 of 14 Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Matrix: Water Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date Holding Times Eval Preparation Actual Rec Actual Date Rec Anions and Nutrients : Bromide in Water by IC (Low Level) HDPE E235.Br-L 24-Aug-2022 1 PD1-A 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients : Bromide in Water by IC (Low Level) HDPE PD1-B E235.Br-L 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days ✓ ----Anions and Nutrients : Bromide in Water by IC (Low Level) **HDPE** PD3-FB E235.Br-L 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients: Bromide in Water by IC (Low Level) HDPE PD5-A E235.Br-L 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients : Chloride in Water by IC HDPE PD1-A E235.CI 24-Aug-2022 27-Aug-2022 27-Aug-2022 28 days 3 days Anions and Nutrients : Chloride in Water by IC **HDPE** E235.CI 27-Aug-2022 24-Aug-2022 PD1-B 27-Aug-2022 28 days 3 days --------Anions and Nutrients : Chloride in Water by IC HDPE E235.CI 27-Aug-2022 ✓ PD3-FB 24-Aug-2022 27-Aug-2022 28 days 3 days

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Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

Evaluation: × = Holding time exceedance;	/ :	= Within Holding Time
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Matrix: Water					E۱	/aluation: 🗴 =	Holding time exceed	edance ; 🔻	= Within	Holding III
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	7 Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PD5-A	E235.CI	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD1-A	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD1-B	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD3-FB	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE PD5-A	E235.F	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD1-A	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	✓	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD1-B	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	✓	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD3-FB	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	~	27-Aug-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PD5-A	E235.NO3-L	24-Aug-2022	27-Aug-2022	3 days	3 days	1	27-Aug-2022	3 days	0 days	✓

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: Azimuth Consulting Group Inc. : Site C MMP - Pore Water Client Project



Matrix: Water					Ev	⁄aluation: ≭ =	Holding time exce	edance ; •	= Within	Holding Tir
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holdin Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PD1-A	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	√
ועוא	L200.1102-L	247 lug-2022	27-7 tug-2022				27-7 tag-2022	o days	o days	·
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	5005 NOO 1									,
PD1-B	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										,
PD3-FB	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE	E005 NIO0 I	04.4 0000	07.4				07.4			,
PD5-A	E235.NO2-L	24-Aug-2022	27-Aug-2022				27-Aug-2022	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE	F005 004	24 4 2022	07 A 0000				07.40000	00.1	0.1	,
PD1-A	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE	F005 004	04.40000	07 A 0000				07.40000	00.1	0.1	,
PD1-B	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE	F005 004	04.40000	07.4					00.1		
PD3-FB	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PD5-A	E235.SO4	24-Aug-2022	27-Aug-2022				27-Aug-2022	28 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Lev	rel, LOR = 0.5 ppt)									
Pre-cleaned amber glass - dissolved (lab preserved)										
PD1-A	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓

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: Azimuth Consulting Group Inc. : Site C MMP - Pore Water Client Project



Matrix: Water					E	valuation: × =	Holding time exce	edance : v	∕ – Within	Holding Tir
Analyte Group	Method	Sampling Date	Fxt	raction / Pro		raiualion. * -	Holding time exce	Analys		Holding Till
Container / Client Sample ID(s)	Metriod	Samping Sate		'					Eval	
Container, Charles (2)			Preparation Date	Rec	Actual	Lvai	Analysis Date	Rec	Actual	Lvai
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	pt)									
Pre-cleaned amber glass - dissolved (lab preserved) PD1-B	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 p)	pt)									
Pre-cleaned amber glass - dissolved (lab preserved) PD3-FB	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 pp	pt)									
Pre-cleaned amber glass - dissolved (lab preserved) PD5-A	E509-L	24-Aug-2022	31-Aug-2022				31-Aug-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD1-A	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS								days		
HDPE - dissolved (lab preserved) PD1-B	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS								,		
HDPE - dissolved (lab preserved) PD3-FB	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	*
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) PD5-A	E421	24-Aug-2022	30-Aug-2022				30-Aug-2022	180 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)								1	
Amber glass dissolved (sulfuric acid) PD1-A	E358-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	l)									
Amber glass dissolved (sulfuric acid) PD1-B	E358-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓

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 Work Order
 : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

Evaluation: x = Holding time exceedance ; ✓	= Within Holding Time
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viaurix: water						araaraara.	noiding time excee	oudinoo ,	***************************************	
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)									
Amber glass dissolved (sulfuric acid)										
PD3-FB	E358-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)									
Amber glass dissolved (sulfuric acid)										
PD5-A	E358-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
PD1-A	E355-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
PD1-B	E355-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
PD3-FB	E355-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Level)									
Amber glass total (sulfuric acid)										
PD5-A	E355-L	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD1-A	E290	24-Aug-2022	29-Aug-2022				29-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration									,	
HDPE										
PD1-B	E290	24-Aug-2022	29-Aug-2022				29-Aug-2022	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD3-FB	E290	24-Aug-2022	29-Aug-2022				29-Aug-2022	14 days	5 days	✓
	The second secon	1		T. Control of the Con	1		I	1	1	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

Matrix: Water					LV	raiuation. * =	Holding time exce	euance, •	_ vviti iii	Holding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Alkalinity Species by Titration										
HDPE										
PD5-A	E290	24-Aug-2022	29-Aug-2022				29-Aug-2022	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE										
PD1-A	E100	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
			_						_	
Physical Tests : Conductivity in Water										
HDPE										
PD1-B	E100	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 davs	✓
		3 '	3						,	
Physical Tests : Conductivity in Water										
HDPE							1			
PD3-FB	E100	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
1 501 5	2.00	217tag 2022	20 / lug 2022				20 / lag 2022	20 days	o dayo	
District Control of the Nation										
Physical Tests : Conductivity in Water HDPE							I			
PD5-A	E100	24-Aug-2022	29-Aug-2022				29-Aug-2022	28 days	5 days	✓
PD5-A	L100	24-Aug-2022	29-Aug-2022				29-Aug-2022	20 days	Juays	,
Physical Tests : pH by Meter									I	I
HDPE PD1-A	E108	24-Aug-2022	29-Aug-2022				29-Aug-2022	0.05	0.00	*
PDI-A	E100	24-Aug-2022	29-Aug-2022				29-Aug-2022	0.25 hrs	0.26	EHTR-FM
								IIIS	hrs	EU I K-LINI
Physical Tests : pH by Meter									ı	
HDPE	E400	04 4 0000	00 4 0000				00.40000			
PD1-B	E108	24-Aug-2022	29-Aug-2022				29-Aug-2022	0.25	0.26	-
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PD3-FB	E108	24-Aug-2022	29-Aug-2022				29-Aug-2022	0.25	0.26	*
								hrs	hrs	EHTR-FM
Physical Tests : pH by Meter										
HDPE										
PD5-A	E108	24-Aug-2022	29-Aug-2022				29-Aug-2022	0.25	0.26	3 0
								hrs	hrs	EHTR-FM

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Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

natrix: water						raiuation. * -	Holding time excee	euance,	– vvitriiri	nolaling
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual		-	Rec	Actual	
hysical Tests : TSS by Gravimetry										
HDPE										
PD1-A	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓
hysical Tests : TSS by Gravimetry										
HDPE										
PD1-B	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PD3-FB	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓
hysical Tests : TSS by Gravimetry										
HDPE										
PD5-A	E160	24-Aug-2022					30-Aug-2022	7 days	6 days	✓
peciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD1-A	E537	24-Aug-2022	02-Sep-2022	180 days	9 days	✓	07-Sep-2022	180 days	5 days	✓
peciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD1-B	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
peciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD3-FB	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓
				days				days		
peciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PD5-A	E537	24-Aug-2022	02-Sep-2022	180	9 days	✓	07-Sep-2022	180	5 days	✓
				days				days		

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended Rec. HT: ALS recommended hold time (see units).

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water		Evaluat	ion: × = QC frequ		ecification; ✓ = 0		
Quality Control Sample Type				ount		Frequency (%	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	623997	1	7	14.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	621463	1	4	25.0	5.0	✓
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	✓
Conductivity in Water	E100	623998	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	627800	2	34	5.8	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓
pH by Meter	E108	623996	1	18	5.5	5.0	✓
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	✓
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	623997	1	7	14.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	621463	1	4	25.0	5.0	_
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	1
Conductivity in Water	E100	623998	1	4	25.0	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	1
Dissolved Methylmercury in Water by GCAFS	E537	627800	2	34	5.8	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	1
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	1
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	1
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	1
pH by Meter	E108	623996	1	18	5.5	5.0	1
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	<u>√</u>
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	1
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	1
Method Blanks (MB)							-
Alkalinity Species by Titration	E290	623997	1	7	14.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	621463	1	4	25.0	5.0	√
Chloride in Water by IC	E235.Cl	621462	1	12	8.3	5.0	√
Conductivity in Water	E100	623998	1	4	25.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	√

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

Evaluation: × = QC frequency outside specification: ✓ = QC frequency within specification.

Matrix: Water Evaluation: × = QC frequency outside specification; ✓ = QC frequency will										
Quality Control Sample Type		·	Co	ount		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Method Blanks (MB) - Continued										
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓			
Dissolved Methylmercury in Water by GCAFS	E537	627800	2	34	5.8	5.0	✓			
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	✓			
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓			
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓			
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓			
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓			
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	✓			
TSS by Gravimetry	E160	625937	1	20	5.0	5.0	✓			
Matrix Spikes (MS)										
Bromide in Water by IC (Low Level)	E235.Br-L	621463	1	4	25.0	5.0	✓			
Chloride in Water by IC	E235.CI	621462	1	12	8.3	5.0	✓			
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	626630	1	20	5.0	5.0	✓			
Dissolved Metals in Water by CRC ICPMS	E421	622631	1	10	10.0	5.0	✓			
Dissolved Methylmercury in Water by GCAFS	E537	627800	2	34	5.8	5.0	✓			
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	622665	1	9	11.1	5.0	✓			
Fluoride in Water by IC	E235.F	621461	1	12	8.3	5.0	✓			
Nitrate in Water by IC (Low Level)	E235.NO3-L	621464	1	16	6.2	5.0	✓			
Nitrite in Water by IC (Low Level)	E235.NO2-L	621465	1	12	8.3	5.0	✓			
Sulfate in Water by IC	E235.SO4	621466	1	12	8.3	5.0	✓			
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	622666	1	9	11.1	5.0	✓			
					-	-				

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC (Low Level)	E235.Br-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			·

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCI, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 Vancouver - Environmental	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion				
	Vancouver -			
	Environmental			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	V			
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	Vancouver -			
	Environmental			
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 4

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 27-Aug-2022

Issue Date : 26-Sep-2022 11:42

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

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Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples analysed

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Jennifer Nguyen	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Vancouver Inorganics, Burnaby, British Columbia

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Client : Azimuth Consulting Group Inc.
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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

ub-Matrix: Water							Labora	ntory Duplicate (D	(UP) Report		
aboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifie
hysical Tests (QC	<u> </u>										
J2202312-003	PD5-A	pH		E108	0.10	pH units	8.33	8.34	0.0720%	4%	
Physical Tests (QC	Lot: 623997)										
FJ2202312-003	PD5-A	alkalinity, total (as CaCO3)		E290	1.0	mg/L	329	333	1.27%	20%	
Physical Tests (QC	Lot: 623998)										
J2202312-003	PD5-A	conductivity		E100	2.0	μS/cm	603	603	0.00%	10%	
Physical Tests (QC	Lot: 625937)										
J2202315-002	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	9.7	8.5	1.2	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621461)										
-J2202312-001	PD1-A	fluoride	16984-48-8	E235.F	0.020	mg/L	0.086	0.083	0.002	Diff <2x LOR	
nions and Nutrien	ts (QC Lot: 621462)										
FJ2202312-001	PD1-A	chloride	16887-00-6	E235.CI	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621463)										
-J2202312-001	PD1-A	bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621464)										
FJ2202312-001	PD1-A	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0197	0.0200	0.0002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621465)										
FJ2202312-001	PD1-A	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 621466)										
-J2202312-001	PD1-A	sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	73.8	73.5	0.443%	20%	
Organic / Inorganic	Carbon (QC Lot: 6226	665)									
J2202199-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	51.4	51.5	0.243%	20%	
Organic / Inorganic	Carbon (QC Lot: 6226	566)									
J2202199-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	49.3	51.9	5.09%	20%	
Dissolved Metals (OC Lot: 622631)										
/A22B9855-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	38.8	39.7	2.40%	20%	
		magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	7.77	7.50	3.59%	20%	
Dissolved Metals (OC Lat: 626630)										
C2201927-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	<0.50	<0.50	0	Diff <2x LOR	
Speciated Metals (· ·	· · · · · · · · · · · · · · · · · · ·									
C2201977-001	Anonymous	methylmercury (as MeHg),	22967-92-6	E537	0.000020	μg/L	0.000126	0.000143	12.2%	30%	
52251077 001	,,	dissolved	22007 02-0		0.000020	P9′-	0.000120	0.000140	12.270	0070	_

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Sub-Matrix: Water					Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Speciated Metals (C	Speciated Metals (QC Lot: 654341) - continued											
FC2202096-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000072	0.000055	0.000017	Diff <2x LOR		

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 623997)				Result	4
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
			9		
Physical Tests (QCLot: 623998)	E100	1	μS/cm	<1.0	
,	2100	·	регон	-1.0	
Physical Tests (QCLot: 625937)	E160	2		10.0	
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 621461)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 621462)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 621463)					
bromide	24959-67-9 E235.Br-L	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 621464)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 621465)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 621466)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Organic / Inorganic Carbon (QCLot: 622665	5)				
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 622666	3)				
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 622631)					
calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 626630)					
mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
Speciated Metals (QCLot: 627800)					
methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
Speciated Metals (QCLot: 654341)					
methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	
			<u> </u>		

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water	Laboratory Control Sample (LCS) Report									
					Spike	Recovery (%)	Recovery	Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
Physical Tests (QCLot: 623996)										
pH		E108		pH units	7 pH units	100	98.0	102		
Physical Tests (QCLot: 623997)										
alkalinity, total (as CaCO3)		E290	1	mg/L	500 mg/L	112	85.0	115		
Physical Tests (QCLot: 623998)										
conductivity		E100	1	μS/cm	146.9 μS/cm	101	90.0	110		
Physical Tests (QCLot: 625937)									'	
solids, total suspended [TSS]		E160	3	mg/L	150 mg/L	94.2	85.0	115		
Anions and Nutrients (QCLot: 621461)										
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.6	90.0	110		
Anions and Nutrients (QCLot: 621462)									•	
chloride	16887-00-6	E235.CI	0.5	mg/L	100 mg/L	100	90.0	110		
Anions and Nutrients (QCLot: 621463)									'	
bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	97.3	85.0	115		
Anions and Nutrients (QCLot: 621464)										
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110		
Anions and Nutrients (QCLot: 621465)										
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110		
Anions and Nutrients (QCLot: 621466)										
sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110		
Organic / Inorganic Carbon (QCLot: 622665)										
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	99.4	80.0	120		
Organic / Inorganic Carbon (QCLot: 622666)										
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	105	80.0	120		
Dissolved Metals (QCLot: 622631)										
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.7	80.0	120		
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.8	80.0	120		
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	107	80.0	120		
Speciated Metals (QCLot: 627800)										
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	89.2	70.0	130		
Speciated Metals (QCLot: 654341)										
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	76.9	70.0	130		

 Page
 : 8 of 10

 Work Order
 : FJ2202312



Sub-Matrix: Water	Laboratory Control Sample (LCS) Report								
						Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method		Method LOR		Concentration	LCS	Low	High	Qualifier

Page : 9 of 10 Work Order : FJ2202312

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

	natou campio (ci cimiai co	implee) may be eabjeet to blae. HE	,											
Sub-Matrix: Water						Matrix Spike (MS) Report								
		Sp	ike	Recovery (%)	Recovery Limits (%)									
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier				
Anions and Nutr	ients (QCLot: 621461)													
FJ2202312-002	PD3-FB	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125					
Anions and Nutr	ients (QCLot: 621462)													
FJ2202312-002	PD3-FB	chloride	16887-00-6	E235.CI	104 mg/L	100 mg/L	104	75.0	125					
Anions and Nutr	ients (QCLot: 621463)													
FJ2202312-002	PD3-FB	bromide	24959-67-9	E235.Br-L	0.505 mg/L	0.5 mg/L	101	75.0	125					
Anions and Nutr	ients (QCLot: 621464)													
FJ2202312-002	PD3-FB	nitrate (as N)	14797-55-8	E235.NO3-L	2.66 mg/L	2.5 mg/L	106	75.0	125					
Anions and Nutr	ients (QCLot: 621465)													
FJ2202312-002	PD3-FB	nitrite (as N)	14797-65-0	E235.NO2-L	0.507 mg/L	0.5 mg/L	101	75.0	125					
Anions and Nutr	ients (QCLot: 621466)													
FJ2202312-002	PD3-FB	sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125					
Organic / Inorga	nic Carbon (QCLot: 62	2665)												
FJ2202199-002	Anonymous	carbon, dissolved organic [DOC]		E358-L	ND mg/L	5 mg/L	ND	70.0	130					
Organic / Inorga	nic Carbon (QCLot: 62	2666)												
FJ2202199-002	Anonymous	carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130					
Dissolved Metals	(QCLot: 622631)													
VA22B9855-002	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	8 mg/L	ND	70.0	130					
		magnesium, dissolved	7439-95-4	E421	ND mg/L	2 mg/L	ND	70.0	130					
Dissolved Metals	(QCLot: 626630)													
FC2201927-002	Anonymous	mercury, dissolved	7439-97-6	E509-L	4.56 ng/L	5 ng/L	91.1	70.0	130					
Speciated Metals	(QCLot: 627800)													
FJ2202286-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00214 μg/L	0.0025 μg/L	85.6	60.0	140					
Speciated Metals	(QCLot: 654341)													
FC2202140-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00177 μg/L	0.0025 μg/L	70.7	60.0	140					

Page : 10 of 10 Work Order : FJ2202312



FJAE Shipping & Receiving

Call Out

__Expedite __Priority

of Coolers 💢 Air # of Carboys __ Ground

f Custody (COC) / Analytical Request Form

ada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number:

COC #: 2022AUG POREWATER

Page 1 of

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	www.alsglobal.com						ghgar in Ir da i i i i ghgar in Ir da i i i i ghgar i i i i i i i i i koma i a i i i i i i i i												
Report To Contact and company name below will appear on the final report				Report Format / Distribution				Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply											
Company:	Azimuth Consulting Group Inc.	Select	Select Report Format: PDF DEXCEL DEDD (DIGITAL)				Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply									ges apply			
Contact:	lan McIvor	Quality	Quality Control (QC) Report with Report ☑ YES ☐ NO				.γ Jays)	4	day [P	4]			₹	1 B	usine	ss day [E1]		
Phone:	604-730-1220	☑ Com	pare Results	to Criteria on Report - p	provide details belov	v if box checked	PRIORITY (Business Days)	3 (day [P	3]			EMERGENCY	Sa	me Da	ay, Wee	kend c	or	_
	Company address below will appear on the final report	Select	Distribution	on: 🗹 EMAIL	☐ MAIL ☐ I	FAX .	PF (Bush	2	day [P	2]			EME	S	atuto	ry holid	ay [E0]	j	
Street:	2902 West Braodway	Email	1 or Fax	gmann@azimuthgi	roup.ca			Date an	d Time	Require	d for all	E&P T	ATs:			Com	asara ya	y hose	r. *
City/Province:	Vancouver	Email :	2	imcivor@azimuthg	roup.ca		For tests that can not be performed according to the service level selected, you will be contacted.												
Postal Code:	V6K 2G8	Email 3	3	kganshorn@ecofis	hresearch.com		Analysis Request												
Invoice To	Same as Report To ☑ YES ☐ NO			Invoice Dis	tribution			Indica	te Filter	ed (F), i	Preserve	ed (P) c	r Filter	red and F	reserv	ed (F/P) b	elow		
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	Azimuth Consulting Group Inc.	Email 1	1 or Fax	gmann@azimuthgr	roup.ca	·		λVC											-
Contact:	Gary Mann	Email 2	2	imcivor@azimuthg	roup.ca			S (L)					,	1					φ
	Project Information		Qil	and Gas Required	l Fields (client (use)	by .	AF.				1	, 1		1	-		, 1	iner
ALS Account #	/ Quote #: Q75925	AFE/Cos	st Center:		PO#		in Water by	ઇ	TSS				, 1	i				. 1	nta
Job #:	Site C MMP - Pore Water	Major/Mi	nor Code:		Routing Code:		Ϊ	Water by CVAFS (Low)	Alk,				,		-				Number of Containers
PO / AFE:	BCH-22-01	Requis	sitioner:				cury	. ∖aa	otal.				ا با	1 1	1				io.
LSD:		Locatio	on:				mer []	ng/l	pH, T				5	1					dell
ALS Lab Wo	rk Order # (lab use only)	ALS C	ontact:	Sneha Sansare	Sampler:	Kevin Ganshorn	d Methyl (0.02 ng	/ed Mercui LOR = 0.5	Cond., pi	ø			IONBALANCE-BC-CL						Ž .
ALS Sample #	Sample Identification and/or Coordinates			Date	Time		olve FFS	olve L L		Hardness			BAL	1				, I	
(Jab.use only)	(This descript			(dd-mmm-yy)	(hh:mm)	Sample Type	Dissolved GCAFS (0	Diss	Anions,	Harc	DOC	тос	NO.			1			
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	PR2:34	ું કું છે				Water			<u> </u>		- R	R	-R-			THE CONTRACTOR		manage and seconds	enempera 6
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	PD5-A	ာ် ဋိ		24AU,22	09:55	Water	R	R	R	R	R	R	R	\vdash	+				6
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Drinking	g Water (DW) Samples¹ (client use			tronic COC only)	king on the glop	-down list below	Frozen	man kepingan (1)	2012	П		M. P. C. CONTROL P. C.	KILLOCK GLOSON	Observa	eran and a com-	Yes	Charlestante	No	
Are samples tak	en from a Regulated DW System?		22-ECOI	100-004 (MMP Po	re Water Quali	lv) for	Ice Pac			Ice C	ubes	П		ody sea				No	
	ES 🗹 NO		\$22,000 miles (\$1,000 miles (\$	ers/detection limits	Control (Control of the State of the Control of the		Cooling	Initiat				_		,	,				_
Are samples for	human drinking water use?		77011177709W-99848	makes discharge and an angelog of the Child	a servicina, anti-tant	.nenenononononokunoffokununung80997977				LERTE	MPERA	TURES	°C		F)	NAL COC	LERTE	MPERA	TURES °C
□ Y	es 🗹 no						7.	0										4	-
	SHIPMENT RELEASE (client use)		ACCOUNTS OF THE PROPERTY AND ADDRESS OF THE PA	INITIAL SHIPMEN				r. Silvery in		CONTROL CONTROL	nst Fil	VAL S	HIPM	ENTR	CEP	TION (la	b use r	only)	
Released by	Date: 14, 2022 Time:	Recei	ved by:	RICH	Date: 용, 길 (-,20	; Time	15	Rece	ived b	y:				Date:				Time:
REFERATO BACK	PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION			WHIT	E - LABORATOR	RY COPY YELL		LIENT (COPY										OCTOBER 2015 FRONT

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202328 Page : 1 of 4

Vancouver BC Canada V6K 2G8

Amendment : 1

Address

Client Laboratory : Azimuth Consulting Group Inc. : ALS Environmental - Fort St. John

: Ian McIvor **Account Manager** : Brent Mack Contact

> Address : # 218 - 2902 West Broadway : 11007 Alaska Road

> > Fort St. John BC Canada V1J 6P3

Telephone Telephone : 778-370-3279 **Project** : Site C MMP - Pore Water Date Samples Received : 26-Aug-2022 07:25 PO

: BCH-22-01 **Date Analysis Commenced** : 30-Aug-2022

C-O-C number : 2022Aug Porewater Issue Date : 26-Sep-2023 15:50

Sampler : KG Site ----: Q75925 Quote number No. of samples received : 1 No. of samples analysed : 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Inorganics, Burnaby, British Columbia

Page : 2 of 4

Work Order : FJ2202328 Amendment 1
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
%	percent
μg/L	micrograms per litre
μS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Accreditation

Accreditation	Description	Laboratory	Address					
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC					

Applicable accreditations are indicated in the Method/Lab column as superscripts.

>: greater than.

Page : 3 of 4

Work Order : FJ2202328 Amendment 1
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Results

Sub-Matrix: Water				Cli	ent sample ID	PR3	 	
(Matrix: Water)								
				Client samp	ling date / time	25-Aug-2022 16:20	 	
Analyte	CAS Number	Method/La	b	LOR	Unit	FJ2202328-001	 	
						Result	 	
Physical Tests								
Alkalinity, total (as CaCO3)		E290/VA	Α	1.0	mg/L	206	 	
Conductivity		E100/VA	Α	2.0	μS/cm	401	 	
Hardness (as CaCO3), dissolved		EC100/VA		0.60	mg/L	222	 	
pH		E108/VA	Α	0.10	pH units	8.31	 	
Solids, total suspended [TSS]		E160/VA	Α	3.0	mg/L	10.1	 	
Anions and Nutrients								
Bromide	24959-67-9	E235.Br-L/VA	Α	0.050	mg/L	<0.050	 	
Chloride	16887-00-6	E235.CI/VA	Α	0.50	mg/L	0.78	 	
Fluoride	16984-48-8	E235.F/VA	Α	0.020	mg/L	0.156	 	
Nitrate (as N)	14797-55-8	E235.NO3-L/V	Α	0.0050	mg/L	0.0157	 	
Nitrite (as N)	14797-65-0	A E235.NO2-L/V	Α	0.0010	mg/L	<0.0010	 	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	Α	0.30	mg/L	28.5	 	
Organic / Inorganic Carbon								
Carbon, dissolved organic [DOC]		E358-L/VA	Α	0.50	mg/L	11.1	 	
Carbon, total organic [TOC]		E355-L/VA	Α	0.50	mg/L	10.8	 	
Ion Balance								
Anion sum		EC101/VA		0.10	meq/L	4.74	 	
Cation sum		EC101/VA		0.10	meq/L	4.71	 	
Ion balance (APHA)		EC101/VA		0.010	%	0.317	 	
Dissolved Metals								
Mercury, dissolved	7439-97-6	E509-L/VA	Α	0.50	ng/L	8.17	 	
Calcium, dissolved	7440-70-2	E421/VA	Α	0.050	mg/L	65.7	 	
Magnesium, dissolved	7439-95-4	E421/VA	Α	0.0050	mg/L	14.0	 	
Dissolved MeHg filtration location		EP537/VA		-	-	Field	 	
Dissolved mercury filtration location		EP509-L/VA		-	-	Field	 	
Dissolved metals filtration location		EP421/VA		-	-	Laboratory	 	
Speciated Metals Methylmercury (as MeHg), dissolved	22967-92-6	E537/VA	A	0.000020	μg/L	0.000692	 	

Page : 4 of 4

Work Order : FJ2202328 Amendment 1
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202328** Page : 1 of 9

Amendment : 1

Client : Azimuth Consulting Group Inc. : ALS Environmental - Fort St. John

Contact : lan McIvor Account Manager : Brent Mack

Address :# 218 - 2902 West Broadway Address :11007 Alaska Road

Vancouver BC Canada V6K 2G8 Fort St. John, British Columbia Canada V1J 6P3

Telephone :____ Telephone : 778-370-3279

 Project
 : Site C MMP - Pore Water
 Date Samples Received
 : 26-Aug-2022 07:25

 PO
 : BCH-22-01
 Issue Date
 : 26-Sep-2023 15:50

C-O-C number : 2022Aug Porewater

Sampler : KG
Site :--Quote number : Q75925
No. of samples received :1
No. of samples analysed :1

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

<u>No</u> Quality Control Sample Frequency Outliers occur.

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Work Order : FJ2202328 Amendment 1
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Analyte Group Container / Client Sample ID(s) Method Sampling Date Extraction / Preparation Preparation Date Extraction / Preparation Preparation Date Eval Analysis Date	Holdin Rec	sis g Times	
Date Rec Actual		g Times	
2010	Rec	<u> </u>	Eval
		Actual	
Anions and Nutrients : Bromide in Water by IC (Low Level)			
HDPE			
PR3 E235.Br-L 25-Aug-2022 30-Aug-2022 28 5 days ✓ 30-Aug-2022	28 days	5 days	✓
days			
Anions and Nutrients : Chloride in Water by IC			
HDPE			
PR3 E235.Cl 25-Aug-2022 30-Aug-2022 28 5 days ✓ 30-Aug-2022	28 days	5 days	✓
days			
Anions and Nutrients : Fluoride in Water by IC			
HDPE			
PR3 E235.F 25-Aug-2022 30-Aug-2022 28 5 days ✓ 30-Aug-2022	28 days	5 days	✓
days			
Anions and Nutrients : Nitrate in Water by IC (Low Level)			
HDPE			
PR3 E235.NO3-L 25-Aug-2022 30-Aug-2022 3 days 4 days 30-Aug-2022	3 days	4 days	x
EHT			EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)			
HDPE			
PR3 E235.NO2-L 25-Aug-2022 30-Aug-2022 3 days 4 days 30-Aug-2022	3 days	4 days	30
EHT			EHT
Anions and Nutrients : Sulfate in Water by IC			
HDPE			
PR3 E235.SO4 25-Aug-2022 30-Aug-2022 28 5 days ✓ 30-Aug-2022	28 days	5 days	✓
days			
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)			
Pre-cleaned amber glass - dissolved (lab preserved)			
PR3 E509-L 25-Aug-2022 02-Sep-2022 28 8 days ✓ 02-Sep-2022	28 days	8 days	✓
days			

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Work Order: FJ2202328 Amendment 1
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Pore Water



Matrix: Water Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

Matrix. Water						valuation. • -	noiding time exce	suarioc , .	- vvicinii	Tholaing Time
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PR3	E421	25-Aug-2022	30-Aug-2022	180	5 days	✓	30-Aug-2022	180	5 days	✓
				days				days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Leve	el)									
Amber glass dissolved (sulfuric acid)										
PR3	E358-L	25-Aug-2022	01-Sep-2022	28	7 days	1	01-Sep-2022	28 days	7 days	✓
			·	days			· ·			
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustic	on (Low Lovel)			,						
Amber glass total (sulfuric acid)	Low Level)									
PR3	E355-L	25-Aug-2022	01-Sep-2022	28	7 days	1	01-Sep-2022	28 days	7 days	✓
110	2000 2	20 / ldg 2022	01 COP 2022	days	, dayo		0 1 GGP 2022	20 dayo	radyo	·
				uays						
Physical Tests : Alkalinity Species by Titration				I		I				
HDPE	E290	05 4 0000	00 4 0000		5 1	✓	00 4 0000	44.1	5 J	√
PR3	E290	25-Aug-2022	30-Aug-2022	14	5 days	•	30-Aug-2022	14 days	5 days	Y
				days						
Physical Tests : Conductivity in Water										
HDPE										
PR3	E100	25-Aug-2022	30-Aug-2022	28	5 days	✓	30-Aug-2022	28 days	5 days	✓
				days						
Physical Tests : pH by Meter										
HDPE										
PR3	E108	25-Aug-2022	30-Aug-2022	0.25	109 hrs	*	30-Aug-2022	0.25	110 hrs	*
				hrs		EHTR-FM		hrs		EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE										
PR3	E160	25-Aug-2022					01-Sep-2022	7 days	7 days	✓
							· ·			
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR3	E537	25-Aug-2022	02-Sep-2022	180	8 days	✓	07-Sep-2022	180	5 days	√
110			02 00p 2022	days	Jaayo	·	0, 00p 2022	days	Jaayo	,
				uays				uays		

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

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Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Pore Water



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Quality Control Sample Type			С	ount		Frequency (%))
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	624246	1	19	5.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	624252	1	15	6.6	5.0	<u> </u>
Chloride in Water by IC	E235.CI	624251	1	19	5.2	5.0	<u> </u>
Conductivity in Water	E100	624244	1	19	5.2	5.0	<u>√</u>
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	<u>√</u>
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	√
Fluoride in Water by IC	E235.F	624248	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	1	19	5.2	5.0	√
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	1	19	5.2	5.0	√
pH by Meter	E108	624245	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	624247	1	19	5.2	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	624246	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	624252	1	15	6.6	5.0	✓
Chloride in Water by IC	E235.CI	624251	1	19	5.2	5.0	✓
Conductivity in Water	E100	624244	1	19	5.2	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	624762	1	18	5.5	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	624248	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	624249	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	624250	1	19	5.2	5.0	✓
pH by Meter	E108	624245	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	624247	1	19	5.2	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	624246	1	19	5.2	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	624252	1	15	6.6	5.0	<u> </u>
Chloride in Water by IC	E235.CI	624251	1	19	5.2	5.0	

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Project : Site C MMP - Pore Water

Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)



Evaluation: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Matrix: Water Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Actual Expected Evaluation Analytical Methods Method Blanks (MB) - Continued Conductivity in Water 624244 19 5.2 1 5.0 E100 Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) 630550 1 16 6.2 5.0 E509-L Dissolved Metals in Water by CRC ICPMS 18 5.5 5.0 E421 624762 1 ✓ Dissolved Methylmercury in Water by GCAFS 1 20 5.0 5.0 630063 E537 1 Dissolved Organic Carbon by Combustion (Low Level) 629551 1 20 5.0 5.0 E358-L Fluoride in Water by IC 624248 1 19 5.2 5.0 E235.F 1 Nitrate in Water by IC (Low Level) 624249 1 19 5.2 5.0 E235.NO3-L Nitrite in Water by IC (Low Level) E235.NO2-L 624250 5.2 5.0 1 Sulfate in Water by IC 624247 1 19 5.2 5.0 1 E235.SO4 Total Organic Carbon (Non-Purgeable) by Combustion (Low Level) E355-L 629552 1 20 5.0 5.0 ✓ TSS by Gravimetry E160 629645 20 5.0 5.0 Matrix Spikes (MS) Bromide in Water by IC (Low Level) 624252 1 15 6.6 5.0 E235.Br-L Chloride in Water by IC 624251 1 19 5.2 5.0 E235.CI ✓ Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt) 630550 1 16 6.2 5.0 E509-L ✓ Dissolved Metals in Water by CRC ICPMS 624762 18 5.5 5.0 E421 ✓ Dissolved Methylmercury in Water by GCAFS 630063 1 20 5.0 5.0 E537 ✓ Dissolved Organic Carbon by Combustion (Low Level) E358-L 629551 1 20 5.0 5.0 ✓ Fluoride in Water by IC 19 5.0 E235.F 624248 1 5.2 1 Nitrate in Water by IC (Low Level) E235.NO3-L 624249 1 19 5.2 5.0 ✓ Nitrite in Water by IC (Low Level) 624250 19 5.0 E235.NO2-L 1 5.2 1 Sulfate in Water by IC 624247 1 19 5.2 5.0 E235.SO4 ✓

E355-L

629552

1

20

5.0

5.0

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	ALS Environmental -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Vancouver			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted
				at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	ALS Environmental -			pH should be measured in the field within the recommended 15 minute hold time.
	Vancouver			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre
	ALS Environmental -			filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Vancouver			brackish waters) may produce a positive bias by this method. Alternate analysis
	vanodavci			methods are available for these types of samples.
Bromide in Water by IC (Low Level)	E235.Br-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			400000000000000000000000000000000000000
	Vancouver			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	ALS Environmental -			
	Vancouver			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			
	Vancouver			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			
	Vancouver			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			
	Vancouver			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	ALS Environmental -			
	Vancouver			

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Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCI, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Methylmercury in Water by GCAFS	E537 ALS Environmental - Vancouver	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Vancouver	Water	АРНА 1030Е	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by	EP355	Water		Preparation for Total Organic Carbon by Combustion
Combustion				
	ALS Environmental -			
	Vancouver			
Preparation for Dissolved Organic Carbon for	EP358	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Combustion				
	ALS Environmental -			
	Vancouver			
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
	ALS Environmental -			
	Vancouver			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	ALS Environmental -			
	Vancouver			
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	ALS Environmental -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Vancouver			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : FJ2202328

Amendment : 1

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 2022Aug Porewater

Sampler : KG

Site :--Quote number : Q75925
No. of samples received : 1

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Laboratory ; ALS Environmental - Fort St. John

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 26-Aug-2022 07:25

Date Analysis Commenced : 30-Aug-2022

Issue Date : 26-Sep-2023 15:50

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

: 1

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples analysed

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Inorganics, Burnaby, British Columbia

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Project: Site C MMP - Pore Water



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water							Labora	ntory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 624244)										
FJ2202327-007	Anonymous	Conductivity		E100	2.0	μS/cm	168	171	1.65%	10%	
Physical Tests (QC	Lot: 624245)										
FJ2202327-007	Anonymous	pH		E108	0.10	pH units	7.86	7.87	0.127%	4%	
Physical Tests (QC	Lot: 624246)										
FJ2202327-007	Anonymous	Alkalinity, total (as CaCO3)		E290	1.0	mg/L	79.6	78.9	0.883%	20%	
Physical Tests (QC	Lot: 629645)										
FJ2202327-001	Anonymous	Solids, total suspended [TSS]		E160	3.0	mg/L	5.3	5.1	0.2	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624247)										
FJ2202328-001	PR3	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	28.5	28.5	0.111%	20%	
Anions and Nutrien	ts (QC Lot: 624248)										
FJ2202328-001	PR3	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.156	0.150	0.006	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624249)										
FJ2202328-001	PR3	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0157	0.0155	0.0002	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624250)										
FJ2202328-001	PR3	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624251)										
FJ2202328-001	PR3	Chloride	16887-00-6	E235.CI	0.50	mg/L	0.78	0.77	0.007	Diff <2x LOR	
Anions and Nutrien	ts (QC Lot: 624252)										
FJ2202328-001	PR3	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 6295	51)									
FJ2202327-001	Anonymous	Carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.83	2.76	0.06	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 6295	52)									
FJ2202327-001	Anonymous	Carbon, total organic [TOC]		E355-L	0.50	mg/L	2.86	2.85	0.01	Diff <2x LOR	
Dissolved Metals (OC Lat: 624762)										
VA22C0108-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.500	mg/L	206	209	1.59%	20%	
	,	Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	56.8	55.2	2.84%	20%	
Dissolved Metals (OC L et: 630550)										
EO2206775-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	14.0	13.0	6.97%	20%	
Speciated Metals (-	,,				J				-	
FJ2202315-001	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	<0.020 ng/L	<0.000020	0	Diff <2x LOR	
. 52202010 001	,onymodo	wicaryimercury (as interru), dissolved	22001-02-0		0.000020	M3/ L	-0.020 Hg/L	-0.000020		JIII -ZA LOIX	

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Project: Site C MMP - Pore Water



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 624244)					
Conductivity	E100	1	μS/cm	1.2	
Physical Tests (QCLot: 624246)					
Alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 629645)					
Solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 624247)					
Sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 624248)					
Fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 624249)					
Nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 624250)					
Nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 624251)					
Chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 624252)					
Bromide	24959-67-9 E235.Br-L	0.05	mg/L	<0.050	
Organic / Inorganic Carbon (QCLot: 6295	51)				
Carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 6295	52)				
Carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 624762)					
Calcium, dissolved	7440-70-2 E421	0.05	mg/L	<0.050	
Magnesium, dissolved	7439-95-4 E421	0.005	mg/L	<0.0050	
Dissolved Metals (QCLot: 630550)					
Mercury, dissolved	7439-97-6 E509-L	0.5	ng/L	<0.50	
Speciated Metals (QCLot: 630063)					
Methylmercury (as MeHg), dissolved	22967-92-6 E537	0.00002	μg/L	<0.000020	

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Project: Site C MMP - Pore Water



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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Analyte	000	1 1 1	Unit μS/cm pH units	Spike Concentration 146.9 μS/cm 7 pH units	96.0 100	90.0 98.0	High 110	Qualifier
Physical Tests (QCLot: 624244) Conductivity E10 Physical Tests (QCLot: 624245) pH E10 Physical Tests (QCLot: 624246) Alkalinity, total (as CaCO3) E29 Physical Tests (QCLot: 629645)	000	1	μS/cm	146.9 μS/cm	96.0	90.0	110	
Conductivity	90							
Physical Tests (QCLot: 624245) pH E10 Physical Tests (QCLot: 624246) Alkalinity, total (as CaCO3) E29 Physical Tests (QCLot: 629645)	90							
Physical Tests (QCLot: 624246) Alkalinity, total (as CaCO3) Physical Tests (QCLot: 629645)	90		pH units	7 pH units	100	98.0	102	
Physical Tests (QCLot: 624246) Alkalinity, total (as CaCO3) E29 Physical Tests (QCLot: 629645)	90		pH units	7 pH units	100	98.0	102	
Alkalinity, total (as CaCO3) E29 Physical Tests (QCLot: 629645)		1						
Alkalinity, total (as CaCO3) E29 Physical Tests (QCLot: 629645)		1						
	60		mg/L	500 mg/L	107	85.0	115	
Solids, total suspended [TSS] E16	60						·	
		3	mg/L	150 mg/L	88.2	85.0	115	
Anions and Nutrients (QCLot: 624247)								
Sulfate (as SO4) 14808-79-8 E23	35.SO4	0.3	mg/L	100 mg/L	99.4	90.0	110	
Anions and Nutrients (QCLot: 624248)								
Fluoride 16984-48-8 E23	35.F	0.02	mg/L	1 mg/L	97.7	90.0	110	
Anions and Nutrients (QCLot: 624249)								
Nitrate (as N) 14797-55-8 E23	35.NO3-L	0.005	mg/L	2.5 mg/L	98.8	90.0	110	
Anions and Nutrients (QCLot: 624250)								
Nitrite (as N) 14797-65-0 E23	35.NO2-L	0.001	mg/L	0.5 mg/L	97.2	90.0	110	
Anions and Nutrients (QCLot: 624251)							·	
Chloride 16887-00-6 E23	35.CI	0.5	mg/L	100 mg/L	98.3	90.0	110	
Anions and Nutrients (QCLot: 624252)								
Bromide 24959-67-9 E23	35.Br-L	0.05	mg/L	0.5 mg/L	108	85.0	115	
Organic / Inorganic Carbon (QCLot: 629551)								
Carbon, dissolved organic [DOC] E35	58-L	0.5	mg/L	8.57 mg/L	101	80.0	120	
Organic / Inorganic Carbon (QCLot: 629552)								
Carbon, total organic [TOC] E35	55-L	0.5	mg/L	8.57 mg/L	99.7	80.0	120	
Dissolved Metals (QCLot: 624762)								
Calcium, dissolved 7440-70-2 E42	21	0.05	mg/L	50 mg/L	97.2	80.0	120	
Magnesium, dissolved 7439-95-4 E42	21	0.005	mg/L	50 mg/L	102	80.0	120	
Mercury, dissolved 7439-97-6 E50	09-L	0.5	ng/L	5 ng/L	101	80.0	120	
Speciated Metals (QCLot: 630063)								

Page : 7 of 8

Work Order: FJ2202328 Amendment 1
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Pore Water



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report						
	Spike	Recovery (%)	Recovery								
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Speciated Metals (QCLot: 630063) - contin	nued										
Methylmercury (as MeHg), dissolved	22967-92-6 E	E537	0.00002	μg/L	0.0025 μg/L	82.7	70.0	130			

Page : 8 of 8

Work Order: FJ2202328 Amendment 1
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Pore Water



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water						Matrix Spike (MS) Report									
					Spi	ike	Recovery (%)	Recovery	Limits (%)						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier					
Anions and Nutri	ients (QCLot: 624247)														
VA22C0138-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	106 mg/L	100 mg/L	106	75.0	125						
Anions and Nutri	ients (QCLot: 624248)														
VA22C0138-001	Anonymous	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125						
Anions and Nutri	ients (QCLot: 624249)														
VA22C0138-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125						
Anions and Nutr	ients (QCLot: 624250)														
VA22C0138-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.516 mg/L	0.5 mg/L	103	75.0	125						
Anions and Nutr	ients (QCLot: 624251)														
VA22C0138-001	Anonymous	Chloride	16887-00-6	E235.CI	105 mg/L	100 mg/L	105	75.0	125						
Anions and Nutri	ients (QCLot: 624252)														
VA22C0138-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.532 mg/L	0.5 mg/L	106	75.0	125						
Organic / Inorgan	nic Carbon (QCLot: 62	9551)													
FJ2202327-003	Anonymous	Carbon, dissolved organic [DOC]		E358-L	4.69 mg/L	5 mg/L	93.9	70.0	130						
Organic / Inorgan	nic Carbon (QCLot: 62	9552)													
FJ2202327-003	Anonymous	Carbon, total organic [TOC]		E355-L	5.08 mg/L	5 mg/L	102	70.0	130						
Dissolved Metals	(QCLot: 624762)														
KS2203131-001	Anonymous	Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130						
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130						
Dissolved Metals	(QCLot: 630550)														
FC2201954-001	Anonymous	Mercury, dissolved	7439-97-6	E509-L	4.41 ng/L	5 ng/L	88.3	70.0	130						
Speciated Metals	(QCLot: 630063)														
FJ2202315-002	Anonymous	Methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00191 μg/L	0.0025 μg/L	76.6	60.0	140						

FJAE Shipping & Receiving

Chain of Custody (COC) / /

Call Out Expedite Request Form

| #of Coolers × Air

Canada Toll Free: 1 800 668 # of Carboys Ground

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COC #: 2022AUG COC Number: **POREWATER**

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COC #: 2022AUG **POREWATER**

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CERTIFICATE OF ANALYSIS

Page

Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 20220Aug Porewater

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 3

No. of samples analysed : 3

Laboratory : Fort St. John - Environmental

: 1 of 3

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 26-Aug-2022 17:00

Date Analysis Commenced : 01-Sep-2022

Issue Date : 12-Sep-2022 09:43

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia	
Brieanna Allen	Production/Validation Manager	Inorganics, Burnaby, British Columbia	
Hamideh Moradi	Analyst	Metals, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Kyle Chang	Lab Assistant	Metals, Burnaby, British Columbia	
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia	
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia	
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia	

Page : 2 of 3 Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
-	No Unit
μg/L	micrograms per litre
μS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
ng/L	nanograms per litre
pH units	pH units

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Samples PR1 and PR2: Insufficient Sample. Please contact AM for test prioritization.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.

>: greater than.

Page : 3 of 3 Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Results

Sub-Matrix: Water			Cli	ient sample ID	PR1	PR2	Travel Blank	
(Matrix: Water)								
			Client samp	ling date / time	26-Aug-2022 10:35	26-Aug-2022 13:10	26-Aug-2022	
Analyte	CAS Number	Method	LOR	Unit	FJ2202370-001	FJ2202370-002	FJ2202370-003	
					Result	Result	Result	
Physical Tests								
alkalinity, total (as CaCO3)		E290	1.0	mg/L			<1.0	
conductivity		E100	2.0	μS/cm			<2.0	
hardness (as CaCO3), dissolved		EC100	0.60	mg/L	264	158		
pH		E108	0.10	pH units			5.70	
solids, total suspended [TSS]		E160	3.0	mg/L	7.9	<3.0	<3.0	
Anions and Nutrients								
bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.250 DLDS	<0.050	<0.050	
chloride	16887-00-6	E235.CI	0.50	mg/L	10.8	1.08	<0.50	
fluoride	16984-48-8	E235.F	0.020	mg/L	0.145 DLCI	<0.037 DLCI	<0.020	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0250 DLDS	0.0379	<0.0050	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0050 DLDS	<0.0010	<0.0010	
sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	6.53	16.1	<0.30	
Organic / Inorganic Carbon								
carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	19.9	23.8		
carbon, total organic [TOC]		E355-L	0.50	mg/L	24.1	21.0	<0.50	
Dissolved Metals								
mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	11.3	8.56		
calcium, dissolved	7440-70-2	E421	0.050	mg/L	78.3	49.0		
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	16.6	8.61		
dissolved MeHg filtration location		EP537	-	-	Field	Field		
dissolved mercury filtration location		EP509-L	-	-	Field	Field		
dissolved metals filtration location		EP421	-	-	Laboratory	Field		
Speciated Metals								
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	0.000927	0.000201		

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 20220Aug Porewater

Sampler : KG
Site :--Quote number : Q75925
No. of samples received : 3
No. of samples analysed : 3

Page : 1 of 13

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279
Date Samples Received : 26-Aug-2022 17:00

Issue Date : 12-Sep-2022 09:43

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



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: Azimuth Consulting Group Inc. : Site C MMP - Pore Water Client Project



Outliers: Quality Control Samples
Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: Water

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Physical Tests	FJ2202370-003	Travel Blank	pН		E108	6.12 % DUP-PH	4%	Duplicate RPD does not
								meet the DQO for this test.

Result Qualifiers

Qualifier	Description
DUP-PH	Duplicate pH result meets ALS Data Quality Objective for low ionic strength samples (+/- 1 pH unit where EC < 200 uS).

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Water					E۱	/aluation: ≭ =	Holding time exce	edance ; 🔻	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
PR1	E235.Br-L	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
PR2	E235.Br-L	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.Br-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PR1	E235.CI	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
PR2	E235.CI	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE										
Travel Blank	E235.CI	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
PR1	E235.F	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

Matrix: Water						raidation.	Holding time exce	oudinoo ,	- vvicinii	Troiding Time
Analyte Group	Method	Sampling Date	Ex	traction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC			Bate	1100	1 1010101			7.00		
HDPE PR2	E235.F	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Travel Blank	E235.F	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR1	E235.NO3-L	26-Aug-2022	01-Sep-2022	3 days	6 days	# EHT	02-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE PR2	E235.NO3-L	26-Aug-2022	01-Sep-2022	3 days	6 days	≭ EHT	02-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	26-Aug-2022	01-Sep-2022	3 days	6 days	x EHT	01-Sep-2022	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE PR1	E235.NO2-L	26-Aug-2022	01-Sep-2022				02-Sep-2022	3 days	6 days	* EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
PR2	E235.NO2-L	26-Aug-2022	01-Sep-2022				02-Sep-2022	3 days	6 days	x EHT
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	3 days	6 days	# EHT
Anions and Nutrients : Sulfate in Water by IC										
HDPE PR1	E235.SO4	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: **Water** Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

viatrix: water					⊏v	aluation. ^ –	nolding time exce	euance , •	- *************************************	Holding Hill
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation					
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
PR2	E235.SO4	26-Aug-2022	01-Sep-2022				02-Sep-2022	28 days	6 days	✓
Anions and Nutrients : Sulfate in Water by IC									1	
HDPE										
Travel Blank	E235.SO4	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5)	opt)									
Pre-cleaned amber glass - dissolved (lab preserved)										
PR1	E509-L	26-Aug-2022	02-Sep-2022				02-Sep-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5)	opt)									
Pre-cleaned amber glass - dissolved (lab preserved)	ĺ									
PR2	E509-L	26-Aug-2022	02-Sep-2022				02-Sep-2022	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PR1	E421	26-Aug-2022	02-Sep-2022				02-Sep-2022	180	7 days	✓
								days		
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
PR2	E421	26-Aug-2022	02-Sep-2022				02-Sep-2022	180	7 days	✓
								days		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)									
Amber glass dissolved (sulfuric acid)										
PR1	E358-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Lev	el)									
Amber glass dissolved (sulfuric acid)										
PR2	E358-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)			-						
Amber glass total (sulfuric acid)										
PR1	E355-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
		The second secon		1	1		I	I .	1	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: **Water** Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Matrix: water						raidation. • =	nolding time exce	cuarioc , .	- *************************************	Tribianing Tim
Analyte Group	Method	Sampling Date	Ext	traction / P	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual		,	Rec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
PR2	E355-L	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combusti	on (Low Level)									
Amber glass total (sulfuric acid)										
Travel Blank	E355-L	26-Aug-2022	03-Sep-2022				03-Sep-2022	28 days	8 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Travel Blank	E290	26-Aug-2022	01-Sep-2022				01-Sep-2022	14 days	6 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Travel Blank	E100	26-Aug-2022	01-Sep-2022				01-Sep-2022	28 days	6 days	✓
Physical Tests : pH by Meter										
HDPE										
Travel Blank	E108	26-Aug-2022	01-Sep-2022				01-Sep-2022	0.25	0.91	*
								hrs	hrs	EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE										
PR1	E160	26-Aug-2022					01-Sep-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
PR2	E160	26-Aug-2022					01-Sep-2022	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
Travel Blank	E160	26-Aug-2022					01-Sep-2022	7 days	7 days	✓
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR1	E537	26-Aug-2022	02-Sep-2022	180	7 days	✓	07-Sep-2022	180	5 days	✓
				days				days		

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

watir. Water					LV	aluation. • – i	i lolding time excee	suarice,	_ vviti iii i	riolaling rilling
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Dissolved Methylmercury in Water by GCAFS										
Amber glass dissolved (hydrochloric acid)										
PR2	E537	26-Aug-2022	02-Sep-2022	180	7 days	✓	07-Sep-2022	180	5 days	✓
				days				days		

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water	<u> </u>	Evaluat	ion: 🗴 = QC frequ	ency outside spe	ecification; ✓ = 0	QC frequency wi	thin specification
Quality Control Sample Type				ount		Frequency (%)
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	628289	1	15	6.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	628292	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.CI	628291	2	35	5.7	5.0	✓
Conductivity in Water	E100	628288	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	630704	1	4	25.0	5.0	✓
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	628290	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	628293	2	38	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	628294	2	38	5.2	5.0	✓
pH by Meter	E108	628287	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	628295	2	35	5.7	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	2	40	5.0	5.0	✓
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	628289	1	15	6.6	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	628292	2	28	7.1	5.0	✓
Chloride in Water by IC	E235.CI	628291	2	35	5.7	5.0	1
Conductivity in Water	E100	628288	1	10	10.0	5.0	1
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	1
Dissolved Metals in Water by CRC ICPMS	E421	630704	1	4	25.0	5.0	1
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	1
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	1
Fluoride in Water by IC	E235.F	628290	2	28	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	628293	2	38	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	628294	2	38	5.2	5.0	✓
pH by Meter	E108	628287	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	628295	2	35	5.7	5.0	1
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	2	40	5.0	5.0	1
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	628289	1	15	6.6	5.0	1
Bromide in Water by IC (Low Level)	E235.Br-L	628292	2	28	7.1	5.0	1
Chloride in Water by IC	E235.CI	628291	2	35	5.7	5.0	1
Conductivity in Water	E100	628288	1	10	10.0	5.0	√
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	1

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix: Water

Matrix: Water	Evaluation: x = QC frequency outside specification; ✓ = QC frequency within specification							
Quality Control Sample Type			Co	ount		Frequency (%))	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued								
Dissolved Metals in Water by CRC ICPMS	E421	630704	1	4	25.0	5.0	✓	
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓	
Fluoride in Water by IC	E235.F	628290	2	28	7.1	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	628293	2	38	5.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	628294	2	38	5.2	5.0	✓	
Sulfate in Water by IC	E235.SO4	628295	2	35	5.7	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	2	40	5.0	5.0	✓	
TSS by Gravimetry	E160	629645	1	20	5.0	5.0	✓	
Matrix Spikes (MS)								
Bromide in Water by IC (Low Level)	E235.Br-L	628292	2	28	7.1	5.0	✓	
Chloride in Water by IC	E235.CI	628291	2	35	5.7	5.0	✓	
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L	630550	1	16	6.2	5.0	✓	
Dissolved Metals in Water by CRC ICPMS	E421	630704	1	4	25.0	5.0	✓	
Dissolved Methylmercury in Water by GCAFS	E537	630063	1	20	5.0	5.0	✓	
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	629551	1	20	5.0	5.0	✓	
Fluoride in Water by IC	E235.F	628290	2	28	7.1	5.0	✓	
Nitrate in Water by IC (Low Level)	E235.NO3-L	628293	2	38	5.2	5.0	✓	
Nitrite in Water by IC (Low Level)	E235.NO2-L	628294	2	38	5.2	5.0	✓	
Sulfate in Water by IC	E235.SO4	628295	2	35	5.7	5.0	✓	
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	629552	2	40	5.0	5.0	✓	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water
	Vancouver -			sample. Conductivity measurements are temperature-compensated to 25°C.
	Environmental			
pH by Meter	E108	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results,
	Vancouver -			pH should be measured in the field within the recommended 15 minute hold time.
	Environmental			
TSS by Gravimetry	E160	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Bromide in Water by IC (Low Level)	E235.Br-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Chloride in Water by IC	E235.CI	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
	Vancouver -			
	Environmental			
Fluoride in Water by IC	E235.F	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrite in Water by IC (Low Level)	E235.NO2-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Nitrate in Water by IC (Low Level)	E235.NO3-L	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Sulfate in Water by IC	E235.SO4	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and /or UV detection.
	Vancouver -			
	Environmental			
Alkalinity Species by Titration	E290	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total
	Vancouver -			alkalinity values.
	Environmental			'

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 Work Order
 : FJ2202370

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Dissolved Metals in Water by CRC ICPMS	E421 Vancouver - Environmental	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Mercury in Water by CVAFS (Low Level, LOR = 0.5 ppt)	E509-L Vancouver - Environmental	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAFS.
Dissolved Methylmercury in Water by GCAFS	E537 Vancouver - Environmental	Water	EPA 1630 (mod)	This method follows Method 1630 of the US EPA. Samples are distilled under an inert gas flow to isolate methylmercury and minimize matrix interferences. The distillate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 Vancouver - Environmental	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Dissolved Metals Water Filtration	EP421	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
	Vancouver -			
	Environmental			
Dissolved Mercury Water Filtration (Low	EP509-L	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Level)				
	Vancouver -			
	Environmental			
Dissolved Methylmercury Water Preparation	EP537	Water	EPA 1630	This method follows Method 1630 of the US EPA. Samples are distilled under an inert
				gas flow to isolate methylmercury and minimize matrix interferences. The distillate is
	Vancouver -			analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation.
	Environmental			The separated species are then pyrolized to elemental Hg and quantified by cold vapour
				atomic flourescence spectroscopy. Results are reported "as MeHg".



QUALITY CONTROL REPORT

Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Pore Water

PO : BCH-22-01

C-O-C number : 20220Aug Porewater

Sampler : KG
Site :---Quote number : Q75925
No. of samples received : 3

Page : 1 of 10

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 26-Aug-2022 17:00

Date Analysis Commenced : 01-Sep-2022

Issue Date : 12-Sep-2022 09:49

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

: 3

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples analysed

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Brieanna Allen	Production/Validation Manager	Vancouver Inorganics, Burnaby, British Columbia
Hamideh Moradi	Analyst	Vancouver Metals, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Kyle Chang	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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: Azimuth Consulting Group Inc. Client : Site C MMP - Pore Water Project



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water							Labora	ntory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	C Lot: 628287)										
FJ2202370-003	Travel Blank	рН		E108	0.10	pH units	5.70	6.06	6.12%	4%	DUP-PH
Physical Tests (QC	C Lot: 628288)										
FJ2202370-003	Travel Blank	conductivity		E100	2.0	μS/cm	<2.0	<2.0	0	Diff <2x LOR	
Physical Tests (QC	C Lot: 628289)										
FJ2202370-003	Travel Blank	alkalinity, total (as CaCO3)		E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	
Physical Tests (QC	C Lot: 629645)										
FJ2202327-001	Anonymous	solids, total suspended [TSS]		E160	3.0	mg/L	5.3	5.1	0.2	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628290)										
FJ2202338-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628291)										
FJ2202338-001	Anonymous	chloride	16887-00-6	E235.CI	2.50	mg/L	5.24	5.14	0.10	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628292)										
FJ2202338-001	Anonymous	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628293)										
FJ2202338-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628294)										
FJ2202338-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 628295)										
FJ2202338-001	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	344	341	1.00%	20%	
Anions and Nutrien	nts (QC Lot: 629244)										
FJ2202370-001	PR1	fluoride	16984-48-8	E235.F	0.100	mg/L	0.145	0.141	0.004	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 629245)										
FJ2202370-001	PR1	chloride	16887-00-6	E235.CI	2.50	mg/L	10.8	10.6	0.13	Diff <2x LOR	
Anions and Nutrien	nts (QC Lot: 629246)										
FJ2202370-001	PR1	bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	
Anions and Nutrion	nts (QC Lot: 629247)										
FJ2202370-001	PR1	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	
Anions and Nutrice	nts (QC Lot: 629248)					-					
FJ2202370-001	PR1	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	
	nts (QC Lot: 629249)					3					
FJ2202370-001	PR1	sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	6.53	6.47	0.06	Diff <2x LOR	
. 52252070 001	1	- Canalo (43 007)	14000 10-0		1.00	1119/12	0.00	0.47	0.00	2.11 -2x 2010	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Sub-Matrix: Water							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic	Carbon (QC Lot: 629551										
FJ2202327-001	Anonymous	carbon, dissolved organic [DOC]		E358-L	0.50	mg/L	2.83	2.76	0.06	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629552	2)									
FJ2202327-001	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	2.86	2.85	0.01	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 632096	5)									
FJ2202314-004	Anonymous	carbon, total organic [TOC]		E355-L	0.50	mg/L	0.77	0.74	0.03	Diff <2x LOR	
Dissolved Metals (QC Lot: 630550)										
EO2206775-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	0.50	ng/L	14.0	13.0	6.97%	20%	
Dissolved Metals (QC Lot: 630704)										
VA22C0287-001	Anonymous	calcium, dissolved	7440-70-2	E421	0.050	mg/L	18.2	17.7	3.02%	20%	
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	2.20	2.23	1.23%	20%	
Speciated Metals (QC Lot: 630063)										
FJ2202315-001	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.000020	μg/L	<0.020 ng/L	<0.000020	0	Diff <2x LOR	

Qualifiers

Qualifier Description

DUP-PH Duplicate pH result meets ALS Data Quality Objective for low ionic strength samples (+/- 1 pH unit where EC < 200 uS).

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 628288)					
conductivity	E100	1	μS/cm	1.1	
Physical Tests (QCLot: 628289)					
alkalinity, total (as CaCO3)	E290	1	mg/L	<1.0	
Physical Tests (QCLot: 629645)					
solids, total suspended [TSS]	E160	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 628290)					
fluoride	16984-48-8 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 628291)					
chloride	16887-00-6 E235.CI	0.5	mg/L	<0.50	
Anions and Nutrients (QCLot: 628292)					
bromide	24959-67-9 E235.Br-L	0.05	mg/L	<0.050	
Anions and Nutrients (QCLot: 628293)	44707 55 0 5005 1100	2007		.0.00=0	
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 628294)	44707.05.0 E005.NO.0	0.004		.0.0040	
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 628295)	44000 70 0 5005 004			.0.00	
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Anions and Nutrients (QCLot: 629244)	16984-48-8 E235.F	0.02	wa a /l	<0.020	
fluoride	10904-40-0 E235.F	0.02	mg/L	<0.020	
Anions and Nutrients (QCLot: 629245)	16887-00-6 E235.CI	0.5	mg/L	<0.50	
	10007-00-0 L233.CI	0.5	IIIg/L	40.50	
Anions and Nutrients (QCLot: 629246)	24959-67-9 E235.Br-L	0.05	mg/L	<0.050	
	24000 01 0 E200.BI E	0.00	mg/L	10.000	
Anions and Nutrients (QCLot: 629247) nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 629248)			9.=		
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 629249)					
sulfate (as SO4)	14808-79-8 E235.SO4	0.3	mg/L	<0.30	
Organic / Inorganic Carbon (QCLot: 629551)			-		
carbon, dissolved organic [DOC]	E358-L	0.5	mg/L	<0.50	
Organic / Inorganic Carbon (QCLot: 629552)					
carbon, total organic [TOC]	E355-L	0.5	mg/L	<0.50	
	The state of the s	I I	l	l l	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 632096)						
carbon, total organic [TOC]		E355-L	0.5	mg/L	<0.50	
Dissolved Metals (QCLot: 630550)						
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	<0.50	
Dissolved Metals (QCLot: 630704)						
calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	
Speciated Metals (QCLot: 630063)						
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	<0.000020	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water	atrix: Water					Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)				
Analyte	CAS Number M	lethod	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Physical Tests (QCLot: 628287)												
pH	E	108		pH units	7 pH units	100	98.0	102				
Physical Tests (QCLot: 628288)												
conductivity	E	100	1	μS/cm	146.9 μS/cm	100	90.0	110				
Physical Tests (QCLot: 628289)												
alkalinity, total (as CaCO3)	E	290	1	mg/L	500 mg/L	110	85.0	115				
Physical Tests (QCLot: 629645)												
solids, total suspended [TSS]	E	160	3	mg/L	150 mg/L	88.2	85.0	115				
Anions and Nutrients (QCLot: 628290)												
fluoride	16984-48-8 E	235.F	0.02	mg/L	1 mg/L	96.6	90.0	110				
Anions and Nutrients (QCLot: 628291)												
chloride	16887-00-6 E	235.Cl	0.5	mg/L	100 mg/L	97.2	90.0	110				
Anions and Nutrients (QCLot: 628292)												
bromide	24959-67-9 E	235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115				
Anions and Nutrients (QCLot: 628293)												
nitrate (as N)	14797-55-8 E	235.NO3-L	0.005	mg/L	2.5 mg/L	97.2	90.0	110				
Anions and Nutrients (QCLot: 628294)												
nitrite (as N)	14797-65-0 E	235.NO2-L	0.001	mg/L	0.5 mg/L	96.3	90.0	110				
Anions and Nutrients (QCLot: 628295)												
sulfate (as SO4)	14808-79-8 E	235.SO4	0.3	mg/L	100 mg/L	98.3	90.0	110				
Anions and Nutrients (QCLot: 629244)												
fluoride	16984-48-8 E	235.F	0.02	mg/L	1 mg/L	97.1	90.0	110				
Anions and Nutrients (QCLot: 629245)												
chloride	16887-00-6 E	235.CI	0.5	mg/L	100 mg/L	97.3	90.0	110				
Anions and Nutrients (QCLot: 629246)												
bromide	24959-67-9 E	235.Br-L	0.05	mg/L	0.5 mg/L	97.6	85.0	115				
Anions and Nutrients (QCLot: 629247)												
nitrate (as N)	14797-55-8 E	235.NO3-L	0.005	mg/L	2.5 mg/L	98.1	90.0	110				
Anions and Nutrients (QCLot: 629248)												
nitrite (as N)	14797-65-0 E	235.NO2-L	0.001	mg/L	0.5 mg/L	96.0	90.0	110				
Anions and Nutrients (QCLot: 629249)												
sulfate (as SO4)	14808-79-8 E	235.SO4	0.3	mg/L	100 mg/L	99.2	90.0	110				

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Sub-Matrix: Water						Laboratory Co	ontrol Sample (LCS)	Report	
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 629551)									
carbon, dissolved organic [DOC]		E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	
Organic / Inorganic Carbon (QCLot: 629552)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	99.7	80.0	120	
Organic / Inorganic Carbon (QCLot: 632096)									
carbon, total organic [TOC]		E355-L	0.5	mg/L	8.57 mg/L	99.0	80.0	120	
mercury, dissolved	7439-97-6	E509-L	0.5	ng/L	5 ng/L	101	80.0	120	
Dissolved Metals (QCLot: 630704)									I
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.6	80.0	120	
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	
Speciated Metals (QCLot: 630063)									
methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00002	μg/L	0.0025 μg/L	82.7	70.0	130	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water							-	e (MS) Report		
					Spi		Recovery (%)	Recovery	Limits (%)	
Laboratory sample D	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutri	ents (QCLot: 628290)									
FJ2202338-002	Anonymous	fluoride	16984-48-8	E235.F	4.65 mg/L	5 mg/L	93.0	75.0	125	
Anions and Nutri	ents (QCLot: 628291)									
FJ2202338-002	Anonymous	chloride	16887-00-6	E235.CI	482 mg/L	500 mg/L	96.5	75.0	125	
Anions and Nutri	ents (QCLot: 628292)									
FJ2202338-002	Anonymous	bromide	24959-67-9	E235.Br-L	2.55 mg/L	2.5 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 628293)									
FJ2202338-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.1 mg/L	12.5 mg/L	96.8	75.0	125	
Anions and Nutri	ents (QCLot: 628294)									
FJ2202338-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.38 mg/L	2.5 mg/L	95.2	75.0	125	
Anions and Nutri	ents (QCLot: 628295)									
FJ2202338-002	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	500 mg/L	ND	75.0	125	
Anions and Nutri	ents (QCLot: 629244)									
VA22B9853-020	Anonymous	fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 629245)									
VA22B9853-020	Anonymous	chloride	16887-00-6	E235.CI	102 mg/L	100 mg/L	102	75.0	125	
Anions and Nutri	ents (QCLot: 629246)									
VA22B9853-020	Anonymous	bromide	24959-67-9	E235.Br-L	0.503 mg/L	0.5 mg/L	101	75.0	125	
Anions and Nutri	ents (QCLot: 629247)									
VA22B9853-020	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.58 mg/L	2.5 mg/L	103	75.0	125	
Anions and Nutri	ents (QCLot: 629248)									
VA22B9853-020	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.486 mg/L	0.5 mg/L	97.2	75.0	125	
Anions and Nutri	ents (QCLot: 629249)									
VA22B9853-020	Anonymous	sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	
Organic / Inorgar	nic Carbon (QCLot: 629	9551)								
FJ2202327-003	Anonymous	carbon, dissolved organic [DOC]		E358-L	4.69 mg/L	5 mg/L	93.9	70.0	130	
Organic / Inorgar	nic Carbon (QCLot: 629	9552)								
FJ2202327-003	Anonymous	carbon, total organic [TOC]		E355-L	5.08 mg/L	5 mg/L	102	70.0	130	

Page : 10 of 10 Work Order : FJ2202370

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Pore Water



Sub-Matrix: Water							Matrix Spik	re (MS) Report		
					Spi	ke	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Organic / Inorgan	ic Carbon (QCLot: 6320	096) - continued								
VA22C0169-001	Anonymous	carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130	
Dissolved Metals	(QCLot: 630550)									
FC2201954-001	Anonymous	mercury, dissolved	7439-97-6	E509-L	4.41 ng/L	5 ng/L	88.3	70.0	130	
Dissolved Metals	(QCLot: 630704)									
VA22C0287-001	Anonymous	calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	
		magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	
Speciated Metals	(QCLot: 630063)									
FJ2202315-002	Anonymous	methylmercury (as MeHg), dissolved	22967-92-6	E537	0.00191 μg/L	0.0025 μg/L	76.6	60.0	140	

COC #: 2022AUG

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here (lab use only)

COC Number: **POREWATER**

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Contact:	lan McIvor		Quality Control	(QC) Report with R	Report 🖸 YES	□ NO	} } }	1	day [F	-			FJ22023				3/(,
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·	Company address below will appear on the fi	nal report	Select Distributi		MAIL [FAX	2 day [P2]				_	T	III W	2.0H3.0	CL	M E		
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City/Province:	Vancouver	······	Email 2	imcivor@azimuth	group.ca		For tests t	that can r	not be pe	rformed	according	g to the s	erv				(T3.11)	
Postal Code:	V6K 2G8		Email 3	kganshorn@ecofi	shresearch.com	·					···	Ar	al		W K.	V. III.		IIII .
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Contact:	Gary Mann		Email 2	imcivor@azimuth	group.ca		}	S (L					1	- 1			1 1	2
·	Project Information		Oil	and Gas Require	d Fields (client	use)	ğ	Water by CVAFS (Low	,,				l		1 1	`	1 1	Ë
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ALS Lab Wor	rk Order# (lab use only)		ALS Contact:	Sneha Sansare	Sampler:	Kevin Ganshorr	od Meth) (0.02 ng	ed Merca OR = 0.	Cond., p	ss			IONBALANCE-BC-CI	bu				_
ALS Sample #	Sample Identificati	on and/or Coordinates		Date	Time	Sample Type	AFS AFS	el, L	Anions,	ques	O		Maria I	Ī	_			
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	human drinking water use?	PR 2 Genera	1 bottle n	of sufficien	the filler	ℓ	Cooling		_	LED YE	MPERA1	i incois		1 - 3	e energy	5551 FB =	rianco az	unco do esta
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REFER TO BACK	PAGE FOR ALS LOCATIONS AND SAMPLE	NG INFORMATION		WHI WHI	TE - LABORATOR		OW - CI	IENT C	OPY						~/~	-4/		OCTOBER 2015 FR

Appendix B:	
Supporting Media	Supplemental Information

July 2024

APPENDIX B3: SEDIMENT CHEMISTRY ALS REPORTS

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : **FJ2202202** Page : 1 of 3

Vancouver BC Canada V6K 2G8

Amendment : 2

Address

Client : Azimuth Consulting Group Inc. Laboratory : ALS Environmental - Fort St. John

Contact : Ian McIvor Account Manager : Brent Mack

: # 218 - 2902 West Broadway Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

 Telephone
 : -- Telephone
 : 778-370-3279

 Project
 : Site C MMP - Sediment
 Date Samples Received
 : 18-Aug-2022 18:15

PO : BCH-22-01 Date Analysis Commenced : 23-Aug-2022

C-O-C number : 2022AUG SED Issue Date : 26-Sep-2023 16:07
Sampler : Kevin Ganshorn

Site : ---Quote number : Q75925
No. of samples received : 2
No. of samples analysed : 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

SignatoriesPositionLaboratory DepartmentColby BinghamLaboratory SupervisorInorganics, Saskatoon, SaskatchewanHedy LaiTeam Leader - InorganicsInorganics, Saskatoon, SaskatchewanJanice LeungSupervisor - Organics InstrumentationOrganics, Burnaby, British Columbia

Kinny Wu Lab Analyst Metals, Burnaby, British Columbia
Xihua Yao Laboratory Analyst Inorganics, Saskatoon, Saskatchewan

Page : 2 of 3

Work Order : FJ2202202 Amendment 2
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description			
%	percent			
μg/kg	micrograms per kilogram			
mg/kg	milligrams per kilogram			
pH units	pH units			

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Accreditation

Accreditation	Description	Laboratory	Address
А	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC
В	CALA ISO/IEC 17025:2017	SK ALS Environmental - Saskatoon	819 58 Street East, Saskatoon, SK

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Page : 3 of 3

Work Order : FJ2202202 Amendment 2
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment				Cli	ient sample ID	PR3	 	
(Matrix: Soil/Solid)								
				Client samp	ling date / time	18-Aug-2022 11:30	 	
Analyte	CAS Number	Method/	'Lab	LOR	Unit	FJ2202202-002	 	
						Result	 	
Physical Tests								
Loss on ignition @ 375°C		E205B/SK	В	1.0	%	1.6	 	
pH (1:2 soil:water)		E108/VA	Α	0.10	pH units	8.19	 	
Particle Size								
Clay (<0.004mm)		EC184E/SK		1.0	%	6.6	 	
Silt (0.063mm - 0.004mm)		EC184E/SK		1.0	%	34.0	 	
Sand (2.0mm - 0.063mm)		EC184E/SK		1.0	%	59.4	 	
Gravel (>2mm)		EC184E/SK		1.0	%	<1.0	 	
Organic / Inorganic Carbon								
Carbon, total [TC]		E351/SK	В	0.050	%	1.87	 	
Carbon, inorganic [IC]		E354/SK	В	0.050	%	0.676	 	
Carbon, inorganic [IC], (as CaCO3 equivalent)		E354/SK	В	0.40	%	5.63	 	
Carbon, total organic [TOC]		EC356/SK		0.050	%	1.19	 	
Organic matter		EC356/SK		0.10	%	2.05	 	
Metals								
Mercury	7439-97-6	E510/VA	Α	0.0050	mg/kg	0.0420	 	
Speciated Metals								
Methylmercury (as MeHg)	22967-92-6	E538/VA	Α	0.050	μg/kg	0.490	 	

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2202202** Page : 1 of 6

Amendment :2

Client : Azimuth Consulting Group Inc. Laboratory : ALS Environmental - Fort St. John

Contact : lan McIvor Account Manager : Brent Mack

Address :# 218 - 2902 West Broadway Address :11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone :_--- Telephone : 778-370-3279

 Project
 : Site C MMP - Sediment
 Date Samples Received
 : 18-Aug-2022 18:15

 PO
 : BCH-22-01
 Issue Date
 : 26-Sep-2023 16:04

C-O-C number : 2022AUG SED Sampler : Kevin Ganshorn

:1

Site :---Quote number : Q75925
No. of samples received :2

No. of samples analysed

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

Vancouver BC Canada V6K 2G8

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches) ■ No Analysis Holding Time Outliers exist.

Outliers: Frequency of Quality Control Samples • No Quality Control Sample Frequency Outliers occur.

Page : 3 of 6

Work Order : FJ2202202 Amendment 2
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: × = Holding time exceedance; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Fyt	raction / Pr			a received anno oxido	Analysis				
Container / Client Sample ID(s)	Metriod	Camping Date			g Times	Eval	Analysis Date		Times	Eval		
Container / Cheft Cample 15(3)			Preparation Date	Rec	Actual	⊏vai	Arialysis Dale	Rec	Actual	⊏Vai		
Metals : Mercury in Soil/Solid by CVAAS			Date	7100	7 totaar			7100	riotaar			
Glass soil jar/Teflon lined cap												
PR3	E510	18-Aug-2022	26-Aug-2022	28	8 days	✓	26-Aug-2022	28 days	8 days	1		
	20.0	107149 2022	_0 / tag _0	days	o dayo		207.09 2022	20 44,0	o dayo			
And the second of the Table 1 of the second				dayo								
Organic / Inorganic Carbon : Total Carbon by Combustion				I								
Glass soil jar/Teflon lined cap PR3	E351	18-Aug-2022	26-Aug-2022				26-Aug-2022	0 days	0 days	✓		
FINA	L001	10-Aug-2022	20-Aug-2022				20-Aug-2022	0 days	0 days	•		
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard C	urve			I				T				
Glass soil jar/Teflon lined cap PR3	E354	18-Aug-2022					26 4 2022		8 days			
PK3	L354	10-Aug-2022					26-Aug-2022		o uays			
Physical Tests: Loss On Ignition (375°C)												
Glass soil jar/Teflon lined cap	E205B	10 Aug 2022					25 Aug 2022	005	7 daya	√		
PR3	E205B	18-Aug-2022					25-Aug-2022	365	7 days	•		
								days				
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)								1				
Glass soil jar/Teflon lined cap	F400	40. 4 0000	00.4			,		00.1		,		
PR3	E108	18-Aug-2022	26-Aug-2022	30	8 days	✓	26-Aug-2022	30 days	8 days	✓		
				days								
Speciated Metals : Methylmercury in Soil by GCAFS												
Glass soil jar/Teflon lined cap												
PR3	E538	18-Aug-2022	23-Aug-2022	28	6 days	✓	24-Aug-2022	28 days	1 days	✓		
				days								

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Page : 4 of 6

Work Order: FJ2202202 Amendment 2
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Lvaluat			pecification; ✓ = QC frequency within spe				
Quality Control Sample Type				ount		Frequency (%)			
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation		
Laboratory Duplicates (DUP)									
Loss On Ignition (375°C)	E205B	619318	1	2	50.0	5.0	✓		
Mercury in Soil/Solid by CVAAS	E510	618493	1	19	5.2	5.0	✓		
Methylmercury in Soil by GCAFS	E538	612349	1	3	33.3	5.0	✓		
pH by Meter (1:2 Soil:Water Extraction)	E108	618495	1	19	5.2	5.0	✓		
Total Carbon by Combustion	E351	621014	1	1	100.0	5.0	✓		
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	620868	1	19	5.2	5.0	✓		
Laboratory Control Samples (LCS)									
Loss On Ignition (375°C)	E205B	619318	1	2	50.0	5.0	✓		
Mercury in Soil/Solid by CVAAS	E510	618493	2	19	10.5	10.0	✓		
Methylmercury in Soil by GCAFS	E538	612349	2	3	66.6	10.0	✓		
pH by Meter (1:2 Soil:Water Extraction)	E108	618495	1	19	5.2	5.0	✓		
Total Carbon by Combustion	E351	621014	2	1	200.0	10.0	✓		
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	620868	2	19	10.5	10.0	✓		
Method Blanks (MB)									
Loss On Ignition (375°C)	E205B	619318	1	2	50.0	5.0	✓		
Mercury in Soil/Solid by CVAAS	E510	618493	1	19	5.2	5.0	√		
Methylmercury in Soil by GCAFS	E538	612349	1	3	33.3	5.0	✓		
Total Carbon by Combustion	E351	621014	1	1	100.0	5.0	✓		
Total Inorganic Carbon by Acetic Acid pH Standard Curve	F354	620868	1	19	5.2	5.0			

Page : 5 of 6

Work Order : FJ2202202 Amendment 2
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 ALS Environmental - Vancouver	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Loss On Ignition (375°C)	E205B ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampled at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Vancouver	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 ALS Environmental - Vancouver	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E ALS Environmental - Saskatoon	Soil/Solid	Metal Mining Technical Guidance for Environmental Effects Monitoring (2012)	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.
Total Organic Carbon (Calculated) in soil	EC356 ALS Environmental - Saskatoon	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).

Page : 6 of 6

Work Order : FJ2202202 Amendment 2
Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108	Soil/Solid	BC WLAP METHOD:	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample
			PH, ELECTROMETRIC,	with deionized/distilled water at a 1:2 ratio of sediment to water.
	ALS Environmental -		SOIL	
	Vancouver			
Digestion for Metals and Mercury	EP440	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl.
				This method is intended to liberate metals that may be environmentally available.
	ALS Environmental -			·
	Vancouver			
Methylmercury Soil Digestion	EP538	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for
				the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with
	ALS Environmental -			an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes.
	Vancouver			The methylmercury is then extracted into dichloromethane and then an aliquot is back
				extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation,
				purge and trap, desorption and GC separation. The separated species are then
				pyrolized to elemental Hg and quantified by cold vapour atomic flourescence
				spectroscopy. Results are reported "as MeHg".
Dry and Grind in Soil/Solid <60°C	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
			Methods of Analysis,	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	ALS Environmental -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Calgary			<2 mm. Further size reduction may be needed for particular tests.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Work Order : **FJ2202202** Page : 1 of 5

Amendment : 2

Client : Azimuth Consulting Group Inc. Laboratory : ALS Environmental - Fort St. John

Contact : Ian McIvor Account Manager : Brent Mack

Address :# 218 - 2902 West Broadway Address :11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : Telephone : :778-370-3279

Project : Site C MMP - Sediment Date Samples Received : 18-Aug-2022 1

: Site C MMP - Sediment Date Samples Received : 18-Aug-2022 18:15 : BCH-22-01 Date Analysis Commenced : 23-Aug-2022

C-O-C number : 2022AUG SED | Issue Date : 26-Sep-2023 16:04

Site :---Quote number : Q75925

No. of samples received : 2
No. of samples analysed : 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Vancouver BC Canada V6K 2G8

Reference Material (RM) Report; Recovery and Data Quality Objectives

: Kevin Ganshorn

- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

PO

Sampler

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Laboratory Supervisor	Saskatoon Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan

Page : 2 of 5

Work Order: FJ2202202 Amendment 2
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Page : 3 of 5

Work Order: FJ2202202 Amendment 2
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid							Labora	tory Duplicate (D	JP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR Unit		Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 618495)										
FJ2202202-001	PR2	pH (1:2 soil:water)		E108	0.10	pH units	7.86	7.94	1.0%	5%	
Physical Tests (QC	Lot: 619318)										
FJ2202202-001	PR2	Loss on ignition @ 375°C		E205B	1.0	%	2.6	2.6	0.03	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 620868	3)									
FJ2202202-001	PR2	Carbon, inorganic [IC]		E354	0.050	%	0.954	0.957	0.356%	20%	
Organic / Inorganic	Carbon (QC Lot: 621014	1)									
EO2206783-014	Anonymous	Carbon, total [TC]		E351	0.050	%	1.37	1.29	5.79%	20%	
Metals (QC Lot: 61	8493)										
FJ2202202-001	PR2	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0530	0.0545	2.83%	40%	
Speciated Metals (QC Lot: 612349)										
FJ2202202-001	PR2	Methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	1.79	1.72	4.10%	30%	
		1									

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number N	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 620	868)					
Carbon, inorganic [IC]	E	354	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLot: 621	014)					
Carbon, total [TC]	E	351	0.05	%	<0.050	
Metals (QCLot: 618493)						
Mercury	7439-97-6 E	510	0.005	mg/kg	<0.0050	
Speciated Metals (QCLot: 612349)						
Methylmercury (as MeHg)	22967-92-6 E	538	0.05	μg/kg	<0.050	

Page : 4 of 5

Work Order: FJ2202202 Amendment 2
Client: Azimuth Consulting Group Inc.
Project: Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid			Laboratory Control Sample (LCS) Report								
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Physical Tests (QCLot: 618495)											
pH (1:2 soil:water)		E108		pH units	6 pH units	99.8	95.0	105			
Organic / Inorganic Carbon (QCLot: 62086	8)										
Carbon, inorganic [IC]		E354	0.05	%	0.5 %	93.5	90.0	110			
Organic / Inorganic Carbon (QCLot: 62101	4)										
Carbon, total [TC]		E351	0.05	%	48 %	101	90.0	110			
Metals (QCLot: 618493)											
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	100	80.0	120			
Speciated Metals (QCLot: 612349)									'		
Methylmercury (as MeHg)	22967-92-6	E538	0.05	μg/kg	10 µg/kg	98.1	70.0	130			

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:			Reference Material (RM) Report							
					RM Target	Recovery (%)	Recovery I	Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier	
Physical Tests (0	QCLot: 619318)									
	RM	Loss on ignition @ 375°C		E205B	8 %	89.5	80.0	120		
Organic / Inorga	nic Carbon (QCLot: 620	1868)								
	RM	Carbon, inorganic [IC]		E354	0.383 %	95.6	80.0	120		
Organic / Inorga	nic Carbon (QCLot: 621	014)								
	RM	Carbon, total [TC]		E351	1.4 %	101	80.0	120		
Metals (QCLot: 6	18493)									
	SCP SS-2	Mercury	7439-97-6	E510	0.059 mg/kg	97.7	70.0	130		
Speciated Metals	(QCLot: 612349)									
	RM	Methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	95.9	70.0	130		

Page 5 of 5

Work Order: FJ2202202 Amendment 2 Client



ALS Enuiron

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number:

COC #: 2022AUG SED

ige 1 of

	Canada Toll Free: 1 800 668 9878
www.aisglobal.com	•

Report To	Contact and company name below will appe	ear on the final report	Report Format / Distribution sele				Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply											
Company:	Azimuth Consulting Group Inc.		Select Report	Format: 🔽	☑ EXCEL ☑ EI	DD (DIGITAL)	Regular [R] Standard TAT if received by 3 pm - business days - no surcharges apply											
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Phone:	604-730-1220		☑ Compare Results to Criteria on Report - provide details below if box checked				្ត្រី 3 day [P3] □					EMERGENCY	Same Day, Weekend or				_	
	Company address below will appear on the final	report	Select Distribu	Select Distribution: 🗵 EMAIL 🗀 MAIL 🗀 FAX			A day [P4]				EMER	Statutory holiday [E0]						
Street:	2902 West Braodway		Email 1 or Fax gmann@azimuthgroup.ca					Date and Time Required for all E&P TATS: A CANDOMY INCOME.							YHH			
City/Province:	Vancouver		Email 2	imcivor@azimutho	дгоир.са		For tests	hat can i	nat can not be performed according to the service level selected, you will be contacted.									
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Contact:	Gary Mann		Email 2	imcivor@azimutho	group.ca		1	ļ			e							ø,
	Project Information		, C	il and Gas Require	d Fields (client	use)	<u>§</u>	િર			ctio			1				neu
ALS Account #	/ Quote #: Q75925		enter		PO#		3	\ \cdot \	=		extra	es	Ę	4	The state of			ntai
Job #:	Site C MMP - Sediment		Code	:	Routing Code:		0.005 mg/kg ww)	0.05 µg/kg W/W)	gravel)		ter 6	at 375 degrees	jine					Number of Containers
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ALS Sample # (lab use only)	Sample Identii (This descripti	S = 5		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Mercury	Methylmercury	Particle S	TC, TIC, TOC in soil	pH by meter	Loss on Ignition	Moisture Content by Gravimetry		ng & Rece Expedite	Priority Air	round	
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Are samples taken from a Regulated DW System? ☐ YES ☑ NO Please reference VA22-ECOF?				ECOF100-004 (MMP Sediment) for parameters/detection limits			Ice Pac Cooling	_		_	Cubes			dy seal		-	No No	
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Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22.01

C-O-C number : 2022Aug SED Sampler : KG

Site : ---Quote number : Q75925

No. of samples received : 1

No. of samples analysed : 1

Page : 1 of 3

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 18-Aug-2022 07:50

Date Analysis Commenced : 23-Aug-2022

Issue Date : 09-Sep-2022 13:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan	
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Maria Painchaud	Laboratory Assistant	Inorganics, Saskatoon, Saskatchewan	
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia	
Parnian Sane	Analyst	Metals, Burnaby, British Columbia	
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan	

Page : 2 of 3

Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description			
%	percent			
μg/kg	micrograms per kilogram			
mg/kg	milligrams per kilogram			
pH units	pH units			

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 3 Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment		CI	ient sample ID	PR1	 	
(Matrix: Soil/Solid)						
		Client samp	ling date / time	17-Aug-2022 14:00	 	
Analyte CAS Number	Method	LOR	Unit	FJ2202206-001	 	
				Result	 	
Physical Tests						
loss on ignition @ 375°C	E205B	1.0	%	1.2	 	
moisture	E144	0.25	%	25.7	 	
pH (1:2 soil:water)	E108	0.10	pH units	8.10	 	
Particle Size						
clay (<0.004mm)	EC184E	1.0	%	1.9	 	
silt (0.063mm - 0.004mm)	EC184E	1.0	%	14.5	 	
sand (2.0mm - 0.063mm)	EC184E	1.0	%	83.6	 	
gravel (>2mm)	EC184E	1.0	%	<1.0	 	
Organic / Inorganic Carbon						
carbon, total [TC]	E351	0.050	%	1.02	 	
carbon, inorganic [IC]	E354	0.050	%	0.219	 	
carbon, inorganic [IC], (as CaCO3 equivalent)	E354	0.40	%	1.82	 	
carbon, total organic [TOC]	EC356	0.050	%	0.801	 	
organic matter	EC356	0.10	%	1.38	 	
Metals						
mercury 7439-97-6	E510	0.0050	mg/kg	0.0528	 	
Speciated Metals						
methylmercury (as MeHg) 22967-92-6	E538	0.050	μg/kg	0.639	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

: 1

PO : BCH-22.01 C-O-C number : 2022Aug SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples analysed

Page : 1 of 7

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279
Date Samples Received : 18-Aug-2022 07:50
Issue Date : 09-Sep-2022 13:43

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7 Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date **Holding Times** Eval Preparation Date Rec Actual Rec Actual Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 17-Aug-2022 1 PR1 26-Aug-2022 26-Aug-2022 28 days 9 days Organic / Inorganic Carbon: Total Carbon by Combustion Glass soil jar/Teflon lined cap PR1 E351 17-Aug-2022 24-Aug-2022 24-Aug-2022 0 days ✓ ----180 days Organic / Inorganic Carbon: Total Inorganic Carbon by Acetic Acid pH Standard Curve Glass soil jar/Teflon lined cap PR1 E354 24-Aug-2022 17-Aug-2022 Physical Tests: Loss On Ignition (375°C) Glass soil jar/Teflon lined cap PR1 E205B 17-Aug-2022 23-Aug-2022 365 6 days days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap PR1 E144 17-Aug-2022 25-Aug-2022 Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 17-Aug-2022 PR1 26-Aug-2022 26-Aug-2022 30 days 9 days --------Speciated Metals: Methylmercury in Soil by GCAFS Glass soil jar/Teflon lined cap PR1 E538 ✓ 24-Aug-2022 ✓ 17-Aug-2022 23-Aug-2022 6 days 28 days 1 days 28 days

Page : 4 of 7 Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Rec. HT: ALS recommended hold time (see units).

Page : 5 of 7
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluat	ion: × = QC freque	ency outside spe	ecification; ✓ =	QC frequency wit	hin specificati
Quality Control Sample Type					Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Loss On Ignition (375°C)	E205B	615331	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	618113	1	20	5.0	5.0	✓
Methylmercury in Soil by GCAFS	E538	612349	1	3	33.3	5.0	✓
Moisture Content by Gravimetry	E144	618121	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	618115	1	20	5.0	5.0	✓
Total Carbon by Combustion	E351	616628	1	10	10.0	5.0	√
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	616632	1	11	9.0	5.0	√
Laboratory Control Samples (LCS)							
Loss On Ignition (375°C)	E205B	615331	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	618113	2	20	10.0	10.0	✓
Methylmercury in Soil by GCAFS	E538	612349	2	3	66.6	10.0	√
Moisture Content by Gravimetry	E144	618121	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	618115	1	20	5.0	5.0	√
Total Carbon by Combustion	E351	616628	2	10	20.0	10.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	616632	2	11	18.1	10.0	√
Method Blanks (MB)							
Loss On Ignition (375°C)	E205B	615331	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	618113	1	20	5.0	5.0	✓
Methylmercury in Soil by GCAFS	E538	612349	1	3	33.3	5.0	√
Moisture Content by Gravimetry	E144	618121	1	7	14.2	5.0	✓
Total Carbon by Combustion	E351	616628	1	10	10.0	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	616632	1	11	9.0	5.0	√

Page : 6 of 7
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60°C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Loss On Ignition (375°C)	E205B Saskatoon - Environmental	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampld at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E Saskatoon - Environmental	Soil/Solid	Metal Mining Technical Guidance for Environmental Effects Monitoring (2012)	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.

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 : 7 of 7

 Work Order
 : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
	Saskatoon -			
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver -	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
	Environmental		0012	
Digestion for Metals and Mercury	EP440	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
	Vancouver - Environmental			
Methylmercury Soil Digestion	EP538	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with
	Vancouver -			an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes.
	Environmental			The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation,
				purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dry and Grind	EPP442	Soil/Solid	Soil Sampling and Methods of Analysis,	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	Saskatoon -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental			<2 mm. Further size reduction may be needed for particular tests.



QUALITY CONTROL REPORT

Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

PO : BCH-22.01 C-O-C number : 2022Aug SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples analysed : 1

Page : 1 of 5

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 18-Aug-2022 07:50

Date Analysis Commenced : 23-Aug-2022

Issue Date : 09-Sep-2022 13:39

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Maria Painchaud	Laboratory Assistant	Saskatoon Inorganics, Saskatoon, Saskatchewan
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia
Parnian Sane	Analyst	Vancouver Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan

Page : 2 of 5
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Page : 3 of 5
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid	b-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier		
Physical Tests (QC	Lot: 615331)												
FJ2202206-001	PR1	loss on ignition @ 375°C		E205B	1.0	%	1.2	1.1	0.05	Diff <2x LOR			
Physical Tests (QC	Lot: 618115)												
FJ2202198-001	Anonymous	pH (1:2 soil:water)		E108	0.10	pH units	7.84	7.98	1.8%	5%			
Physical Tests (QC	Lot: 618121)												
FJ2202206-001	PR1	moisture		E144	0.25	%	25.7	26.1	1.56%	20%			
Organic / Inorganic	Carbon (QC Lot: 616628	9)											
EO2206776-006	Anonymous	carbon, total [TC]		E351	0.050	%	1.72	1.77	2.41%	20%			
Organic / Inorganic	Carbon (QC Lot: 616632	(1)											
EO2206776-010	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.230	0.230	0.0001	Diff <2x LOR			
Metals (QC Lot: 618	3113)												
FJ2202198-001	Anonymous	mercury	7439-97-6	E510	0.0500	mg/kg	0.0794	0.0753	0.0041	Diff <2x LOR			
Speciated Metals (QC Lot: 612349)												
FJ2202202-001	Anonymous	methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	1.79	1.72	4.10%	30%			

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

oub matrixi com com					
Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 618121)					
moisture	E144	0.25	%	<0.25	
Organic / Inorganic Carbon (QCLot:	616628)				
carbon, total [TC]	E351	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLot:	616632)				
carbon, inorganic [IC]	E354	0.05	%	<0.050	
Metals (QCLot: 618113)					
mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Speciated Metals (QCLot: 612349)					
methylmercury (as MeHg)	22967-92-6 E538	0.05	μg/kg	<0.050	

Page : 4 of 5
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid						Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery	Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier		
Physical Tests (QCLot: 618115)											
pH (1:2 soil:water)		E108		pH units	6 pH units	98.8	95.0	105			
Physical Tests (QCLot: 618121)											
moisture		E144	0.25	%	50 %	99.8	90.0	110			
Organic / Inorganic Carbon (QCLot: 616628	3)										
carbon, total [TC]		E351	0.05	%	48 %	104	90.0	110			
Organic / Inorganic Carbon (QCLot: 616632											
carbon, inorganic [IC]		E354	0.05	%	0.5 %	94.6	90.0	110			
Metals (QCLot: 618113)											
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	100	80.0	120			
Speciated Metals (QCLot: 612349)									'		
methylmercury (as MeHg)	22967-92-6	E538	0.05	μg/kg	10 μg/kg	98.1	70.0	130			

Page : 5 of 5
Work Order : FJ2202206

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:	ub-Matrix:						Reference Material (RM) Report					
					RM Target	Recovery (%)	Recovery L	imits (%)				
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier			
Physical Tests (QCLot: 615331)												
	RM	loss on ignition @ 375°C		E205B	8 %	88.6	80.0	120				
Organic / Inorgan	ic Carbon (QCLot: 616	628)										
	RM	carbon, total [TC]		E351	1.4 %	101	80.0	120				
Organic / Inorgan	ic Carbon (QCLot: 616	632)							•			
	RM	carbon, inorganic [IC]		E354	0.383 %	97.2	80.0	120				
Metals (QCLot: 6	18113)											
	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	91.8	70.0	130				
Speciated Metals	(QCLot: 612349)											
	RM	methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	95.9	70.0	130				

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here (tab use only)

COC Number:

COC #: 2022AUG SED

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	www.alsglobal.com		
5	Contact and company name below will appear on the	he final report	Report Fo

	www.alsglobal.com								Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply												
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City/Province:	Vancouver			E	mail 2	imcivor@azimutho	rou <u>p.ca</u>		For tests	tests that can not be performed according to the service level selected, you will be contacted.											
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CERTIFICATE OF ANALYSIS

Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22-01

C-O-C number : 2022AUG SED

Sampler : KG Site : ---

Quote number : Q75925

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 19-Aug-2022 15:45

Date Analysis Commenced : 24-Aug-2022

Issue Date : 29-Aug-2022 16:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Xihua Yao	Laboratory Analyst	Inorganics, Saskatoon, Saskatchewan

Page : 2 of 3

Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
μg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 3 Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment			CI	ient sample ID	PD1	 	
(Matrix: Soil/Solid)							
			Client samp	ling date / time	[19-Aug-2022]	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202228-001	 	
					Result	 	
Physical Tests							
loss on ignition @ 375°C		E205B	1.0	%	2.5	 	
moisture		E144	0.25	%	32.0	 	
pH (1:2 soil:water)		E108	0.10	pH units	8.25	 	
Particle Size							
clay (<0.004mm)		EC184E	1.0	%	8.6	 	
silt (0.063mm - 0.004mm)		EC184E	1.0	%	62.7	 	
sand (2.0mm - 0.063mm)		EC184E	1.0	%	28.7	 	
gravel (>2mm)		EC184E	1.0	%	<1.0	 	
Organic / Inorganic Carbon							
carbon, total [TC]		E351	0.050	%	2.34	 	
carbon, inorganic [IC]		E354	0.050	%	0.688	 	
carbon, inorganic [IC], (as CaCO3 equivalent)		E354	0.40	%	5.73	 	
carbon, total organic [TOC]		EC356	0.050	%	1.65	 	
organic matter		EC356	0.10	%	2.84	 	
Metals							
mercury	7439-97-6	E510	0.0050	mg/kg	0.0582	 	
Speciated Metals							
methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	0.759	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022AUG SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples received : 1

No. of samples analysed : 1

This report is automatically a

Page : 1 of 7

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 19-Aug-2022 15:45 Issue Date : 29-Aug-2022 16:44

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

RIGHT SOLUTIONS | RIGHT PARTNER

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date **Holding Times** Eval Preparation Date Rec Actual Rec Actual Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 19-Aug-2022 1 PD1 27-Aug-2022 28-Aug-2022 28 days 9 days Organic / Inorganic Carbon : Total Carbon by Combustion LDPE bag PD1 E351 19-Aug-2022 27-Aug-2022 27-Aug-2022 0 days ✓ ----180 days Organic / Inorganic Carbon: Total Inorganic Carbon by Acetic Acid pH Standard Curve LDPE bag E354 26-Aug-2022 PD1 19-Aug-2022 Physical Tests: Loss On Ignition (375°C) LDPE bag PD1 E205B 19-Aug-2022 25-Aug-2022 7 davs 365 days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap PD1 E144 19-Aug-2022 26-Aug-2022 Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 19-Aug-2022 PD1 27-Aug-2022 27-Aug-2022 30 days 8 days --------Speciated Metals: Methylmercury in Soil by GCAFS Glass soil jar/Teflon lined cap PD1 E538 ✓ 29-Aug-2022 ✓ 19-Aug-2022 24-Aug-2022 6 days 28 days 5 days 28 days

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 Work Order
 : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Rec. HT: ALS recommended hold time (see units).

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluati	ion: × = QC frequ	ency outside sp	ecification; ✓ = 0	QC frequency wit	hin specificatio
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Loss On Ignition (375°C)	E205B	619318	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	621087	1	20	5.0	5.0	✓
Methylmercury in Soil by GCAFS	E538	615739	1	10	10.0	5.0	✓
Moisture Content by Gravimetry	E144	621090	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	621089	1	20	5.0	5.0	✓
Total Carbon by Combustion	E351	621027	1	20	5.0	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	620868	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Loss On Ignition (375°C)	E205B	619318	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	621087	2	20	10.0	10.0	✓
Methylmercury in Soil by GCAFS	E538	615739	2	10	20.0	10.0	✓
Moisture Content by Gravimetry	E144	621090	1	7	14.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	621089	1	20	5.0	5.0	✓
Total Carbon by Combustion	E351	621027	2	20	10.0	10.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	620868	2	20	10.0	10.0	✓
Method Blanks (MB)							
Loss On Ignition (375°C)	E205B	619318	1	3	33.3	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	621087	1	20	5.0	5.0	✓
Methylmercury in Soil by GCAFS	E538	615739	1	10	10.0	5.0	✓
Moisture Content by Gravimetry	E144	621090	1	7	14.2	5.0	✓
Total Carbon by Combustion	E351	621027	1	20	5.0	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	620868	1	20	5.0	5.0	✓

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20\pm5^{\circ}\text{C}$), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Loss On Ignition (375°C)	E205B Saskatoon - Environmental	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampld at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E	Soil/Solid	Metal Mining Technical Guidance for	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based
	Saskatoon - Environmental		Environmental Effects Monitoring (2012)	on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.

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 : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
	Saskatoon -			, ,
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. This method is intended to liberate metals that may be environmentally available.
Methylmercury Soil Digestion	EP538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dry and Grind	EPP442	Soil/Solid	Soil Sampling and Methods of Analysis,	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	Saskatoon -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental			<2 mm. Further size reduction may be needed for particular tests.



QUALITY CONTROL REPORT

Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022AUG SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

Page : 1 of 5

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 19-Aug-2022 15:45

Date Analysis Commenced : 24-Aug-2022

Issue Date : 29-Aug-2022 16:44

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

: 1

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

No. of samples analysed

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia	
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan	
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan	
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia	
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia	
Xihua Yao	Laboratory Analyst	Saskatoon Inorganics, Saskatoon, Saskatchewan	

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid	o-Matrix: Soil/Solid						Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier			
Physical Tests (QC	Lot: 619318)													
FJ2202202-001	Anonymous	loss on ignition @ 375°C		E205B	1.0	%	2.6	2.6	0.03	Diff <2x LOR				
Physical Tests (QC	Lot: 621089)													
FJ2202228-001	PD1	pH (1:2 soil:water)		E108	0.10	pH units	8.25	8.25	0.0%	5%				
Physical Tests (QC	Lot: 621090)													
FJ2202228-001	PD1	moisture		E144	0.25	%	32.0	37.4	15.5%	20%				
Organic / Inorganic	Carbon (QC Lot: 620868)												
FJ2202202-001	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.954	0.957	0.356%	20%				
Organic / Inorganic	Carbon (QC Lot: 621027)												
EO2206815-001	Anonymous	carbon, total [TC]		E351	0.050	%	2.20	2.08	5.46%	20%				
Metals (QC Lot: 621	087)													
FJ2202228-001	PD1	mercury	7439-97-6	E510	0.0050	mg/kg	0.0582	0.0597	2.54%	40%				
Speciated Metals (C	QC Lot: 615739)													
FJ2202228-001	PD1	methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	0.759	0.770	1.44%	30%				

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 621090)					
moisture	E144	0.25	%	<0.25	
Organic / Inorganic Carbon (QCLot: 62	0868)				
carbon, inorganic [IC]	E354	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLot: 62	1027)				
carbon, total [TC]	E351	0.05	%	<0.050	
Metals (QCLot: 621087)					
mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Speciated Metals (QCLot: 615739)					
methylmercury (as MeHg)	22967-92-6 E538	0.05	μg/kg	<0.050	

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid	-Matrix: Soil/Solid						Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier				
Physical Tests (QCLot: 621089)													
pH (1:2 soil:water)	E	E108		pH units	6 pH units	99.3	95.0	105					
Physical Tests (QCLot: 621090)													
moisture	E	Ξ144	0.25	%	50 %	99.9	90.0	110					
Organic / Inorganic Carbon (QCLot: 62086													
carbon, inorganic [IC]	E	E354	0.05	%	0.5 %	93.5	90.0	110					
Organic / Inorganic Carbon (QCLot: 62102													
carbon, total [TC]	E	Ξ351	0.05	%	48 %	102	90.0	110					
Metals (QCLot: 621087)													
mercury	7439-97-6 E	E510	0.005	mg/kg	0.1 mg/kg	108	80.0	120					
Speciated Metals (QCLot: 615739)								1	1				
methylmercury (as MeHg)	22967-92-6 E	E538	0.05	μg/kg	10 μg/kg	104	70.0	130					

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Work Order : FJ2202228

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:						Refere	nce Material (RM) Re	port	
					RM Target	Recovery (%)	Recovery L	imits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (C	CLot: 619318)								
	RM	loss on ignition @ 375°C		E205B	8 %	89.5	80.0	120	
Organic / Inorgan	ic Carbon (QCLot: 620	868)							
	RM	carbon, inorganic [IC]		E354	0.383 %	95.6	80.0	120	
Organic / Inorgan	ic Carbon (QCLot: 621	027)							
	RM	carbon, total [TC]		E351	1.4 %	102	80.0	120	
Metals (QCLot: 62	21087)								
	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	102	70.0	130	
Speciated Metals	(QCLot: 615739)								
	RM	methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	106	70.0	130	

ALS Environ

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode tabel here (tab use only)

COC Number:

COC #: 2022AUG SED

age 1 of

Environmental	Canada Toli Free: 1 800 668 9878
www.aisglobal.com	

Report To	Contact and company name below will appe	ear on the final report		Report Format	/ Distribution		Select Ser	vice Leve	el Below	- Please	confirm	all E&P	TATs wi	th your A	M - surcha	rges will a	pply		
Company:	Azimuth Consulting Group Inc.		Select Report F	ormat: 🗹 🏻 🖠	☑ EXCEL ☑ EC	D (DIGITAL)		Re	gular	[R]	☑ Stan	dard TA	T if rec	eived by	y 3 pm - bi	usiness da	ys - no su	ırcharge	s apply
Contact:	lan McIvor		Quality Control ((QC) Report with R	eport 🗵 YES	□ NO	, ays)	4 (day [F	4]			₹	11	Busines	s day [l	E1]		
Phone:	604-730-1220		Compare Results to Criteria on Report - provide details below if box checked			4 day [P4]					MERGENCY	Same Day, Weekend or							
	Company address below will appear on the final	report	Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX				2 day [P2] Statutory holiday [E0]												
Street:	2902 West Braodway		Email 1 or Fax gmann@azimuthgroup.ca					Jate and	t Time	Requir	ed for all	E&P T	ATs:			dd-n	iuru-AA	hhim	· · · · · · · · · · · · · · · · · · ·
City/Province:	Vancouver		Email 2	imcivor@azimutho	roup ca		For tests t	hat can n	ot be pe	rformed	accordin	g to the	service	level sek	ected, you v	vill be con	tacted.		
Postal Code:	V6K 2G8		Email 3									Α	nalys	is Rec	uest				
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	Copy of Invoice with Report YES [□ NO	Select Invoice D	Distribution: 🗵 EM/	AIL MAIL	FAX													
Company:	Azimuth Consulting Group Inc.		Email 1 or Fax	gmann@azimutho	roup.ca														
Contact:	Gary Mann		Email 2	imcivor@azimutho	roup.ca						Ē								ρ
	Project Information		Oil	and Gas Require	d Fields (client	use)	w)	3			ctio								iner
ALS Account #	/ Quote #: Q75925		AFE/Cost Center:		PO#		Kg v	Λí	÷) xtrc	S.	È						unta
Job #:	Site C MMP - Sediment		Major/Minor Code:		Routing Code:		0.005 mg/kg ww)	(DL 0.05 µg/kg WW)	gravel)		ate	egre	Gravimetry						Number of Containers
PO / AFE:	BCH-22-01		Requisitioner:				005	3.05	+		l: we	75 d							e. o
L\$D:			Location:				(DL 0.	0	(Pipette	soil	Soi	at 3	tby			1			dr.
ALS Lab Wor	rk Order # (lab use only)		ALS Contact:	Sneha Sansare	Sampler:	Kevin Ganshorn	μιγ	Methylmercury (Size	, TOC in soil	рН by meter (1.2 Soil: water extraction)	on Ignition at 375 degrees	Moisture Content by						Ŋ
ALS Sample #	Sample Identification	and/or Coordinates		Date	Time	Sample Type	Total Merc	thyln	Particle	TC, TIC, "	by n	uo ss	istur						
(lab use only)	(This def Fort	St. John		i (dd-mmm-yy)	(hh:mm)	Cample Type	Tol	Me	D B	10	Ŧ.	Loss	ş						
	WC WC	ork Order Reference				cSediment-	"Rum	 	inci Russia	-R	*****	**************************************	R.		- 1				names 2 minutes
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	ES NO	Please reference VA22	2-ECOF100-004	(MMP Sediment) I	or parameters/	detection limits	Ice Pac			Ice C	ubes	Ш	Custo	ody se	al intact	Yes	ЦΙ	No	
i	human drinking water use?						Cooling			LER TE	MPERA	TURES	ь <u>с</u>		FIN	AL COOL	ER TEMP	ERATI	JRES °C
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	SHIPMENT RELEASE (client use)			INITIAL SHIPME	NTIRECEPTION	(lab use only)	1 04	Ç	I		FIR	IAL S	нгРМ	ENTR	ECEPT	ION (lat	Lise on	lu)	
Released by:	Jansharn Aug 19, 20	722 Time: 15=45	Received by:	RICK	Date:	1,22	Time:	5	Rece	ived b					Date:				lme:
	C PAGE FOR ALS LOCATIONS AND SAMPLING			-		RY COPY YELL			OPY					1					CTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

This.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22-01

C-O-C number : 2022Aug SED

Sampler : KG Site : ----

Quote number : Q75925

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 23-Aug-2022 18:36

Date Analysis Commenced : 26-Aug-2022

Issue Date : 14-Sep-2022 10:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan	
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia	
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia	

Page : 2 of 3 Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
μg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 3 Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment			CI	ient sample ID	PD3	 	
(Matrix: Soil/Solid)							
			Client samp	ling date / time	23-Aug-2022	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202311-001	 	
					Result	 	
Physical Tests							
loss on ignition @ 375°C		E205B	1.0	%	2.2	 	
moisture		E144	0.25	%	32.8	 	
pH (1:2 soil:water)		E108	0.10	pH units	8.08	 	
Particle Size							
clay (<0.004mm)		EC184E	1.0	%	7.3	 	
silt (0.063mm - 0.004mm)		EC184E	1.0	%	48.5	 	
sand (2.0mm - 0.063mm)		EC184E	1.0	%	44.2	 	
gravel (>2mm)		EC184E	1.0	%	<1.0	 	
Organic / Inorganic Carbon							
carbon, total [TC]		E351	0.050	%	2.02	 	
carbon, inorganic [IC]		E354	0.050	%	0.527	 	
carbon, inorganic [IC], (as CaCO3 equivalent)		E354	0.40	%	4.39	 	
carbon, total organic [TOC]		EC356	0.050	%	1.49	 	
organic matter		EC356	0.10	%	2.57	 	
Metals							
mercury	7439-97-6	E510	0.0050	mg/kg	0.0511	 	
Speciated Metals							
methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	<0.050	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022Aug SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

No. of samples received : 1

No. of samples analysed : 1

Page : 1 of 7

Issue Date

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279
Date Samples Received : 23-Aug-2022 18:36

: 14-Sep-2022 10:39

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7 Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date **Holding Times** Eval Preparation Date Rec Actual Rec Actual Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 23-Aug-2022 1 PD3 31-Aug-2022 31-Aug-2022 28 days 8 days Organic / Inorganic Carbon : Total Carbon by Combustion LDPE bag PD3 E351 23-Aug-2022 29-Aug-2022 29-Aug-2022 0 days ✓ ----180 days Organic / Inorganic Carbon: Total Inorganic Carbon by Acetic Acid pH Standard Curve LDPE bag PD3 E354 29-Aug-2022 23-Aug-2022 Physical Tests: Loss On Ignition (375°C) LDPE bag PD3 E205B 23-Aug-2022 26-Aug-2022 4 days 365 days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap PD3 E144 23-Aug-2022 30-Aug-2022 Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 23-Aug-2022 PD3 31-Aug-2022 31-Aug-2022 30 days 8 days --------Speciated Metals: Methylmercury in Soil by GCAFS Glass soil jar/Teflon lined cap PD3 E538 ✓ 12-Sep-2022 ✓ 23-Aug-2022 07-Sep-2022 28 days 5 days 28 16 days days

Page : 4 of 7 Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Rec. HT: ALS recommended hold time (see units).

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Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluati	ion: × = QC frequ	ency outside sp	ecification; ✓ = 0	QC frequency wit	hin specificatio
Quality Control Sample Type			Co	ount		Frequency (%)	i .
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Loss On Ignition (375°C)	E205B	621084	1	13	7.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	625610	1	19	5.2	5.0	✓
Methylmercury in Soil by GCAFS	E538	626093	1	19	5.2	5.0	✓
Moisture Content by Gravimetry	E144	625618	1	19	5.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	625612	1	19	5.2	5.0	✓
Total Carbon by Combustion	E351	623716	1	6	16.6	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	623278	1	9	11.1	5.0	✓
Laboratory Control Samples (LCS)							
Loss On Ignition (375°C)	E205B	621084	1	13	7.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	625610	2	19	10.5	10.0	✓
Methylmercury in Soil by GCAFS	E538	626093	2	19	10.5	10.0	✓
Moisture Content by Gravimetry	E144	625618	1	19	5.2	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	625612	1	19	5.2	5.0	✓
Total Carbon by Combustion	E351	623716	2	6	33.3	10.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	623278	2	9	22.2	10.0	✓
Method Blanks (MB)							
Loss On Ignition (375°C)	E205B	621084	1	13	7.6	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	625610	1	19	5.2	5.0	✓
Methylmercury in Soil by GCAFS	E538	626093	1	19	5.2	5.0	√
Moisture Content by Gravimetry	E144	625618	1	19	5.2	5.0	✓
Total Carbon by Combustion	E351	623716	1	6	16.6	5.0	√
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	623278	1	9	11.1	5.0	✓

Page : 6 of 7
Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60°C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Loss On Ignition (375°C)	E205B Saskatoon - Environmental	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampld at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E Saskatoon - Environmental	Soil/Solid	Metal Mining Technical Guidance for Environmental Effects Monitoring (2012)	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.

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 Work Order
 : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
	Saskatoon -			
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC,	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
	Vancouver -		SOIL	
Digastian for Matala and Marayny	Environmental	Soil/Solid	EDA 200 2 (mod)	
Digestion for Metals and Mercury	EP440	3011/3011d	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
	Vancouver -			
	Environmental			
Methylmercury Soil Digestion	EP538	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with
	Vancouver -			an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes.
	Environmental			The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation,
				purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dry and Grind	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
			Methods of Analysis,	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	Saskatoon -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental			<2 mm. Further size reduction may be needed for particular tests.



QUALITY CONTROL REPORT

Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022Aug SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples analysed

Page : 1 of 5

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 23-Aug-2022 18:36

Date Analysis Commenced : 26-Aug-2022

Issue Date : 14-Sep-2022 10:38

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

: 1

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Qammar Almas

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories Position Laboratory Department

Colby Bingham Quality Systems Coordinator
Hedy Lai Team Leader - Inorganics

Kinny Wu Lab Analyst

Ophelia Chiu Department Manager - Organics

Lab Assistant

Saskatoon Inorganics, Saskatoon, Saskatchewan Saskatoon Inorganics, Saskatoon, Saskatchewan Vancouver Metals, Burnaby, British Columbia Vancouver Organics, Burnaby, British Columbia Vancouver Metals, Burnaby, British Columbia Page : 2 of 5
Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Page : 3 of 5
Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 621084)										
FC2201985-001	Anonymous	loss on ignition @ 375°C		E205B	1.0	%	64.8	67.3	3.71%	20%	
Physical Tests (QC	Lot: 625612)										
FJ2202311-001	PD3	pH (1:2 soil:water)		E108	0.10	pH units	8.08	8.12	0.5%	5%	
Physical Tests (QC	Lot: 625618)										
FJ2202311-001	PD3	moisture		E144	0.25	%	32.8	33.5	1.88%	20%	
Organic / Inorganic	Carbon (QC Lot: 623278)									
YL2201291-004	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.295	0.293	0.002	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 623716)									
FC2201985-001	Anonymous	carbon, total [TC]		E351	0.050	%	27.6	26.7	3.42%	20%	
Metals (QC Lot: 62	5610)										
FJ2202311-001	PD3	mercury	7439-97-6	E510	0.0050	mg/kg	0.0511	0.0528	3.24%	40%	
Speciated Metals (0	QC Lot: 626093)										
FJ2202311-001	PD3	methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	<0.050	<0.050	0	Diff <2x LOR	

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 625618)					
moisture	E144	0.25	%	<0.25	
Organic / Inorganic Carbon (QCLot: 62	23278)				
carbon, inorganic [IC]	E354	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLot: 62	23716)				
carbon, total [TC]	E351	0.05	%	<0.050	
Metals (QCLot: 625610)					
mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Speciated Metals (QCLot: 626093)				,	
methylmercury (as MeHg)	22967-92-6 E538	0.05	μg/kg	<0.050	

Page : 4 of 5
Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid				Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%) Recovery Limits (%)			
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 625612)									
pH (1:2 soil:water)		E108		pH units	6 pH units	99.3	95.0	105	
Physical Tests (QCLot: 625618)									
moisture		E144	0.25	%	50 %	100	90.0	110	
Organic / Inorganic Carbon (QCLot: 623278									
carbon, inorganic [IC]		E354	0.05	%	0.5 %	95.0	90.0	110	
Organic / Inorganic Carbon (QCLot: 623716									
carbon, total [TC]		E351	0.05	%	48 %	101	90.0	110	
Metals (QCLot: 625610)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	104	80.0	120	
Speciated Metals (QCLot: 626093)									
methylmercury (as MeHg)	22967-92-6	E538	0.05	μg/kg	10 μg/kg	73.2	70.0	130	

Page : 5 of 5 Work Order : FJ2202311

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:	ub-Matrix:						Reference Material (RM) Report								
					RM Target	Recovery (%)	Recovery L	imits (%)							
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier						
Physical Tests (Q	CLot: 621084)														
	RM	loss on ignition @ 375°C		E205B	8 %	93.7	80.0	120							
Organic / Inorgan	ic Carbon (QCLot: 623	278)													
	RM	carbon, inorganic [IC]		E354	0.383 %	95.1	80.0	120							
Organic / Inorgan	ic Carbon (QCLot: 623	716)							•						
	RM	carbon, total [TC]		E351	1.4 %	103	80.0	120							
Metals (QCLot: 62	25610)														
	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	120	70.0	130							
Speciated Metals	(QCLot: 626093)														
	RM	methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	90.6	70.0	130							

Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number:

COC #: 2022AUG SED

uironmental	Canada Toll Free: 1 800 668 9878

	www.alsglobal.com																		. <u> </u>
Report To	Contact and company name below will appear on the final report			Report Format	/ Distribution		Select Ser	vice Lev	Below	- Please	confirm a	afi E&P 1	TATs wil	th your A	M - surci	narges w	ill apply		
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City/Province:	Vancouver	E	mail 2	imcivor@azimutho	roup.ca		For tests t	hat can r	ot be pe	rformed a	ecording	g to the	service I	level sek	acted, you	u will be	contacte	d.	
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REFER TO BACK	K PAGE FOR ALS LOCATIONS AND CAMPLING INFORMATION			WHI	TE - LABORATO		OW - CL		OPY										OCTOBER 2015 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



CERTIFICATE OF ANALYSIS

Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022Aug Sed

Sampler : KG Site : ----

Quote number : Q75925

No. of samples received : 4
No. of samples analysed : 3

Page : 1 of 4

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 30-Aug-2022

Issue Date : 13-Sep-2022 09:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia

Page : 2 of 4
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
μg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	Description
HTP	Sample preparation or preservation hold time was exceeded.
RRV	Reported result verified by repeat analysis.

Page : 3 of 4
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment		CI	lient sample ID	PD5-A	PD5-B	 	
(Matrix: Soil/Solid)							
		Client samp	oling date / time	24-Aug-2022 09:55	24-Aug-2022 09:55	 	
Analyte CAS Numbe	r Method	LOR	Unit	FJ2202314-002	FJ2202314-003	 	
				Result	Result	 	
Physical Tests							
loss on ignition @ 375°C	E205B	1.0	%	2.3	2.4	 	
moisture	E144	0.25	%	30.5	28.7	 	
pH (1:2 soil:water)	. E108	0.10	pH units	8.27	8.33	 	
Particle Size							
clay (<0.004mm)	EC184E	1.0	%	6.0	6.0	 	
silt (0.063mm - 0.004mm)	. EC184E	1.0	%	24.4	24.8	 	
sand (2.0mm - 0.063mm)	- EC184E	1.0	%	69.6	69.2	 	
gravel (>2mm)	. EC184E	1.0	%	<1.0	<1.0	 	
Organic / Inorganic Carbon							
carbon, total [TC]	. E351	0.050	%	1.73	1.77	 	
carbon, inorganic [IC]	E354	0.050	%	0.400	0.394	 	
carbon, inorganic [IC], (as CaCO3 equivalent)	E354	0.40	%	3.34	3.28	 	
carbon, total organic [TOC]	EC356	0.050	%	1.33	1.38	 	
organic matter	EC356	0.10	%	2.29	2.38	 	
Metals							
mercury 7439-97-6	E510	0.0050	mg/kg	0.0554	0.0538	 	
Speciated Metals							
methylmercury (as MeHg) 22967-92-6	E538	0.050	μg/kg	0.064	<0.050	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.

Page : 4 of 4
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Water			Cli	ient sample ID	PD3-FB	 	
(Matrix: Water)							
			Client samp	ling date / time	24-Aug-2022	 	
Analyte	CAS Number	Method	LOR	Unit	FJ2202314-004	 	
					Result	 	
Organic / Inorganic Carbon							
carbon, total organic [TOC]		E355-L	0.50	mg/L	0.77 HTP, RRV	 	
Total Metals							
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ----

Project : Site C MMP - Sediment

: 3

PO : BCH-22-01 C-O-C number : 2022Aug Sed

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 4

No. of samples analysed

Page : 1 of 9

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45
Issue Date : 13-Sep-2022 09:45

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

• Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers: Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.



Page : 3 of 9 Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Analyte Group Container / Client Sample ID(s) Method Sampling Date Extraction / Preparation Preparation Date Rec Actual Metals: Mercury in Soil/Solid by CVAAS	Ana ate Hold	ysis ng Times	
Date Rec Actual		ng Times	
Date Rec Actual	Rec		Eval
Metals : Mercury in Soil/Solid by CVAAS		Actua	<u>'</u>
Glass soil jar/Teflon lined cap			
PD5-A E510 24-Aug-2022 01-Sep-2022 01-Sep-2	22 28 day	s 8 days	· 🗸
Metals : Mercury in Soil/Solid by CVAAS			
Glass soil jar/Teflon lined cap			
PD5-B E510 24-Aug-2022 01-Sep-2022 01-Sep-2	22 28 day	s 8 days	√
Organic / Inorganic Carbon : Total Carbon by Combustion			
LDPE bag	20	0.1	
PD5-A E351 24-Aug-2022 06-Sep-2022 06-Sep-2		0 days	√
	days		
Organic / Inorganic Carbon : Total Carbon by Combustion			
LDPE bag	22 180	0 days	. ✓
РБ5-В 24-лиу-2022 00-5ер-2022 00-5ер-2	days	,	, ,
Councie University Contract Tatally and the Acadis Acid all Countral Councie	uays		
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard Curve LDPE bag			
PD5-A E354 24-Aug-2022 31-Aug-2	22		
1507.			
Organic / Inorganic Carbon : Total Inorganic Carbon by Acetic Acid pH Standard Curve			
LDPE bag			
PD5-B E354 24-Aug-2022 01-Sep-2	22		
Physical Tests: Loss On Ignition (375°C)			
LDPE bag			
PD5-A E205B 24-Aug-2022 30-Aug-2	22 365	6 days	s ✓
	days		

Page : 4 of 9
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Matrix: Soil/Solid Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	te Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Loss On Ignition (375°C)										
LDPE bag										
PD5-B	E205B	24-Aug-2022					30-Aug-2022	365	6 days	✓
								days		
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
PD5-A	E144	24-Aug-2022					31-Aug-2022			
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
PD5-B	E144	24-Aug-2022					31-Aug-2022			
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
PD5-A	E108	24-Aug-2022	01-Sep-2022				01-Sep-2022	30 days	8 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)									'	
Glass soil jar/Teflon lined cap										
PD5-B	E108	24-Aug-2022	01-Sep-2022				01-Sep-2022	30 days	8 days	✓
Speciated Metals : Methylmercury in Soil by GCAFS										
Glass soil jar/Teflon lined cap										
PD5-A	E538	24-Aug-2022	07-Sep-2022	28	14	✓	12-Sep-2022	28 days	5 days	✓
				days	days					
Speciated Metals : Methylmercury in Soil by GCAFS										
Glass soil jar/Teflon lined cap										
PD5-B	E538	24-Aug-2022	07-Sep-2022	28	14	✓	12-Sep-2022	28 days	5 days	✓
				days	days					
Matrix: Water						valuation: ¥ =	Holding time exce	odonoo : "	(- \Mithin	Holding Tin
Analyte Group	Method	Sampling Date	Evt	traction / Pr		raiuation. * -	Holding time exce	Analys		Holding Till
Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation Preparation Holding Times Eval			Analysis Data		Times	Eval	
Container / Citerit Sample ID(s)			Preparation	Rec	Actual	Eval	Analysis Date	Rec	Actual	Evai
0.000 1			Date	Nec	Actual			Nec	Actual	
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combi	ustion (Low Level)									
Glass soil jar/Teflon lined cap PD3-FB	E355-L	24-Aug-2022	03-Sep-2022	3 days	10	×	03-Sep-2022	28 days	0 days	✓
רט-רם	L303-L	24-Aug-2022	03-3ep-2022	3 uays	10	EHT	03-3ep-2022	20 uays	0 uays	•
					days	ЕПІ				

Page : 5 of 9
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Matrix: Water Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

watti. Water						aluation. • –	i lolding time excet	Juanioc , ,	- vviciniii	riolaling rii	
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation		Analysis				
Container / Client Sample ID(s)			Preparation	Holding	Times	Eval	Analysis Date	Holding	Times	Eval	
			Date	Rec	Actual			Rec	Actual		
Total Metals : Total Mercury in Water by CVAAS											
Glass vial - total (lab preserved) PD3-FB	E508	24-Aug-2022	12-Sep-2022				12-Sep-2022	28 days	20 days	✓	

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Page : 6 of 9
Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specific									
Quality Control Sample Type				ount		Frequency (%)					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation				
Laboratory Duplicates (DUP)											
Loss On Ignition (375°C)	E205B	625813	1	8	12.5	5.0	✓				
Mercury in Soil/Solid by CVAAS	E510	627000	1	12	8.3	5.0	✓				
Methylmercury in Soil by GCAFS	E538	626093	1	19	5.2	5.0	✓				
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓				
pH by Meter (1:2 Soil:Water Extraction)	E108	627002	1	16	6.2	5.0	✓				
Total Carbon by Combustion	E351	629308	1	16	6.2	5.0	✓				
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	628605	2	32	6.2	5.0	✓				
Laboratory Control Samples (LCS)											
Loss On Ignition (375°C)	E205B	625813	1	8	12.5	5.0	✓				
Mercury in Soil/Solid by CVAAS	E510	627000	2	12	16.6	10.0	✓				
Methylmercury in Soil by GCAFS	E538	626093	2	19	10.5	10.0	✓				
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓				
pH by Meter (1:2 Soil:Water Extraction)	E108	627002	1	16	6.2	5.0	✓				
Total Carbon by Combustion	E351	629308	2	16	12.5	10.0	√				
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	628605	4	32	12.5	10.0	✓				
Method Blanks (MB)											
Loss On Ignition (375°C)	E205B	625813	1	8	12.5	5.0	✓				
Mercury in Soil/Solid by CVAAS	E510	627000	1	12	8.3	5.0	✓				
Methylmercury in Soil by GCAFS	E538	626093	1	19	5.2	5.0	✓				
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓				
Total Carbon by Combustion	E351	629308	1	16	6.2	5.0	✓				
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	628605	2	32	6.2	5.0	✓				
Matrix: Water			on: × = QC frequ	iency outside sni	ecification: √ =	QC frequency wit	hin specification				
Quality Control Sample Type				Count		<u> </u>					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%) Expected	Evaluation				
Laboratory Duplicates (DUP)											
Total Mercury in Water by CVAAS	E508	643264	1	8	12.5	5.0	✓				
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	632096	1	20	5.0	5.0	√				
Laboratory Control Samples (LCS)											
Total Mercury in Water by CVAAS	E508	643264	1	8	12.5	5.0	✓				
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	632096	1	20	5.0	5.0	√				
Method Blanks (MB)											
Total Mercury in Water by CVAAS	E508	643264	1	8	12.5	5.0	✓				
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	632096	1	20	5.0	5.0	<u> </u>				
Matrix Spikes (MS)							_				
Total Mercury in Water by CVAAS	E508	643264	1	8	12.5	5.0	√				
, , ,		1									

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Matrix: Water Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Matrix. Water	Evaluation	Evaluation: " - Qo nequency outside specimention," - Qo nequency within specimention.								
Quality Control Sample Type			Co	unt	Frequency (%)					
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation			
Matrix Spikes (MS) - Continued										
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	632096	1	20	5.0	5.0	✓			

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally $20\pm5^{\circ}\text{C}$), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 °C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Loss On Ignition (375°C)	E205B Saskatoon - Environmental	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampld at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E Saskatoon - Environmental	Soil/Solid	Metal Mining Technical Guidance for Environmental Effects Monitoring (2012)	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.

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Project : Site C MMP - Sediment



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L Vancouver - Environmental	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108 Vancouver - Environmental	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 Vancouver - Environmental	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
Methylmercury Soil Digestion	EP538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dry and Grind	EPP442 Saskatoon - Environmental	Soil/Solid	Soil Sampling and Methods of Analysis, Carter 2008	After removal of any coarse fragments and reservation of wet subsamples a portion of homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is then particle size reduced with an automated crusher or mortar and pestle, typically to <2 mm. Further size reduction may be needed for particular tests.
Preparation for Total Organic Carbon by Combustion	EP355 Vancouver - Environmental	Water		Preparation for Total Organic Carbon by Combustion



QUALITY CONTROL REPORT

Work Order : FJ2202314

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO :BCH-22-01 C-O-C number : 2022Aug Sed

Sampler : KG
Site :---Quote number : Q75925
No. of samples received : 4
No. of samples analysed : 3

Page : 1 of 7

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 25-Aug-2022 08:45

Date Analysis Commenced : 30-Aug-2022

Issue Date : 13-Sep-2022 09:45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Colby Bingham	Quality Systems Coordinator	Saskatoon Inorganics, Saskatoon, Saskatchewan
Hedy Lai	Team Leader - Inorganics	Saskatoon Inorganics, Saskatoon, Saskatchewan
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Ophelia Chiu	Department Manager - Organics	Vancouver Organics, Burnaby, British Columbia
Qammar Almas	Lab Assistant	Vancouver Metals, Burnaby, British Columbia

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid							Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 625813)										
CG2211501-061	Anonymous	loss on ignition @ 375°C		E205B	1.0	%	7.1	7.1	0.05	Diff <2x LOR	
Physical Tests (QC	Lot: 627002)										
FJ2202314-002	PD5-A	pH (1:2 soil:water)		E108	0.10	pH units	8.27	8.25	0.2%	5%	
Physical Tests (QC	Lot: 627005)										
FJ2202314-002	PD5-A	moisture		E144	0.25	%	30.5	31.8	4.45%	20%	
Organic / Inorganic	Carbon (QC Lot: 626	5843)									
CG2211435-021	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.158	0.165	0.007	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 628	3605)									
CG2211497-001	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.163	0.167	0.004	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629	3308)									
YL2201312-001	Anonymous	carbon, total [TC]		E351	0.050	%	3.32	3.35	0.720%	20%	
Metals (QC Lot: 62	7000)										
FJ2202314-002	PD5-A	mercury	7439-97-6	E510	0.0050	mg/kg	0.0554	0.0562	1.47%	40%	
Speciated Metals (QC Lot: 626093)										
FJ2202311-001	Anonymous	methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	<0.050	<0.050	0	Diff <2x LOR	
Sub-Matrix: Water		'					Labora	tory Duplicate (D	UP) Report		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Organic / Inorganic	Carbon (QC Lot: 632	2096)									
FJ2202314-004	PD3-FB	carbon, total organic [TOC]		E355-L	0.50	mg/L	0.77	0.74	0.03	Diff <2x LOR	
Total Metals (QC L	ot: 643264)										
FJ2202314-004	PD3-FB	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.000050	<0.0000050	0	Diff <2x LOR	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 627005)					
moisture	E144	0.25	%	<0.25	
Organic / Inorganic Carbon (QCLo	t: 626843)				
carbon, inorganic [IC]	E354	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLo	t: 628605)				
carbon, inorganic [IC]	E354	0.05	%	<0.050	
Organic / Inorganic Carbon (QCLo	t: 629308)				
carbon, total [TC]	E351	0.05	%	<0.050	
Metals (QCLot: 627000)					
mercury	7439-97-6 E510	0.005	mg/kg	<0.0050	
Speciated Metals (QCLot: 626093)					
methylmercury (as MeHg)	22967-92-6 E538	0.05	μg/kg	<0.050	

Sub-Matrix: Water

Analyte	CAS Number I	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 632	2096)					
carbon, total organic [TOC]	E	E355-L	0.5	mg/L	<0.50	
Total Metals (QCLot: 643264)						
mercury, total	7439-97-6 E	E508	0.000005	mg/L	<0.0000050	

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

1 1 27		, ,	•					
Sub-Matrix: Soil/Solid					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 627002)								
H (1:2 soil:water)	E108		pH units	6 pH units	99.3	95.0	105	
Physical Tests (QCLot: 627005)								
noisture	E144	0.25	%	50 %	101	90.0	110	
Organic / Inorganic Carbon (QCLot: 6268	43)							
earbon, inorganic [IC]	E354	0.05	%	0.5 %	94.5	90.0	110	
Organic / Inorganic Carbon (QCLot: 6286	05)							
carbon, inorganic [IC]	E354	0.05	%	0.5 %	94.4	90.0	110	
Organic / Inorganic Carbon (QCLot: 6293	08)							
arbon, total [TC]	E351	0.05	%	48 %	101	90.0	110	
Metals (QCLot: 627000)								
nercury	7439-97-6 E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	
Speciated Metals (QCLot: 626093)								
nethylmercury (as MeHg)	22967-92-6 E538	0.05	µg/kg	10 μg/kg	73.2	70.0	130	
ub-Matrix: Water					Laboratory Co	ntrol Sample (LCS)	Report	
				Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Organic / Inorganic Carbon (QCLot: 6320	96)							
earbon, total organic [TOC]	E355-L	0.5	mg/L	8.57 mg/L	99.0	80.0	120	
Fotal Metals (QCLot: 643264)							1	
mercury, total	7439-97-6 E508	0.000005	mg/L	0.0001 mg/L	113	80.0	120	

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Project : Site C MMP - Sediment



Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report							
					Spi	ike	Recovery (%)	Recovery Limits (%)				
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier		
Organic / Inorganic Carbon (QCLot: 632096)												
VA22C0169-001	Anonymous	carbon, total organic [TOC]		E355-L	ND mg/L	5 mg/L	ND	70.0	130			
Total Metals (QC	Lot: 643264)											
VA22C1349-001	Anonymous	mercury, total	7439-97-6	E508	0.000103 mg/L	0.0001 mg/L	103	70.0	130			

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:					Reference Material (RM) Report						
					RM Target	Recovery (%)	Recovery L	Limits (%)			
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier		
Physical Tests (C	CLot: 625813)										
	RM	loss on ignition @ 375°C		E205B	8 %	100	80.0	120			
Organic / Inorgan	nic Carbon (QCLot: 626	843)									
	RM	carbon, inorganic [IC]		E354	0.383 %	82.8	80.0	120			
Organic / Inorgan	nic Carbon (QCLot: 628	605)									
	RM	carbon, inorganic [IC]		E354	0.383 %	98.6	80.0	120			
Organic / Inorgan	ic Carbon (QCLot: 629	308)									
	RM	carbon, total [TC]		E351	1.4 %	105	80.0	120			
Metals (QCLot: 62	27000)										
	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	107	70.0	130			
Speciated Metals	(QCLot: 626093)										
	RM	methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	90.6	70.0	130			

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Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



ALS Environmen

Chain of Custody (COC) / Analytical Request Form

Affix ALS parcode label here (labuse only)

COC Number:

COC #: 2022AUG SED

Page 1 of 1

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Street:	2902 West Braodway	Email 1 or Fa	imcivor@azimuthg			For tests ti	nat can no	t be pe	rformed a	according	to the	ervice lev	vel selected, you wil	II be contacted.	
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	ng Water (DW) Samples¹ (client u:	()	electronic COC only)	Same and the second		Frozer		П	lce (Cubes	П		ody seal intact		No 🗆
	ken from a Regulated DW System?	100-0	004 (MMP Sediment)	for parameters/	detection limits	Ice Pa	скs g Initiat	_		JUI/65	لبيا	CusiO	my sour made		
	YES 🖸 NO	**			1000	COOIIII	y minual Miti	ALCO	OLER T	EMPERA	ATURE	5%	FIN	IAL COOLER TEN	PERATURES C
Are samples fo	or human drinking water use?					5			T	eessiii nii	Ī	<u>magazzani marika</u>			
	YES V NO			Madiation of the last	l Vian in a sala	12-	/			F	NAL	SHIDAT	ENT RECEPT	ION (lab use o	niy)
	SHIPMENT RELEASE (client use)		INITIAL SHIPME	NIKECEPHON	r (rao use only)		w/Game					A STREET	Date:	A. T. D. D. D. D. D. D. D. D. D. D. D. D. D.	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

160



CERTIFICATE OF ANALYSIS

Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022Aug SED

Sampler : KG Site : ----

Quote number : Q75925

No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 3

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 26-Aug-2022 17:00

Date Analysis Commenced : 31-Aug-2022

Issue Date : 13-Sep-2022 09:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department	
Colby Bingham	Quality Systems Coordinator	Inorganics, Saskatoon, Saskatchewan	
Hedy Lai	Team Leader - Inorganics	Inorganics, Saskatoon, Saskatchewan	
Kinny Wu	Lab Analyst	Metals, Burnaby, British Columbia	
Ophelia Chiu	Department Manager - Organics	Organics, Burnaby, British Columbia	
Qammar Almas	Lab Assistant	Metals, Burnaby, British Columbia	

Page : 2 of 3 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.

Project : Site C MMP - Sediment



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
μg/kg	micrograms per kilogram
mg/kg	milligrams per kilogram
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Page : 3 of 3 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Results

Sub-Matrix: Sediment		CI	ient sample ID	PR2	 	
(Matrix: Soil/Solid)						
		Client samp	ling date / time	26-Aug-2022 13:10	 	
Analyte CAS Number	Method	LOR	Unit	FJ2202371-001	 	
				Result	 	
Physical Tests						
loss on ignition @ 375°C	E205B	1.0	%	1.3	 	
moisture	E144	0.25	%	31.6	 	
pH (1:2 soil:water)	E108	0.10	pH units	8.31	 	
Particle Size						
clay (<0.004mm)	EC184E	1.0	%	9.5	 	
silt (0.063mm - 0.004mm)	EC184E	1.0	%	51.7	 	
sand (2.0mm - 0.063mm)	EC184E	1.0	%	38.8	 	
gravel (>2mm)	EC184E	1.0	%	<1.0	 	
Organic / Inorganic Carbon						
carbon, total [TC]	E351	0.050	%	2.57	 	
carbon, inorganic [IC]	E354	0.050	%	1.07	 	
carbon, inorganic [IC], (as CaCO3 equivalent)	E354	0.40	%	8.91	 	
carbon, total organic [TOC]	EC356	0.050	%	1.50	 	
organic matter	EC356	0.10	%	2.59	 	
Metals						
mercury 7439-97-6	E510	0.0050	mg/kg	0.0413	 	
Speciated Metals						
methylmercury (as MeHg) 22967-92-6	E538	0.050	μg/kg	<0.050	 	

Please refer to the General Comments section for an explanation of any qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.

Contact : Ian McIvor

Address : # 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone

Project Site C MMP - Sediment

: 1

PO BCH-22-01 C-O-C number : 2022Aug SED

Sampler : KG Site Quote number : Q75925 No. of samples received : 1

No. of samples analysed

Page : 1 of 7

Laboratory : Fort St. John - Environmental

Account Manager · Brent Mack

Address : 11007 Alaska Road

Fort St. John. British Columbia Canada V1J 6P3

Telephone : 778-370-3279 **Date Samples Received** : 26-Aug-2022 17:00 Issue Date

: 13-Sep-2022 09:43

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers: Analysis Holding Time Compliance (Breaches)

• No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

• No Quality Control Sample Frequency Outliers occur.

RIGHT SOLUTIONS | RIGHT PARTNER

Page : 3 of 7 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: Soil/Solid Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Analyte Group Extraction / Preparation Analysis Method Sampling Date Container / Client Sample ID(s) **Holding Times** Eval Analysis Date **Holding Times** Eval Preparation Date Rec Actual Rec Actual Metals: Mercury in Soil/Solid by CVAAS Glass soil jar/Teflon lined cap E510 26-Aug-2022 1 PR2 01-Sep-2022 01-Sep-2022 28 days 6 days Organic / Inorganic Carbon: Total Carbon by Combustion Glass soil jar/Teflon lined cap PR2 E351 26-Aug-2022 06-Sep-2022 06-Sep-2022 0 days ✓ ----180 days Organic / Inorganic Carbon: Total Inorganic Carbon by Acetic Acid pH Standard Curve Glass soil jar/Teflon lined cap PR2 E354 03-Sep-2022 26-Aug-2022 Physical Tests: Loss On Ignition (375°C) Glass soil jar/Teflon lined cap PR2 E205B 26-Aug-2022 31-Aug-2022 365 5 davs days **Physical Tests: Moisture Content by Gravimetry** Glass soil jar/Teflon lined cap PR2 E144 26-Aug-2022 31-Aug-2022 Physical Tests: pH by Meter (1:2 Soil:Water Extraction) Glass soil jar/Teflon lined cap E108 26-Aug-2022 PR2 01-Sep-2022 01-Sep-2022 30 days 6 days --------Speciated Metals: Methylmercury in Soil by GCAFS Glass soil jar/Teflon lined cap PR2 E538 ✓ 12-Sep-2022 28 days 0 days ✓ 26-Aug-2022 12-Sep-2022 28 17 days days

Page : 4 of 7 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Rec. HT: ALS recommended hold time (see units).

Page : 5 of 7
Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Soil/Solid		Evaluation	on: × = QC frequ	ency outside spe	ecification; ✓ = 0	QC frequency wit	hin specificatio
Quality Control Sample Type			Co	ount		Frequency (%)	i .
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Loss On Ignition (375°C)	E205B	627410	1	1	100.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	627000	1	12	8.3	5.0	✓
Methylmercury in Soil by GCAFS	E538	634852	1	7	14.2	5.0	✓
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	627002	1	16	6.2	5.0	✓
Total Carbon by Combustion	E351	629807	1	12	8.3	5.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	632002	1	3	33.3	5.0	✓
Laboratory Control Samples (LCS)							
Loss On Ignition (375°C)	E205B	627410	1	1	100.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	627000	2	12	16.6	10.0	✓
Methylmercury in Soil by GCAFS	E538	634852	2	7	28.5	10.0	✓
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	627002	1	16	6.2	5.0	✓
Total Carbon by Combustion	E351	629807	2	12	16.6	10.0	✓
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	632002	2	3	66.6	10.0	✓
Method Blanks (MB)							
Loss On Ignition (375°C)	E205B	627410	1	1	100.0	5.0	✓
Mercury in Soil/Solid by CVAAS	E510	627000	1	12	8.3	5.0	✓
Methylmercury in Soil by GCAFS	E538	634852	1	7	14.2	5.0	✓
Moisture Content by Gravimetry	E144	627005	1	12	8.3	5.0	✓
Total Carbon by Combustion	E351	629807	1	12	8.3	5.0	√
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354	632002	1	3	33.3	5.0	✓

Page : 6 of 7
Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter (1:2 Soil:Water Extraction)	E108 Vancouver - Environmental	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60°C) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Moisture Content by Gravimetry	E144 Vancouver - Environmental	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
Loss On Ignition (375°C)	E205B Saskatoon - Environmental	Soil/Solid	CSSS (2008) 28.3 (mod)	Loss On Ignition (LOI) is determined by drying a portion of an air dried and ground sampld at 105°C, then igniting at 375°C for 16-20 hours. The weight loss after ignition is reported as % loss on ignition. LOI is reported on a dry weight basis. LOI at 375°C can be considered an estimation of Organic Matter Content according to Alberta Agriculture (1988).
Total Carbon by Combustion	E351 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 21.2 (mod)	Total Carbon is determined by the high temperature combustion method with measurement by an infrared detector.
Total Inorganic Carbon by Acetic Acid pH Standard Curve	E354 Saskatoon - Environmental	Soil/Solid	CSSS (2008) 20.2	Total Inorganic Carbon is determined by acetic acid pH standard curve, where 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.
Mercury in Soil/Solid by CVAAS	E510 Vancouver - Environmental	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Methylmercury in Soil by GCAFS	E538 Vancouver - Environmental	Soil/Solid	DeWild et al. (2004)/EPA 1630 (mod)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes. The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Particle Size Analysis (Pipette) - MMER Classification	EC184E Saskatoon - Environmental	Soil/Solid	Metal Mining Technical Guidance for Environmental Effects Monitoring (2012)	The particle size determination is performed by various methods to generate a Grain Size curve. The data from the curve is then used to produce particle size ranges based on the Metal Mining Effluent Regulations (MMER) classification system for Environmental Effects Monitoring.

Page : 7 of 7 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Organic Carbon (Calculated) in soil	EC356	Soil/Solid	CSSS (2008) 21.2	Total Organic Carbon (TOC) is calculated by the difference between total carbon (TC) and total inorganic carbon (TIC).
	Saskatoon -			
	Environmental			
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Leach 1:2 Soil:Water for pH/EC	EP108	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC,	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
	Vancouver -		SOIL	
Digastian for Matala and Marayny	Environmental	Soil/Solid	EDA 200 2 (mod)	
Digestion for Metals and Mercury	EP440	3011/3011d	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCI. This method is intended to liberate metals that may be environmentally available.
	Vancouver -			
	Environmental			
Methylmercury Soil Digestion	EP538	Soil/Solid	DeWild et al. (2004)	This method follows procedures published by DeWild, Olund, Olsen and Tate (2004) for the US Geological Survey (Techniques and Methods 5A-7). Samples are leached with
	Vancouver -			an acidic copper sulphate solution to solubilize methylmercury for inorganic complexes.
	Environmental			The methylmercury is then extracted into dichloromethane and then an aliquot is back extracted into ultra-pure water. The extract is analyzed by aqueous phase ethylation,
				purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic flourescence spectroscopy. Results are reported "as MeHg".
Dry and Grind	EPP442	Soil/Solid	Soil Sampling and	After removal of any coarse fragments and reservation of wet subsamples a portion of
			Methods of Analysis,	homogenized sample is set in a tray and dried at less than 60°C until dry. The sample is
	Saskatoon -		Carter 2008	then particle size reduced with an automated crusher or mortar and pestle, typically to
	Environmental			<2 mm. Further size reduction may be needed for particular tests.



QUALITY CONTROL REPORT

Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.

Contact : lan McIvor

Address :# 218 - 2902 West Broadway

Vancouver BC Canada V6K 2G8

Telephone : ---

Project : Site C MMP - Sediment

PO : BCH-22-01 C-O-C number : 2022Aug SED

 Sampler
 : KG

 Site
 : ---

 Quote number
 : Q75925

 No. of samples received
 : 1

No. of samples analysed

Page : 1 of 5

Laboratory Department

Laboratory : Fort St. John - Environmental

Account Manager : Brent Mack

Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

Telephone : 778-370-3279

Date Samples Received : 26-Aug-2022 17:00

Date Analysis Commenced : 31-Aug-2022

Issue Date : 13-Sep-2022 09:41

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

: 1

Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives

Position

- Reference Material (RM) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Colby Bingham
Quality Systems Coordinator
Saskatoon Inorganics, Saskatoon, Saskatchewan
Hedy Lai
Team Leader - Inorganics
Saskatoon Inorganics, Saskatoon, Saskatchewan
Kinny Wu
Lab Analyst
Vancouver Metals, Burnaby, British Columbia
Ophelia Chiu
Department Manager - Organics
Vancouver Organics, Burnaby, British Columbia
Qammar Almas
Lab Assistant
Vancouver Metals, Burnaby, British Columbia

Page : 2 of 5
Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Page : 3 of 5
Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Soil/Solid				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	hysical Tests (QC Lot: 627002)										
FJ2202314-002	Anonymous	pH (1:2 soil:water)		E108	0.10	pH units	8.27	8.25	0.2%	5%	
Physical Tests (QC	Lot: 627005)										
FJ2202314-002	Anonymous	moisture		E144	0.25	%	30.5	31.8	4.45%	20%	
Physical Tests (QC	Lot: 627410)										
FJ2202371-001	PR2	loss on ignition @ 375°C		E205B	1.0	%	1.3	1.3	0.03	Diff <2x LOR	
Organic / Inorganic	Carbon (QC Lot: 629807)									
YL2201330-001	Anonymous	carbon, total [TC]		E351	0.050	%	2.91	2.98	2.51%	20%	
Organic / Inorganic	Carbon (QC Lot: 632002)									
VA22B9872-001	Anonymous	carbon, inorganic [IC]		E354	0.050	%	0.093	0.090	0.003	Diff <2x LOR	
Metals (QC Lot: 627	7000)										
FJ2202314-002	Anonymous	mercury	7439-97-6	E510	0.0050	mg/kg	0.0554	0.0562	1.47%	40%	
Speciated Metals (0	QC Lot: 634852)										
FJ2202371-001	PR2	methylmercury (as MeHg)	22967-92-6	E538	0.050	μg/kg	<0.050	<0.050	0	Diff <2x LOR	

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Soil/Solid

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier			
Physical Tests (QCLot: 627005)								
moisture	E144	0.25	%	<0.25				
Organic / Inorganic Carbon (QCLot: 629	Organic / Inorganic Carbon (QCLot: 629807)							
carbon, total [TC]	E351	0.05	%	<0.050				
Organic / Inorganic Carbon (QCLot: 632	Organic / Inorganic Carbon (QCLot: 632002)							
carbon, inorganic [IC]	E354	0.05	%	<0.050				
Metals (QCLot: 627000)								
mercury	7439-97-6 E510	0.005	mg/kg	<0.0050				
Speciated Metals (QCLot: 634852)								
methylmercury (as MeHg)	22967-92-6 E538	0.05	μg/kg	<0.050				

Page : 4 of 5
Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Soil/Solid			Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 627002)									
pH (1:2 soil:water)		E108		pH units	6 pH units	99.3	95.0	105	
Physical Tests (QCLot: 627005)									
moisture		E144	0.25	%	50 %	101	90.0	110	
Organic / Inorganic Carbon (QCLot: 629807									
carbon, total [TC]		E351	0.05	%	48 %	103	90.0	110	
Organic / Inorganic Carbon (QCLot: 632002									
carbon, inorganic [IC]		E354	0.05	%	0.5 %	94.1	90.0	110	
Metals (QCLot: 627000)									
mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	106	80.0	120	
Speciated Metals (QCLot: 634852)									
methylmercury (as MeHg)	22967-92-6	E538	0.05	μg/kg	10 μg/kg	76.2	70.0	130	

Page : 5 of 5 Work Order : FJ2202371

Client : Azimuth Consulting Group Inc.
Project : Site C MMP - Sediment



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:			Reference Material (RM) Report						
					RM Target	Recovery (%)	Recovery L	imits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (C	Physical Tests (QCLot: 627410)								
	RM	loss on ignition @ 375°C		E205B	8 %	89.4	80.0	120	
Organic / Inorgan	Organic / Inorganic Carbon (QCLot: 629807)								
	RM	carbon, total [TC]		E351	1.4 %	103	80.0	120	
Organic / Inorgan	ic Carbon (QCLot: 632	002)							
	RM	carbon, inorganic [IC]		E354	0.383 %	88.9	80.0	120	
Metals (QCLot: 62	27000)								
	SCP SS-2	mercury	7439-97-6	E510	0.059 mg/kg	107	70.0	130	
Speciated Metals	(QCLot: 634852)								
	RM	methylmercury (as MeHg)	22967-92-6	E538	14.8 μg/kg	79.6	70.0	130	

ALS) Environmental

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number:

COC #: 2022AUG SED

Page 1 of

	www.alsglobal.com																				
Report To Contact and company name below will appear on the final report			Report Format / Distribution			Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply															
Company:	Azimuth Consulting Gr	oup Inc.			Select Report	Format: 🗹	Ø EXCEL Ø E0	D (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply								ges apply				
Contact:	lan McIvor			Quality Control (QC) Report with Report 🗵 YES 🗆 NO			} Says	4	day [F	4]			ç	1 Business day [E1]							
Phone: 604-730-1220			Compare Res	ults to Criteria on Report	provide details belo	w if box checked	PRIORITY usiness Days	3	day [F	3]			EMERGENCY	S	ame Da	ay, Wes	ekend	OF-	١		
	Company address below	wwill appear on the final	report		Select Distribu	tion: 🗵 EMAIL	MAIL []	FAX	ld (grie)	2	day [F	2]			اقا		****		1	Divis	nois
Street:	2902 West Braodway				Email 1 or Fax	gmann@azimutho	roup.ca			Date an	d Time	Requir	ed for al	E&P T	ATS	F	Envir	onme	ntai	יייום	,,,,,,,
City/Province:	Vancouver				Email 2	imcivor@azimuth	group.ca		For tests t	hat can i	ot be pe	rformed	l accordin	g to the	servic					ce	
Postal Code:	V6K 2G8				Email 3				Analy				naly		Wo	rk Ord		ر کرک	71		
Invoice To	Same as Report To	✓ YES	□ NO			Invoice Dis	stribution		ł	, Indica	te Filter	red (F),	Preserv	ed (P) e	or Filte		۲	JZ	20	20	, '
	Copy of Invoice with Re	eport 🗹 YES	□ NO		Select Invoice	Distribution: 🗵 EM	AIL MAIL] FAX											_	112	- 1111
Company:	Azimuth Consulting Gr	oup Inc.			Email 1 or Fax	gmann@azimutho	roup.ca									1	•	nn Wil	1 LIK	1W.Y	
Contact:	Gary Mann				Email 2	imcivor@azimuth	group ca]) ·			<u> </u>			į.	ı	III III	7,000		2 13 1111
		Information			٥	il and Gas Require	d Fields (client	use)	<u> </u>	(ww			actic			Å.		III I V		711	8 - 111 11 11 11 11 11 11 11 11 11 11 11 1
ALS Account #	# / Quote #: Q75925				AFE/Cost Center:		PO#		ġ.	S	æ		ext	Se	<u>≩</u>	1		יט ווו	() W	ALC:	SE
Job #:	Site C MMP - Sedimen	t			Major/Minor Code		Routing Code:		Ê	Pg.	grave!)		ater	egre	Gravimetry	i Li	1		, 1 11 1	A.C.	_
PO / AFE:	BCH-22-01				Requisitioner:			0.005 mg/kg ww)	0.05 µg/kg	+	_	.ĕ	75 d		\ 	Tele	phone :	+1 250	, 261 551	17	
LSD:			-		Location:				(DF 0	9	(Pipette	i SO	(1:2 Soil: water extraction)	at 3	l b	i Li				r 1	5
ALS Lab Wo	rk Order# (låb)úse on	ly) 😭			ALS Contact:	Sneha Sansare	Sampler:	Kevin Ganshom		Methylmercury (Size	c, TOC in soil	neter (1:	on Ignition at 375 degrees	e Content by						Z
ALS Sample # (lab use only)		mple Identification his description will a				Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total M	Methylr	Particle	TC, TIC,	pH by meter	Loss or	Moisture	L			<u> </u>		
L	PRT-				-			Sediment	R	R	R	- R -	-R		╀┦	. 1					-2
	PR2					26 AV6 22	13:10	Sediment	R	R	R	R	R	R	R						2
	PR2.81			·				Sediment	R	7			R.	R	R						-2
	PD+							Sediment	R	Ď.	-2	R	- R-	- R-	-R-				1		-2-
	PD3 -		·					Sediment-	,B.	P	R	R	-R	- ₹	R						_2_
	PB3-F8							Sediment -	R	_R_	R	R	R	R	_R-						-2 -
	PB5-A							-Sediment	, R	R	R	R	R	R	R			\Box			2
	PDS-B							-Sediment	·R-	R	R	-R	R	R.	R			\top			2
5.11		1	Special Instruct	tions / Sp	ecify Criteria to	add on report by clic	king on the drop	down list below			P 0	SAMP	LE CO	NDITI	ON A	S RE(EIVED	(lab u	se onl	n	
Drinkini	g Water (DW) Samples	(client use)	·		(ele	ctronic COC only)			Frozen						SIF C	bserv	ations	Yes		No	
	en from a Regulated DW	System?	Diazeo referen	ce VA2	2-FCQF100-0n	(MMD Codiment)	or narameters/	detection limits	ice Pac	ks		ice 0	Cubes		Custo	ody se	al intact	t Yes	s 🔲	No	
Please reference VA22-ECOF100-004 (MMP Sediment) for parameters/detection limits Cooling Initiated																					
Are samples for human drinking water use? Are samples for human drinking water use?					TURES*C																
☐ YES ☑ NO							6	1							13	<u>.5</u>					
	SHIPMENT RE	LEASE (client use)				MITIAL SHIPME		(lab use only)	<u> </u>					IAL S	HIPME	ENTR	ECEPT	ION (le	ıb üse	only)	
Released by:	25	Date 1 26	,2022	Time:	Received by:	8	Date:	Uha	Type	00		ived to 200	y:				178	129	17	2	1330
REFER TO BACK	C PAGE FOR ALS LOCATI		INFORMATION		' /	WHI	TE /LABORATOR	RY COPY YELL	OW - CI	IENT (_					<u> </u>	<u> </u>	<i></i>		OCTOBER 2015 FROM

Failure of complete all portions of this form may delay analysis. Please fill in this form LEGIBLY, By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy

1. If my water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

APPENDIX B4: BENTHIC INVERTEBRATE FIELD SAMPLING SHEETS

Ecofish Research: RNQA-19411

	iForm Record: ID 230
Form Field ID	2207.0315.2929
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	Existing
Existing Waypoint	PD3
New Site Location	
New Site Location UTM	31 166021 0
Date and Time	2022-08-03 15:29:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre
Weather Ceiling	Mostly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	24 hours
Weather Wind	Light Breeze
Comment	Tied lead line to tree - wrap 4 times, connect old carabiner Tied anchor to other end of rope with bowline + half hitch Tied 5 butterfly bites on line approx 2 m apart: 2 basket pairs, 2nd anchor then two basket pairs Baskets are two in series - carabiner, bowline, rope, bowline, basket, carabiner, bowline, rope, bowline, basket Deployed leadline with just anchor and first pair of rock baskets Used a float to mark position while deploying Used a line with carabiner to attach to lead line instead of pole while deploying

	Photos
	iForm Record: ID S230
Photo Caption	Looking upstream
Photo (Landscape)	Picture Filename: field_134232353862eb18165d8e3.jpg

iForm Record: ID S230			
Photo Caption	Looking downstream		



Photo Caption

RL to RR

iForm Record: ID S230



Picture Filename: field_199724698062eb182c0679f.jpg

Photo (Landscape)

Photo Caption RR to RL

Photo (Landscape)



iForm Record: ID S230



Photo (Landscape)

iForm Record: ID S230

Photo (Landscape)

Picture Filename: field_189652237662eb1841d2726.jpg



Picture Filename: field_108850837362eb1849ccf6e.jpg

Photo (Landscape)



Data			

Benthic Data				
iForm Record: ID S230				
Basket Location	Latitude:56.102041, Longitude:-120.227802, Altitude:392.036907, Speed:0.016365, Horizontal Accuracy:5.142554, Vertical Accuracy:6.039697, Time:08/03/2022 15:49:44 PDT			
Basket Location UTM	10 672415 6220900			

Benthic Data				
iForm Record: ID S44				
Benthic Basket Number	1			
Basket Depth (m)	2.1			
Install Date	2022-08-03			
Install Time	16:00:00			

iForm Record: ID S44					
Benthic Basket Number	2				
Basket Depth (m)	2.1				
Install Date	2022-08-03				
Install Time	16:00:00				

iForm Record: ID S44						
Benthic Basket Number	3					

Basket Depth (m)	1.9
Install Date	2022-08-03
Install Time	16:02:00

iForm Record: ID S44	
Benthic Basket Number	4
Basket Depth (m)	1.9
Install Date	2022-08-03
Install Time	16:02:00

iForm Record: ID S44	
Benthic Basket Number	5
Basket Depth (m)	1.7
Install Date	2022-08-03
Install Time	16:07:00

iForm Record: ID S44	
Benthic Basket Number	6
Basket Depth (m)	1.7
Install Date	2022-08-03
Install Time	17:07:00

iForm Record: ID S44	
Benthic Basket Number	7
Basket Depth (m)	1.6
Install Date	2022-08-03
Install Time	16:09:00

iForm Record: ID S44	
Benthic Basket Number	8
Basket Depth (m)	1.6
Install Date	2022-08-03
Install Time	16:09:00

Ecofish Research: RNQA-19411

iForm Record: ID 227		
Form Field ID	2207.0312.5537	
Project	1200-25 - Site C Mon 8/9	
Existing Waterbody or New Waterbody	Existing Waterbody	
Existing Waterbody	Peace River (PCR)	
Existing Waypoint or New Site	Existing	
Existing Waypoint	PD1	
New Site Location		
New Site Location UTM	31 166021 0	
Date and Time	2022-08-03 12:56:00	
Data Recorder	PBP - Patrick Beaupre	
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre	
Weather Ceiling	Partly Cloudy	
Weather Precipitation	Dry	
Weather Recent Precipitation	24 hours	
Weather Wind	Fresh Breeze	
Comment	Tied lead line to tree - wrap 4 times, connect old carabiner Tied anchor to other end of rope with bowline + half hitch Tied 5 butterfly bites on line approx 2 m apart: 2 basket pairs, 2nd anchor then two basket pairs Baskets are two in series - carabiner, bowline, rope, bowline, basket, carabiner, bowline, rope, bowline, basket Deployed leadline with just anchor and first pair of rock baskets Used a float to mark position while deploying Used a line with carabiner to attach to lead line instead of pole while deploying Deployment of baskets only about 20 min (but prep much longer)	

Photos

iForm Record: ID S227

Photo (Landscape)



Picture Filename: field_201916188062eb17e1da998.jpg





Photo (Landscape)

Picture Filename: field_172388201162eb17f800dd0.jpg



Photo Caption

Looking upstream



Photo (Landscape)

iForm Record: ID S227 **Photo Caption** Looking downstream

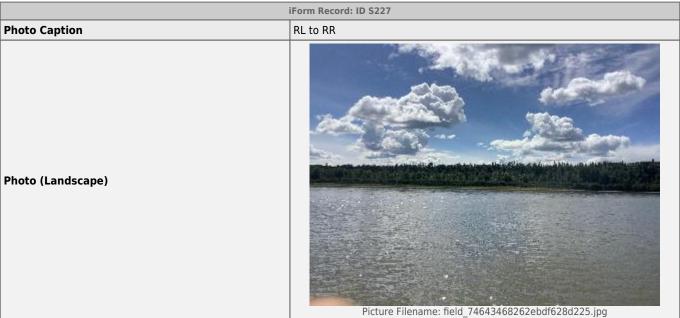




Picture Filename: field_27696372562ebdf54176c4.jpg

iForm Record: ID S227	
Photo Caption	RR to RL









Benthic Data		
iForm Record: ID S227		
Basket Location	Latitude:56.161226, Longitude:-120.743387, Altitude:407.214829, Speed:0.020893, Horizontal Accuracy:4.199744, Vertical Accuracy:8.342795, Time:08/03/2022 13:27:45 PDT	
Basket Location UTM	10 640140 6226317	

Benthic Data	
iForm Record: ID S41	
Benthic Basket Number 1	
Basket Depth (m)	1.7
Install Date	2022-08-03
Install Time	13:40:00

iForm Record: ID S41		
Benthic Basket Number		2
Basket Depth (m)		1.7
Install Date		2022-08-03
Install Time		13:40:00

iForm Record: ID S41	
Benthic Basket Number	3
Basket Depth (m)	1.8
Install Date	2022-08-03
Install Time	13:45:00

iForm Record: ID S41	
Benthic Basket Number	4
Basket Depth (m)	1.8
Install Date	2022-08-03
Install Time	13:45:00

iForm Record: ID S41	
Benthic Basket Number	5
Basket Depth (m)	1.4
Install Date	2022-08-03
Install Time	13:50:00

iForm Record: ID S41	
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Benthic Basket Number	6
Basket Depth (m)	1.4
Install Date	2022-08-03
Install Time	13:50:00

iForm Record: ID S41	
Benthic Basket Number	7
Basket Depth (m)	1.3
Install Date	2022-08-03
Install Time	01:55:00

iForm Record: ID S41	
Benthic Basket Number	8
Basket Depth (m)	1.3
Install Date	2022-08-03
Install Time	13:55:00

Ecofish Research: RNQA-19425

iForm Record: ID 233	
Form Field ID	2207.0411.5312
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	Existing
Existing Waypoint	PD5
New Site Location	
New Site Location UTM	31 166021 0
Date and Time	2022-08-04 11:54:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre
Air Temperature (Celcius)	14
Weather Ceiling	Overcast
Weather Precipitation	Light Rain
Weather Recent Precipitation	Last few hours
Weather Wind	Fresh Breeze
Comment	Similar deployment as day 1;pd1 and pd3 Tie lead line to tree, deploy endpoint anchor and then first two rock basket pairs, then install midpoint anchor and laser two basket pairs

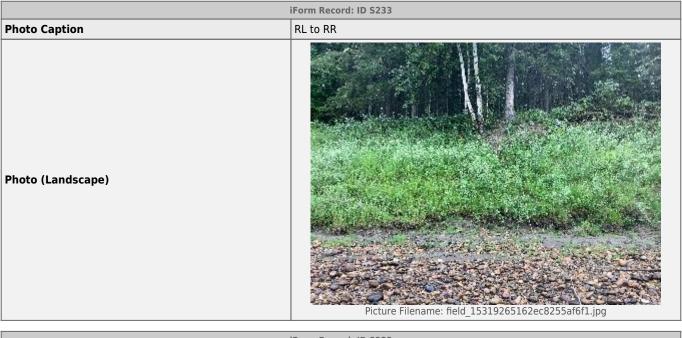
Photos	
iForm Record: ID S233	
Photo Caption	Looking upstream
Photo (Landscape)	Picture Filename: field_187635061762ec823fc93f8.jpg

iForm Record: ID S233	
Photo Caption	Looking downstream



Picture Filename: field_206276949762ec824cc0449.jpg

iForm Record: ID S233	
Photo Caption	RR to RL
Photo (Landscape)	







iForm Record: ID S233

Photo (Landscape)





iForm Record: ID S233

Photo (Landscape)



Photo (Landscape)



Picture Filename: field_147876245962ec828ead585.jpg

Benthic Data	
iForm Record: ID S233	
Basket Location	Latitude:56.309832, Longitude:-119.184870, Altitude:358.695073, Speed:0.000915, Horizontal Accuracy:3.642083, Vertical Accuracy:8.890340, Time:08/04/2022 12:29:21 PDT

Basket Location UTM	11 364839 6242709	
	Benthic Data	
	iForm Record: ID S47	
Benthic Basket Number	1	
Basket Depth (m)	1.5	
Install Date	2022-08-04	
Install Time	12:30:00	
	iForm Record: ID S47	
Benthic Basket Number	2	
Basket Depth (m)	1.5	
Install Date	2022-08-04	
Install Time	12:40:00	
	iForm Record: ID S47	
Benthic Basket Number	3	
Basket Depth (m)	1.4	
Install Date	2022-08-04	
Install Time	12:42:00	
	iForm Record: ID S47	
Benthic Basket Number	4	
Basket Depth (m)	1.4	
Install Date	2022-08-04	
Install Time	12:42:00	
Danakhia Danakat Normban	iForm Record: ID S47	
Benthic Basket Number	5	
Basket Depth (m)	1.4	
Install Date	2022-08-04	
Install Time	12:44:00	
	iForm Record: ID S47	
Benthic Basket Number	6	
Basket Depth (m)	1.4	
Install Date	2022-08-04	
Install Time	12:44:00	
iForm Record: ID S47		
Benthic Basket Number	7	
Basket Depth (m)	1.3	
Install Date	2022-08-04	
Install Time	12:48:00	
	Form Peccent ID C47	
Doublis Docket Nambou	iForm Record: ID S47	
Benthic Basket Number	8	
Basket Depth (m)	1.3	

2022-08-04

12:48:00

Install Date

Install Time

Ecofish Research: RNQA-19425

iForm Record: ID 236	
Form Field ID	2207.0510.3950
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	Existing
Existing Waypoint	PR1
New Site Location	
New Site Location UTM	31 166021 0
Date and Time	2022-08-05 10:20:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	24 hours
Weather Wind	Fresh Breeze
Comment	Baskets deployed as per all others - tie off on tree, anchor at end, 2 basket pairs before mid anchor, put in midpoint anchor, then two basket pairs after. Counting of basket numbers starts with 1 and 2 furthest out near endpoint anchor, and 7 and 8 closest to shore.

	Photos	
	iForm Record: ID S236	
Photo Caption	Looking upstream	
Photo (Landscape)	Picture Filename: field_17688021762edaed37a6c8.jpg	

iForm Record: ID S236	
Photo Caption	Looking downstream



Photo Caption

RR to RL





Picture Filename: field_196119721762edaee0cc245.jpg

Photo (Landscape)

Photo Caption

iForm Record: ID S236 RL to RR



Picture Filename: field_63185143862edaee98398e.jpg

Photo (Landscape)



Benthic Data	
iForm Record: ID S236	
Latitude:56.010567, Longitude:-121.939180, Altitude:466.284465, Speed:0.014799, Horizontal Accuracy:5.534460, Vertical Accuracy:10.595150, Time:08/05/2022 10:44:13 PDT	
Basket Location UTM	10 566142 6207763

Benthic Data	
iForm Record: ID S50	
Benthic Basket Number	1
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	10:30:00

iForm Record: ID S50	
Benthic Basket Number	2
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	10:20:00

iForm Record: ID S50	
Benthic Basket Number	3
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:32:00

iForm Record: ID S50	
Benthic Basket Number	4
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:32:00

iForm Record: ID S50	
Benthic Basket Number	5
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:37:00

iForm Record: ID S50	
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Benthic Basket Number	6
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:37:00

iForm Record: ID S50	
Benthic Basket Number	7
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:39:00

iForm Record: ID S50	
Benthic Basket Number	8
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	10:50:00

Ecofish Research: RNQA-19425

iForm Record: ID 239	
Form Field ID	2207.0513.4033
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	Existing
Existing Waypoint	PR-2.81
New Site Location	
New Site Location UTM	31 166021 0
Date and Time	2022-08-05 13:41:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	24 hours
Weather Wind	Calm
Comment	Baskets deployed as per all others - tie off on tree, anchor at end, 2 basket pairs before mid anchor, put in midpoint anchor, then two basket pairs after. Counting of basket numbers starts with 1 and 2 furthest out near endpoint anchor, and 7 and 8 closest to shore. For this site we had to travel 900m upstream as too shallow and too muddy (<1m depth). This entire area the river is wide and shallow. We confirmed presence of rocky substrate with extension pole.

Photos	
	iForm Record: ID S239
Photo Caption	Looking upstream
Photo (Landscape)	Picture Filename: field_195237486862edaf0451514.jpg

iForm Record: ID S239	
Photo Caption	Looking downstream



Picture Filename: field_53880038162edaf1167320.jpg

iForm Record: ID S239	
Photo Caption	RL to RR
Photo (Landscape)	

iForm Record: ID S239	
Photo Caption	RR to RL
Photo (Landscape)	Picture Filename: field_42473339362edaf1755f7a.jpg

Benthic Data iForm Record: ID S239

Basket Location	Latitude:56.223176, Longitude:-120.957043, Altitude:411.657741, Speed:0.791815, Horizontal Accuracy:2.589021, Vertical Accuracy:6.584630, Time:08/05/2022 13:56:25 PDT
Basket Location UTM	10 626669 6232796

Benthic Data	
iForm Record: ID S53	
Benthic Basket Number	1
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	13:45:00

iForm Record: ID S53	
Benthic Basket Number	2
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	13:45:00

iForm Record: ID S53	
Benthic Basket Number	3
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	13:45:00

iForm Record: ID S53	
Benthic Basket Number	4
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	13:46:00

iForm Record: ID S53	
Benthic Basket Number	5
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	13:49:00

iForm Record: ID S53	
Benthic Basket Number	6
Basket Depth (m)	1.5
Install Date	2022-08-05
Install Time	13:49:00

iForm Record: ID S53	
Benthic Basket Number	7
Basket Depth (m)	0.9
Install Date	2022-08-05
Install Time	13:50:00

iForm Record: ID S53	
Benthic Basket Number	8
Basket Depth (m)	0.9
Install Date	2022-08-05
Install Time	13:50:00

Ecofish Research: RNQA-19425

iForm Record: ID 242	
Form Field ID	2207.0514.5642
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	Existing
Existing Waypoint	PR2
New Site Location	
New Site Location UTM	31 166021 0
Date and Time	2022-08-05 14:57:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	BRM - Bradley Minielly, PBP - Patrick Beaupre
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	24 hours
Weather Wind	Fresh Breeze
Comment	Baskets deployed as per all others - tie off on tree, anchor at end, 2 basket pairs before mid anchor, put in midpoint anchor, then two basket pairs after. Counting of basket numbers starts with 1 and 2 furthest out near endpoint anchor, and 7 and 8 closest to shore. Roughly 300 m downstream of normal location Current very fast here

	Photos	
	iForm Record: ID S242	
Photo Caption	Looking downstream	
Photo (Landscape)	Picture Filename: field_174437597362edaf2bed262.jpg	

iForm Record: ID S242	
Photo Caption	RL to RR



Photo Caption

RR to RL





Photo (Landscape)

Picture Filename: field_4624669162edaf3a12a7e.jpg

Photo Caption

iForm Record: ID S242 Looking upstream



Photo (Landscape)



Picture Filename: field_85048663662edaf4330fbd.jpg



Benthic Data	
iForm Record: ID S242	
Basket Location	Latitude:56.202799, Longitude:-121.469772, Altitude:431.549780, Speed:0.012991, Horizontal Accuracy:3.468159, Vertical Accuracy:7.067013, Time:08/05/2022 15:02:34 PDT
Basket Location UTM	10 594932 6229705

Benthic Data	
iForm Record: ID S56	
Benthic Basket Number 1	
Basket Depth (m)	2
Install Date	2022-08-05
Install Time	15:16:00
Removal Date	2022-08-05

iForm Record: ID S56	
Benthic Basket Number	2
Basket Depth (m)	2
Install Date	2022-08-05
Install Time	15:16:00

iForm Record: ID S56	
Benthic Basket Number	3
Basket Depth (m)	1.8
Install Date	2022-08-05
Install Time	15:18:00

iForm Record: ID S56	
Benthic Basket Number	4
Basket Depth (m)	1.8
Install Date	2022-08-05
Install Time	15:18:00

iForm Record: ID S56	
Benthic Basket Number	5
Basket Depth (m)	1.8
Install Date	2022-08-05
Install Time	15:22:00

iForm Record: ID S56	
Benthic Basket Number	6
Basket Depth (m)	1.8
Install Date	2022-08-05
Install Time	15:22:00

iForm Record: ID S56	
Benthic Basket Number	7
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	15:28:00

iForm Record: ID S56	
Benthic Basket Number	8
Basket Depth (m)	1.7
Install Date	2022-08-05
Install Time	15:24:00

4 August 2022 Arrive & Many Island ~ 11:15 -To Load Book - Set Rock Brokets @ PD5 Rock faskets all setted 12:95 Leaving Site back to many start & Barell at Ego House @ 15:15 Switch to Saultean WR Rilling Code - Heading to do site Maintence and spot measurement at 3 sites H 13-BC @ ~ 16:10 Wiped sons or after 16:15 waiting for 16:30 for spot measure Prelim MU13 = 2000 PSC-LB 216:45 Reset NEON · Light not on. Power is good · Back in truck@ 17:15

Back to truck @ 19:15

3 Aug 2022 Left Tay Lor BL @ 10:00 Headed for PAP-RB Site Replacement Deployed PAPERB Sensor @ 11:10 Dropped sonsor in water @ 11:20 · Pat Power Cycling NEON to reset system @ 11:25 13:20 Retrieved anchor to protie PDI Bagkets set@ 1400 PAP-RB Regret @ 14:15 Heading to PD3 All Baskets set b/w (600 + 16:10

Back to Taylor BL @ 17:15 Checked w/ Julian about PAP-RB - Waiting to reassess tomorrow

	iForm Record: ID 287
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.010531, Longitude:-121.939202, Altitude:456.231505, Speed:0.004653, Horizontal Accuracy:4.969795, Vertical Accuracy:9.715848, Time:09/26/2022 10:03:06 PDT
New Site Location UTM	10 566140 6207759
New Site Name	PR1-invert
Date and Time	2022-09-26 09:30:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre
Additional Crew	Gary mann
Air Temperature (Celcius)	12
Air Temperature Time	10:06:00
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Comment	Arrive at site Remove rope pin down cairn Use boat hook to grab main line Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Each basket takes about 0.75 1 hr to process. Carabiners all left on baskets. Taxa division for this site Trichoptera-big (PR1 TB on vial) Trichoptera-small (PR1 TS) includes more than one species Miscellaneous (PR1 M) includes ephemeroptera, chironomids, hydracarina, oligochaetes, Gastropoda, other Diptera Masses PR1-TB 1.2 g PR1-TS 6.4 g PR1-M 0.6 g Rock sizes All rocks in baskets were large sizes (greater than 10-15cm diameter)

Photos	
iForm Record: ID S287	
Photo Caption Looking upstream	



Photo Caption

iForm Record: ID S287 Looking downstream



Photo (Landscape)

Picture Filename: field_9152717846338f04c9911a.jpg

Photo Caption

RR to RL

iForm Record: ID S287



Picture Filename: field_17903089196338f054c48da.jpg

Photo (Landscape)



Picture Filename: field_20236470986338f05d660a9.jpg

Photo Comment

Large bucket to hand scrub individual rocks, smaller bucket to collect spent rocks, then replace in rock baskets

Photo (Landscape)



Picture Filename: field_10949219156338f0657c24f.jpg

Photo Comment

Rinsing periphyton through potter sieve

Photo (Landscape)



Photo Comment

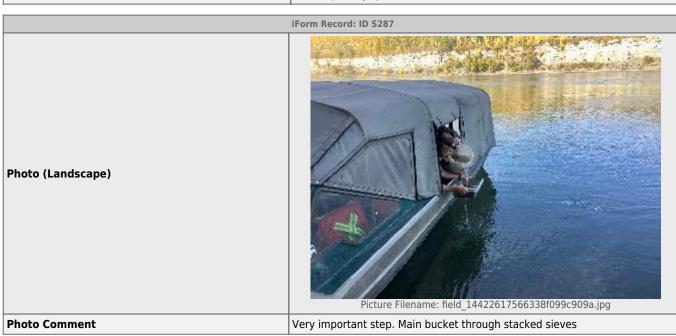
Note water from below

Photo (Landscape) Picture Filename: field_17888652546338f076d2ca2.jpg Photo Comment First brushing of basket





Photo (Landscape) Picture Filename: field_16233193576338f0919e0db.jpg Photo Comment Coarse pickings pre taxa division



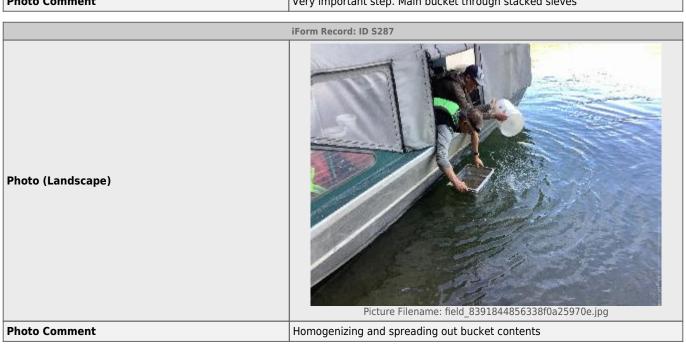
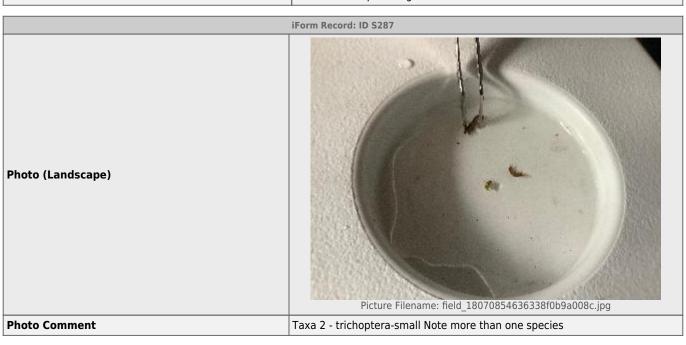


Photo (Landscape) Picture Filename: field_13885539926338f0a98015f.jpg Photo Comment 8 baskets worth of inverts (almost entirely trichoptera)





	iForm Record: ID S287
Photo (Landscape)	Picture Filename: field_9311338746338f0c161327.jpg
Photo Comment	Samples, broken down into three taxa

Benthic Data	
iForm Record: ID S287	
Basket Location	Latitude:56.010576, Longitude:-121.939227, Altitude:457.262675, Speed:0.039837, Horizontal Accuracy:5.941677, Vertical Accuracy:10.606409, Time:09/26/2022 10:41:04 PDT
Basket Location UTM	10 566139 6207764

Benthic Data	
iForm Record: ID S77	
Basket Depth (m)	2.3
Removal Date	2022-09-26
Removal Time	09:45:00

	iForm Record: ID 296
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.101872, Longitude:-120.227573, Altitude:392.662348, Speed:0.002447, Horizontal Accuracy:4.571794, Vertical Accuracy:5.878679, Time:09/29/2022 09:28:36 PDT
New Site Location UTM	10 672430 6220882
New Site Name	PD3-invert
Date and Time	2022-09-29 09:00:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:11:00
Weather Ceiling	Overcast
Weather Precipitation	Drizzle
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Plecoptera big PD3-PB- 4.2g (greater than 4cm) Plecoptera small PD3-PS- 0.2g (2cm and smaller) Trichoptera big PD3-TB - 6.5g Trichoptera small PD3-TS- 6.4g Trichoptera from casings PD3-TC -A - 4.2g PD3-TC -B - 5.4g Ephemeroptera PD3-E- 1.0g More mayflies then. Also larger in size. Found in the upper baskets more. More small caddisflies than big. Largest amount of case trichoptera seen. Most of the large plecoptera came from the last/deepest baskets. No medium size plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, gre

Photos	
iForm Record: ID S296	
Photo Caption Looking upstream	



Photo Caption

iForm Record: ID S296 Looking downstream



Photo (Landscape)

Picture Filename: field_15398285866338ef9bf3f6b.jpg

Photo Caption

RL to RR

iForm Record: ID S296



Photo (Landscape)



Picture Filename: field_532899716338efa36889b.jpg



Photo Comment

and a plecopteran

iForm Record: ID S296 Photo (Landscape) Picture Filename: field_5748376436338efb277881.jpg Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right large trichoptera (TB), bottom left small trichoptera (TS), middle **Photo Comment** plecoptera, bottom right ephemeroptera.

Benthic Data	
iForm Record: ID S296	
Latitude:56.102882, Longitude:-120.231003, Altitude:392.182224, Speed:11.324138, Horizontal Accuracy:4.049040, Vertical Accuracy:6.569921, Time:09/29/2022 16:57:07 PDT	
Basket Location UTM	10 672212 6220985

Benthic Data	
iForm Record: ID S68	
Basket Depth (m)	2.3
Removal Date	2022-09-29
Removal Time	09:35:00

iForm Record: ID 290	
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.202855, Longitude:-121.469783, Altitude:431.633529, Speed:0.084477, Horizontal Accuracy:7.816558, Vertical Accuracy:11.647305, Time:09/27/2022 09:50:17 PDT
New Site Location UTM	10 594931 6229711
New Site Name	PR2-invert
Date and Time	2022-09-27 09:45:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	Gary mann
Air Temperature (Celcius)	10
Air Temperature Time	09:52:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Very low visibility at arrival, gradually clearing up
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera PR2-P 3.9g Trichoptera big PR2-TB -5.5g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera small PR2-TS-A -5.3g Trichoptera small PR2-TS-B - 5.5g Trichoptera tiny PR2-TT-A - 5.9g Trichoptera tiny PR2-TT-B - 6.0g Miscellaneous PR2-M 0.1g Miscellaneous (PR1 M) includes ephemeroptera, oligochaetes P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) M=miscellaneous A and B are replicates Rock sizes Mix of large and small rocks in baskets Small amount of

Photos	
iForm Record: ID S290	
Photo Caption	Looking upstream



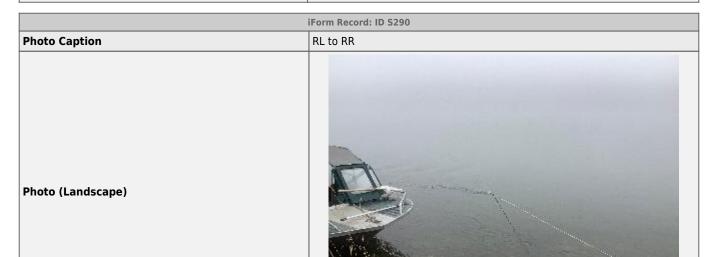


	iForm Record: ID S290
Photo Caption	Looking downstream
	66.1323



Picture Filename: field_10342503376338ef168989c.jpg

Photo (Landscape)







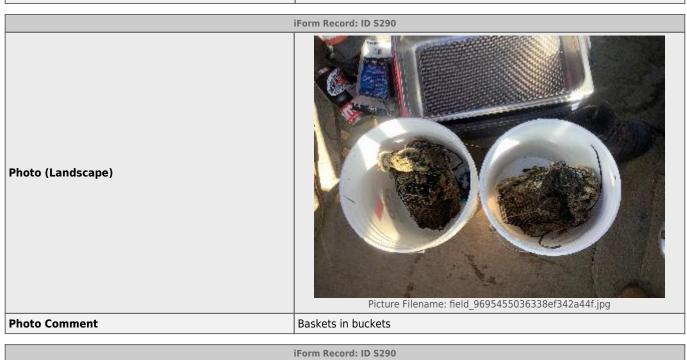
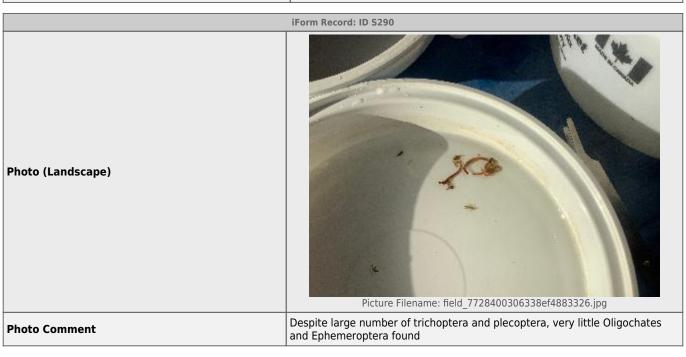


Photo (Landscape) Picture Filename: field 17454421106338ef3af1144.jpg

Photo Comment

Clipping zip ties from one side of rock basket to open it in cleaning bucket

Photo (Landscape) Picture Filename: field_4533840486338ef421b785.jpg Photo Comment Large trichoptera. Greater than 1.5 cm



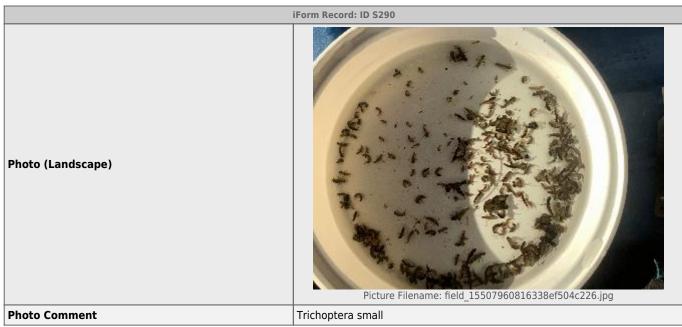


Photo (Landscape) Photo Comment	Picture Filename: field_10151683206338ef5b49d8d.jpg Trichoptera tiny
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Benthic Data	
iForm Record: ID S290	
Basket Location	Latitude:56.202969, Longitude:-121.469598, Altitude:429.559814, Speed:0.010466, Horizontal Accuracy:4.915706, Vertical Accuracy:10.059930, Time:09/27/2022 10:35:45 PDT
Basket Location UTM	10 594943 6229724

Benthic Data		
iForm Record: ID S62		
Basket Depth (m)	2.4	
Removal Date	2022-09-27	
Removal Time	10:30:00	

Form Field ID	iForm Record: ID 299
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.222980, Longitude:-120.957178, Altitude:412.474393, Speed:0.005357, Horizontal Accuracy:4.328103, Vertical Accuracy:9.356317, Time:09/30/2022 10:01:52 PDT
New Site Location UTM	10 626662 6232774
New Site Name	PR2.81 -invert
Date and Time	2022-09-30 09:15:00
Data Recorder	UTW - Tess Ward
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:32:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PR2.81-TB - 6.3g Trichoptera small PR2.81-TS - 6.6g Trichoptera from casings PR2.81-TC - 1.9g Miscellaneous PR2.81-M -0.8g (ephemeroptera, plecoptera, chironomids) More mayflies here. Also larger in size. Found in the upper baskets more. More small caddisflies than big. No medium size plecoptera, only 3 small P found. Tiny chironomids also found. P=plecoptera T=trichoptera B=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera

Photo Caption Looking upstream Photo (Landscape)	Photos Photos	
		iForm Record: ID S299
Photo (Landscape)	Photo Caption	Looking upstream
Picture Filename: field_139966216338efbd4e7c1.jpg	Photo (Landscape)	Picture Filename: field 139966216338efbd4e7c1.jpg

	iForm Record: ID S299
Photo Caption	Looking downstream
Photo (Landscape)	Picture Filename: field_15980888806338efc67f1d9.jpg



iForm Record: ID S299



Photo (Landscape)

Picture Filename: field_10308484736338efda2b053.jpg

Photo Comment

First two baskets - top right small trichoptera, top left trichoptera with casings, bottom left large trichoptera, bottom right ephemeroptera. Not as much as other sites.

iForm Record: ID S299



Picture Filename: field_14201504206338efe23c750.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right small trichoptera (TS), bottom left large trichoptera (TB), bottom right ephemeroptera and plecoptera



Photo Comment

Grab from the first 2 baskets

Benthic Data	
iForm Record: ID S299	
Basket Location	Latitude:56.223167, Longitude:-120.957509, Altitude:413.287149, Speed:2.692066, Horizontal Accuracy:5.692351, Vertical Accuracy:13.201870, Time:09/30/2022 16:31:54 PDT
Basket Location UTM	10 626640 6232794

Benthic Data	
iForm Record: ID S71	
Basket Depth (m)	2.7
Removal Date	2022-09-30
Removal Time	09:35:00

	iForm Record: ID 302
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.309927, Longitude:-119.184708, Altitude:358.791652, Speed:0.017736, Horizontal Accuracy:3.146753, Vertical Accuracy:10.726316, Time:10/01/2022 08:48:35 PDT
New Site Location UTM	11 364850 6242719
New Site Name	PD5-invert
Date and Time	2022-10-01 08:50:00
Data Recorder	UTW - Tess Ward
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	08:50:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Foggy morning clearing to overcast and clouds. No delay
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PD5-TB - 2.5g Trichoptera small PD5-TS-A - 3.4g PD5-TS-B - 3.0g Trichoptera from casings PD3-TC - 2.5g Ephemeroptera PD5-E- 2.2g Miscellaneous PD5 - M - 0.1g (1 plecoptera and 2 tiny midges) More mayflies here. Also larger in size. More small caddisflies than big. 1 plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera from casings-different species than main trichoptera) M=miscellaneous

Photos	
iForm Record: ID S302	
Photo Caption	Looking upstream





Picture Filename: field_17780708056338effe6e4fc.jpg

iForm Record: ID S302	
Photo Caption	Looking downstream
Photo (Landscape)	





Picture Filename: field_2178041246338f00ebaabe.jpg

Photo Comment

First two baskets - left top large trichoptera, right top small trichoptera, bottom left case forming trichoptera, bottom right ephemeroptera

iForm Record: ID S302



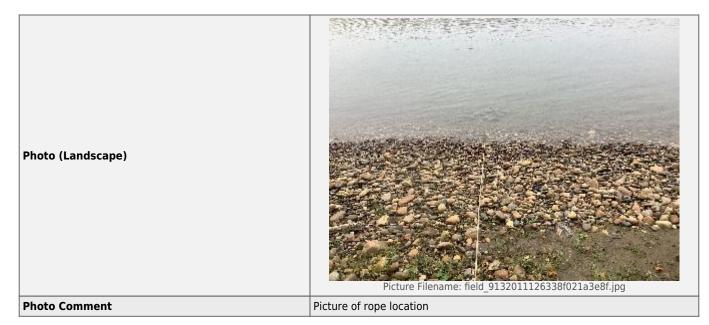
Picture Filename: field_11502572116338f015ec8cf.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left small trichoptera (TS), top right large trichoptera (TB), bottom right trichoptera with casing (TC), bottom left ephemeroptera.

iForm Record: ID S302	
Photo Caption	RR to RL



Benthic Data	
iForm Record: ID S302	
Basket Location	Latitude:56.309924, Longitude:-119.184723, Altitude:357.906955, Speed:0.055703, Horizontal Accuracy:3.855917, Vertical Accuracy:12.360992, Time:10/01/2022 08:51:39 PDT
Basket Location UTM	11 364849 6242719

Benthic Data	
iForm Record: ID S74	
Basket Depth (m)	2.3
Removal Date	2022-10-01
Removal Time	09:15:00

	iForm Record: ID 293
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.161194, Longitude:-120.743319, Altitude:403.330516, Speed:0.016088, Horizontal Accuracy:3.835326, Vertical Accuracy:9.338025, Time:09/28/2022 09:08:02 PDT
New Site Location UTM	10 640144 6226313
New Site Name	PD1-invert
Date and Time	2022-09-28 07:45:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	13
Air Temperature Time	09:11:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Very low visibility at arrival, gradually clearing up
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera big PD1-PB-A - 4.1g (greater then 4cm) Plecoptera big PD1-PB-B - 3.9g Plecoptera big PD1-PB-C - 3.9g Plecoptera small PD1-PS- 2.2g Most plecoptera found in the last / deepest rock baskets Trichoptera big PD1-TB - A - 7.2g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera big PD1-TB - B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera small PD1-TS-B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera from casings PD1-TB - B - 7.1g Trichoptera small PD1-TG-G - 7.2g Trichoptera from casings PD1-TG - 7.4g Ephemeroptera PD1-E-0.4g (34 ti

Photos	
iForm Record: ID S293	
Photo Caption Looking upstream	



Photo Caption

Looking downstream

Photo (Landscape)



iForm Record: ID S293 **Photo Caption**

RL to RR



Photo (Landscape)

Picture Filename: field_16252471616338ef7f6a7cc.jpg

Photo (Landscape)

Photo Comment

First two baskets - bottom left large trichoptera, bottom right small trichoptera, top case forming trichoptera (bright green, removed from cases) with several mayflies and a plecopteran

Photo (Landscape) Picture Filename: field_14290151646338ef872e5cd.jpg Total inverts at end of day. After 8 baskets. Top left small trichoptera, top right large trichoptera, bottom miscellaneous (plecoptera, ephemeroptera and trichoptera from casings)

Benthic Data	
iForm Record: ID S293	
Basket Location	Latitude:56.161202, Longitude:-120.743313, Altitude:404.328067, Speed:0.070068, Horizontal Accuracy:4.189810, Vertical Accuracy:7.495021, Time:09/28/2022 09:52:58 PDT
Basket Location UTM	10 640144 6226314

Benthic Data	
iForm Record: ID S65	
Basket Depth (m)	2.7
Removal Date	2022-09-28
Removal Time	08:45:00

	iForm Record: ID 296
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.101872, Longitude:-120.227573, Altitude:392.662348, Speed:0.002447, Horizontal Accuracy:4.571794, Vertical Accuracy:5.878679, Time:09/29/2022 09:28:36 PDT
New Site Location UTM	10 672430 6220882
New Site Name	PD3-invert
Date and Time	2022-09-29 09:00:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:11:00
Weather Ceiling	Overcast
Weather Precipitation	Drizzle
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Plecoptera big PD3-PB- 4.2g (greater than 4cm) Plecoptera small PD3-PS- 0.2g (2cm and smaller) Trichoptera big PD3-TB - 6.5g Trichoptera small PD3-TS- 6.4g Trichoptera from casings PD3-TC -A - 4.2g PD3-TC -B - 5.4g Ephemeroptera PD3-E- 1.0g More mayflies then. Also larger in size. Found in the upper baskets more. More small caddisflies than big. Largest amount of case trichoptera seen. Most of the large plecoptera came from the last/deepest baskets. No medium size plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, gre

Photos	
iForm Record: ID S296	
Photo Caption	Looking upstream



Photo Caption

iForm Record: ID S296 Looking downstream



Photo (Landscape)

Picture Filename: field_15398285866338ef9bf3f6b.jpg

Photo Caption

RL to RR

iForm Record: ID S296



Photo (Landscape)



Picture Filename: field_532899716338efa36889b.jpg



Photo Comment

and a plecopteran

iForm Record: ID S296 Photo (Landscape) Picture Filename: field_5748376436338efb277881.jpg Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right large trichoptera (TB), bottom left small trichoptera (TS), middle **Photo Comment** plecoptera, bottom right ephemeroptera.

Benthic Data	
iForm Record: ID S296	
Basket Location	Latitude:56.102882, Longitude:-120.231003, Altitude:392.182224, Speed:11.324138, Horizontal Accuracy:4.049040, Vertical Accuracy:6.569921, Time:09/29/2022 16:57:07 PDT
Basket Location UTM	10 672212 6220985

Benthic Data	
iForm Record: ID S68	
Basket Depth (m)	2.3
Removal Date	2022-09-29
Removal Time	09:35:00

Form Field ID	iForm Record: ID 299
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.222980, Longitude:-120.957178, Altitude:412.474393, Speed:0.005357, Horizontal Accuracy:4.328103, Vertical Accuracy:9.356317, Time:09/30/2022 10:01:52 PDT
New Site Location UTM	10 626662 6232774
New Site Name	PR2.81 -invert
Date and Time	2022-09-30 09:15:00
Data Recorder	UTW - Tess Ward
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:32:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PR2.81-TB - 6.3g Trichoptera small PR2.81-TS - 6.6g Trichoptera from casings PR2.81-TC - 1.9g Miscellaneous PR2.81-M -0.8g (ephemeroptera, plecoptera, chironomids) More mayflies here. Also larger in size. Found in the upper baskets more. More small caddisflies than big. No medium size plecoptera, only 3 small P found. Tiny chironomids also found. P=plecoptera T=trichoptera B=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera

Photo Caption Looking upstream Photo (Landscape)		Photos
		iForm Record: ID S299
Photo (Landscape)	Photo Caption	Looking upstream
Picture Filename: field_139966216338efbd4e7c1.jpg	Photo (Landscape)	Picture Filename: field 139966216338efbd4e7c1.jpg

iForm Record: ID S299		
Photo Caption	Looking downstream	
Photo (Landscape)	Picture Filename: field_15980888806338efc67f1d9.jpg	



iForm Record: ID S299



Photo (Landscape)

Picture Filename: field_10308484736338efda2b053.jpg

Photo Comment

First two baskets - top right small trichoptera, top left trichoptera with casings, bottom left large trichoptera, bottom right ephemeroptera. Not as much as other sites.

iForm Record: ID S299



Picture Filename: field_14201504206338efe23c750.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right small trichoptera (TS), bottom left large trichoptera (TB), bottom right ephemeroptera and plecoptera



Photo Comment

Grab from the first 2 baskets

Benthic Data		
iForm Record: ID S299		
Basket Location	Latitude:56.223167, Longitude:-120.957509, Altitude:413.287149, Speed:2.692066, Horizontal Accuracy:5.692351, Vertical Accuracy:13.201870, Time:09/30/2022 16:31:54 PDT	
Basket Location UTM	10 626640 6232794	

Benthic Data		
iForm Record: ID S71		
Basket Depth (m)	2.7	
Removal Date	2022-09-30	
Removal Time	09:35:00	

iForm Record: ID 302		
Form Field ID	2208.2610.0211	
Project	1200-25 - Site C Mon 8/9	
Existing Waterbody or New Waterbody	Existing Waterbody	
Existing Waterbody	Peace River (PCR)	
Existing Waypoint or New Site	New	
New Site Location	Latitude:56.309927, Longitude:-119.184708, Altitude:358.791652, Speed:0.017736, Horizontal Accuracy:3.146753, Vertical Accuracy:10.726316, Time:10/01/2022 08:48:35 PDT	
New Site Location UTM	11 364850 6242719	
New Site Name	PD5-invert	
Date and Time	2022-10-01 08:50:00	
Data Recorder	UTW - Tess Ward	
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward	
Additional Crew		
Air Temperature (Celcius)	11	
Air Temperature Time	08:50:00	
Weather Ceiling	Foggy	
Weather Precipitation	Dry	
Weather Recent Precipitation	None in 24 hours	
Weather Wind	Light Air	
Weather Comments	Foggy morning clearing to overcast and clouds. No delay	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PD5-TB - 2.5g Trichoptera small PD5-TS-A - 3.4g PD5-TS-B - 3.0g Trichoptera from casings PD3-TC - 2.5g Ephemeroptera PD5-E- 2.2g Miscellaneous PD5 - M - 0.1g (1 plecoptera and 2 tiny midges) More mayflies here. Also larger in size. More small caddisflies than big. 1 plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera from casings-different species than main trichoptera) M=miscellaneous	

Photos		
iForm Record: ID S302		
Photo Caption	Looking upstream	





Picture Filename: field_17780708056338effe6e4fc.jpg

iForm Record: ID S302	
Photo Caption	Looking downstream
Photo (Landscape)	





Picture Filename: field_2178041246338f00ebaabe.jpg

Photo Comment

First two baskets - left top large trichoptera, right top small trichoptera, bottom left case forming trichoptera, bottom right ephemeroptera

iForm Record: ID S302



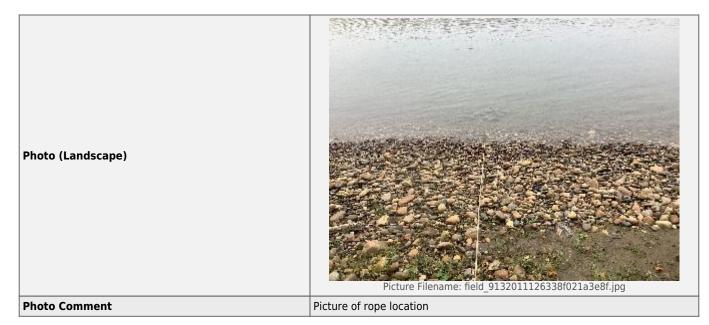
Picture Filename: field_11502572116338f015ec8cf.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left small trichoptera (TS), top right large trichoptera (TB), bottom right trichoptera with casing (TC), bottom left ephemeroptera.

iForm Record: ID \$302	
Photo Caption	RR to RL



Benthic Data	
iForm Record: ID S302	
Latitude:56.309924, Longitude:-119.184723, Altitude:357.906955, Speed:0.055703, Horizontal Accuracy:3.855917, Vertical Accuracy:12.360992, Time:10/01/2022 08:51:39 PDT	
Basket Location UTM	11 364849 6242719

В	enthic Data
iForm Record: ID S74	
Basket Depth (m)	2.3
Removal Date	2022-10-01
Removal Time	09:15:00

	iForm Record: ID 287
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.010531, Longitude:-121.939202, Altitude:456.231505, Speed:0.004653, Horizontal Accuracy:4.969795, Vertical Accuracy:9.715848, Time:09/26/2022 10:03:06 PDT
New Site Location UTM	10 566140 6207759
New Site Name	PR1-invert
Date and Time	2022-09-26 09:30:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre
Additional Crew	Gary mann
Air Temperature (Celcius)	12
Air Temperature Time	10:06:00
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Comment	Arrive at site Remove rope pin down cairn Use boat hook to grab main line Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Each basket takes about 0.75 1 hr to process. Carabiners all left on baskets. Taxa division for this site Trichoptera-big (PR1 TB on vial) Trichoptera-small (PR1 TS) includes more than one species Miscellaneous (PR1 M) includes ephemeroptera, chironomids, hydracarina, oligochaetes, Gastropoda, other Diptera Masses PR1-TB 1.2 g PR1-TS 6.4 g PR1-M 0.6 g Rock sizes All rocks in baskets were large sizes (greater than 10-15cm diameter)

Photos	
iForm Record: ID S287	
Photo Caption Looking upstream	



Photo Caption

iForm Record: ID S287 Looking downstream



Photo (Landscape)

Picture Filename: field_9152717846338f04c9911a.jpg

Photo Caption

RR to RL

iForm Record: ID S287



Picture Filename: field_17903089196338f054c48da.jpg

Photo (Landscape)



Picture Filename: field_20236470986338f05d660a9.jpg

Photo Comment

Large bucket to hand scrub individual rocks, smaller bucket to collect spent rocks, then replace in rock baskets

Photo (Landscape)



Picture Filename: field_10949219156338f0657c24f.jpg

Photo Comment

Rinsing periphyton through potter sieve

Photo (Landscape)



Photo Comment

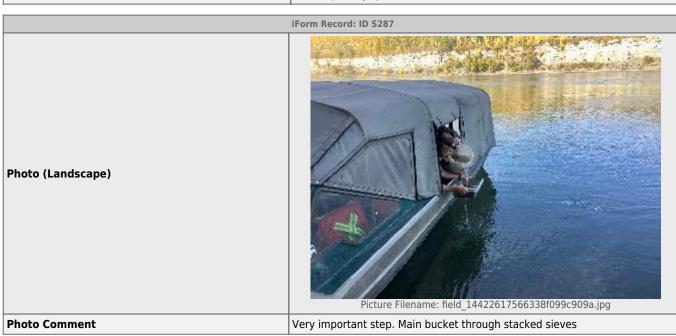
Note water from below

Photo (Landscape) Picture Filename: field_17888652546338f076d2ca2.jpg Photo Comment First brushing of basket





Photo (Landscape) Picture Filename: field_16233193576338f0919e0db.jpg Photo Comment Coarse pickings pre taxa division



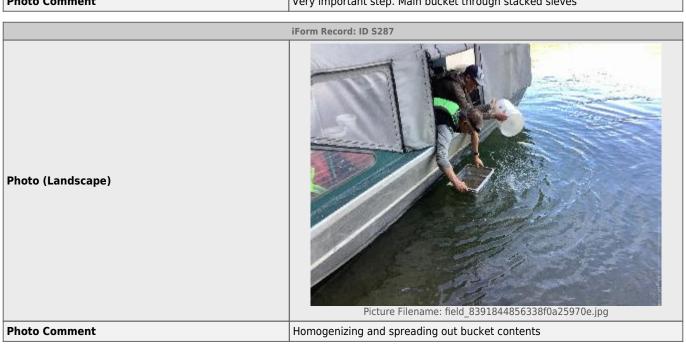
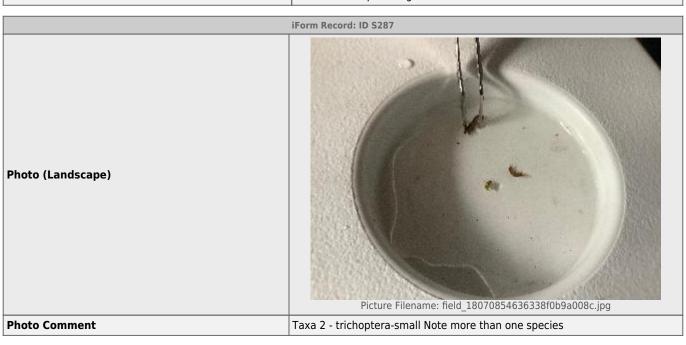


Photo (Landscape) Picture Filename: field_13885539926338f0a98015f.jpg Photo Comment 8 baskets worth of inverts (almost entirely trichoptera)





	iForm Record: ID S287
Photo (Landscape)	Picture Filename: field_9311338746338f0c161327.jpg
Photo Comment	Samples, broken down into three taxa

Benthic Data	
iForm Record: ID S287	
Basket Location	Latitude:56.010576, Longitude:-121.939227, Altitude:457.262675, Speed:0.039837, Horizontal Accuracy:5.941677, Vertical Accuracy:10.606409, Time:09/26/2022 10:41:04 PDT
Basket Location UTM	10 566139 6207764

В	enthic Data
iForm Record: ID S77	
Basket Depth (m)	2.3
Removal Date	2022-09-26
Removal Time	09:45:00

	iForm Record: ID 290
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.202855, Longitude:-121.469783, Altitude:431.633529, Speed:0.084477, Horizontal Accuracy:7.816558, Vertical Accuracy:11.647305, Time:09/27/2022 09:50:17 PDT
New Site Location UTM	10 594931 6229711
New Site Name	PR2-invert
Date and Time	2022-09-27 09:45:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	Gary mann
Air Temperature (Celcius)	10
Air Temperature Time	09:52:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Very low visibility at arrival, gradually clearing up
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera PR2-P 3.9g Trichoptera big PR2-TB -5.5g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera small PR2-TS-A -5.3g Trichoptera small PR2-TS-B - 5.5g Trichoptera tiny PR2-TT-A - 5.9g Trichoptera tiny PR2-TT-B - 6.0g Miscellaneous PR2-M 0.1g Miscellaneous (PR1 M) includes ephemeroptera, oligochaetes P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) M=miscellaneous A and B are replicates Rock sizes Mix of large and small rocks in baskets Small amount of

Photos	
iForm Record: ID S290	
Photo Caption Looking upstream	





	iForm Record: ID S290
Photo Caption	Looking downstream
	66.1323



Picture Filename: field_10342503376338ef168989c.jpg

Photo (Landscape)

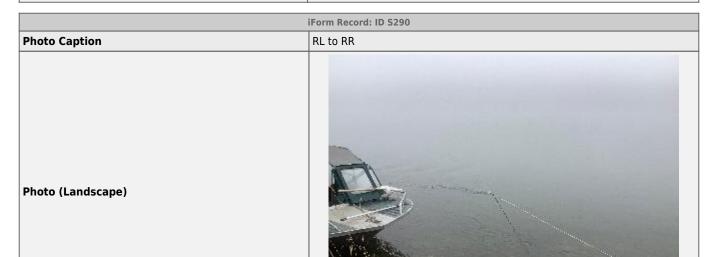




Photo (Landscape)

Photo (Landscape)

Picture Filename: field_8697780706338ef2a8b884.jpg

Photo Comment

Plecoptera

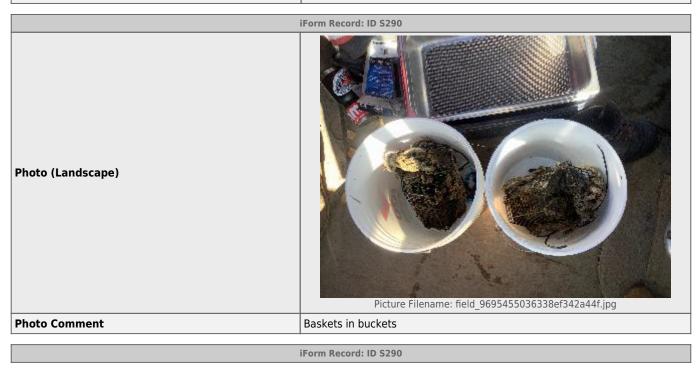
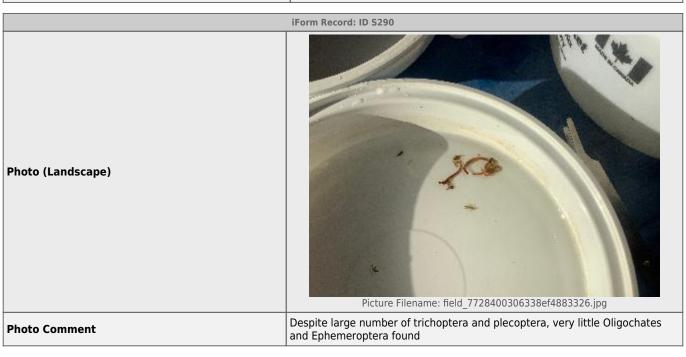


Photo (Landscape) Picture Filename: field 17454421106338ef3af1144.jpg

Photo Comment

Clipping zip ties from one side of rock basket to open it in cleaning bucket

Photo (Landscape) Picture Filename: field_4533840486338ef421b785.jpg Photo Comment Large trichoptera. Greater than 1.5 cm



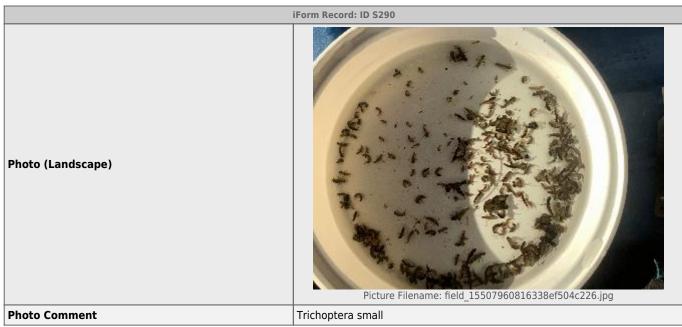


Photo (Landscape) Photo Comment	Picture Filename: field_10151683206338ef5b49d8d.jpg Trichoptera tiny
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Benthic Data	
iForm Record: ID S290	
Basket Location	Latitude:56.202969, Longitude:-121.469598, Altitude:429.559814, Speed:0.010466, Horizontal Accuracy:4.915706, Vertical Accuracy:10.059930, Time:09/27/2022 10:35:45 PDT
Basket Location UTM	10 594943 6229724

Benthic Data	
iForm Record: ID S62	
Basket Depth (m)	2.4
Removal Date	2022-09-27
Removal Time	10:30:00

	iForm Record: ID 293
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.161194, Longitude:-120.743319, Altitude:403.330516, Speed:0.016088, Horizontal Accuracy:3.835326, Vertical Accuracy:9.338025, Time:09/28/2022 09:08:02 PDT
New Site Location UTM	10 640144 6226313
New Site Name	PD1-invert
Date and Time	2022-09-28 07:45:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	13
Air Temperature Time	09:11:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Very low visibility at arrival, gradually clearing up
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera big PD1-PB-A - 4.1g (greater then 4cm) Plecoptera big PD1-PB-B - 3.9g Plecoptera big PD1-PB-C - 3.9g Plecoptera small PD1-PS- 2.2g Most plecoptera found in the last / deepest rock baskets Trichoptera big PD1-TB - A - 7.2g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera big PD1-TB - B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera small PD1-TS-B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera from casings PD1-TB - B - 7.1g Trichoptera small PD1-TG-G - 7.2g Trichoptera from casings PD1-TG - 7.4g Ephemeroptera PD1-E-0.4g (34 ti

Photos	
iForm Record: ID S293	
Photo Caption Looking upstream	



Photo Caption

Looking downstream

Photo (Landscape)



iForm Record: ID S293 **Photo Caption**

RL to RR



Photo (Landscape)

Picture Filename: field_16252471616338ef7f6a7cc.jpg

Photo (Landscape)

Photo Comment

First two baskets - bottom left large trichoptera, bottom right small trichoptera, top case forming trichoptera (bright green, removed from cases) with several mayflies and a plecopteran

Photo (Landscape) Picture Filename: field_14290151646338ef872e5cd.jpg Total inverts at end of day. After 8 baskets. Top left small trichoptera, top right large trichoptera, bottom miscellaneous (plecoptera, ephemeroptera and trichoptera from casings)

Benthic Data	
iForm Record: ID S293	
Basket Location	Latitude:56.161202, Longitude:-120.743313, Altitude:404.328067, Speed:0.070068, Horizontal Accuracy:4.189810, Vertical Accuracy:7.495021, Time:09/28/2022 09:52:58 PDT
Basket Location UTM	10 640144 6226314

Benthic Data	
iForm Record: ID S65	
Basket Depth (m)	2.7
Removal Date	2022-09-28
Removal Time	08:45:00

	iForm Record: ID 287
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.010531, Longitude:-121.939202, Altitude:456.231505, Speed:0.004653, Horizontal Accuracy:4.969795, Vertical Accuracy:9.715848, Time:09/26/2022 10:03:06 PDT
New Site Location UTM	10 566140 6207759
New Site Name	PR1-invert
Date and Time	2022-09-26 09:30:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre
Additional Crew	Gary mann
Air Temperature (Celcius)	12
Air Temperature Time	10:06:00
Weather Ceiling	Partly Cloudy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Comment	Arrive at site Remove rope pin down cairn Use boat hook to grab main line Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Each basket takes about 0.75 1 hr to process. Carabiners all left on baskets. Taxa division for this site Trichoptera-big (PR1 TB on vial) Trichoptera-small (PR1 TS) includes more than one species Miscellaneous (PR1 M) includes ephemeroptera, chironomids, hydracarina, oligochaetes, Gastropoda, other Diptera Masses PR1-TB 1.2 g PR1-TS 6.4 g PR1-M 0.6 g Rock sizes All rocks in baskets were large sizes (greater than 10-15cm diameter)

Photos	
iForm Record: ID S287	
Photo Caption Looking upstream	



Picture Filename: field_6315412866338f043962d8.jpg

Photo Caption

iForm Record: ID S287 Looking downstream



Photo (Landscape)

Picture Filename: field_9152717846338f04c9911a.jpg

Photo Caption

RR to RL

iForm Record: ID S287



Picture Filename: field_17903089196338f054c48da.jpg

Photo (Landscape)



Picture Filename: field_20236470986338f05d660a9.jpg

Photo Comment

Large bucket to hand scrub individual rocks, smaller bucket to collect spent rocks, then replace in rock baskets

Photo (Landscape)



Picture Filename: field_10949219156338f0657c24f.jpg

Photo Comment

Rinsing periphyton through potter sieve

Photo (Landscape)



Photo Comment

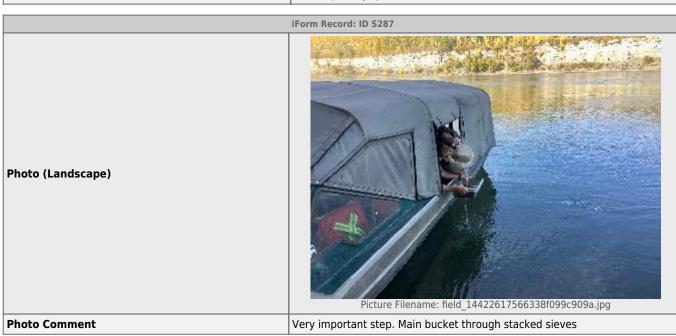
Note water from below

Photo (Landscape) Picture Filename: field_17888652546338f076d2ca2.jpg Photo Comment First brushing of basket





Photo (Landscape) Picture Filename: field_16233193576338f0919e0db.jpg Photo Comment Coarse pickings pre taxa division



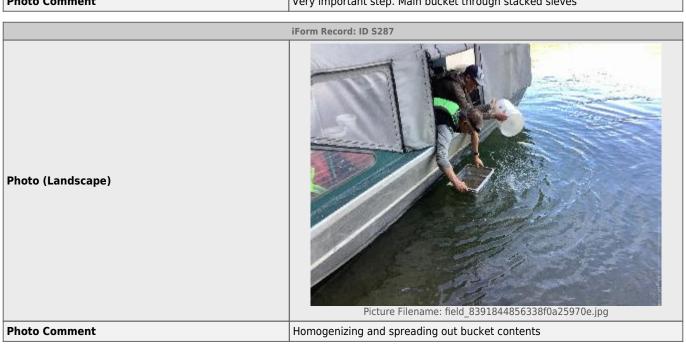
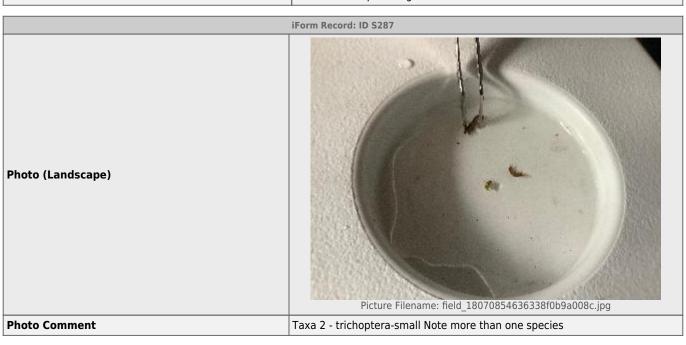


Photo (Landscape) Picture Filename: field_13885539926338f0a98015f.jpg Photo Comment 8 baskets worth of inverts (almost entirely trichoptera)





	iForm Record: ID S287
Photo (Landscape)	Picture Filename: field_9311338746338f0c161327.jpg
Photo Comment	Samples, broken down into three taxa

Benthic Data	
iForm Record: ID S287	
Basket Location	Latitude:56.010576, Longitude:-121.939227, Altitude:457.262675, Speed:0.039837, Horizontal Accuracy:5.941677, Vertical Accuracy:10.606409, Time:09/26/2022 10:41:04 PDT
Basket Location UTM	10 566139 6207764

Benthic Data	
iForm Record: ID S77	
Basket Depth (m)	2.3
Removal Date	2022-09-26
Removal Time	09:45:00

iForm Record: ID 290		
Form Field ID	2208.2610.0211	
Project	1200-25 - Site C Mon 8/9	
Existing Waterbody or New Waterbody	Existing Waterbody	
Existing Waterbody	Peace River (PCR)	
Existing Waypoint or New Site	New	
New Site Location	Latitude:56.202855, Longitude:-121.469783, Altitude:431.633529, Speed:0.084477, Horizontal Accuracy:7.816558, Vertical Accuracy:11.647305, Time:09/27/2022 09:50:17 PDT	
New Site Location UTM	10 594931 6229711	
New Site Name	PR2-invert	
Date and Time	2022-09-27 09:45:00	
Data Recorder	PBP - Patrick Beaupre	
ERL Crew	KDG - Kevin Ganshorn, PBP - Patrick Beaupre, UTW - Tess Ward	
Additional Crew	Gary mann	
Air Temperature (Celcius)	10	
Air Temperature Time	09:52:00	
Weather Ceiling	Foggy	
Weather Precipitation	Dry	
Weather Recent Precipitation	None in 24 hours	
Weather Wind	Light Air	
Weather Comments	Very low visibility at arrival, gradually clearing up	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera PR2-P 3.9g Trichoptera big PR2-TB -5.5g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera small PR2-TS-A -5.3g Trichoptera small PR2-TS-B - 5.5g Trichoptera tiny PR2-TT-A - 5.9g Trichoptera tiny PR2-TT-B - 6.0g Miscellaneous PR2-M 0.1g Miscellaneous (PR1 M) includes ephemeroptera, oligochaetes P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) M=miscellaneous A and B are replicates Rock sizes Mix of large and small rocks in baskets Small amount of	

Photos	
iForm Record: ID S290	
Photo Caption Looking upstream	



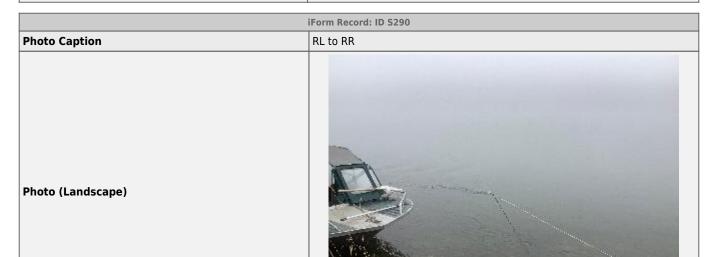


iForm Record: ID S	
Photo Caption	Looking downstream
	66.1323



Picture Filename: field_10342503376338ef168989c.jpg

Photo (Landscape)







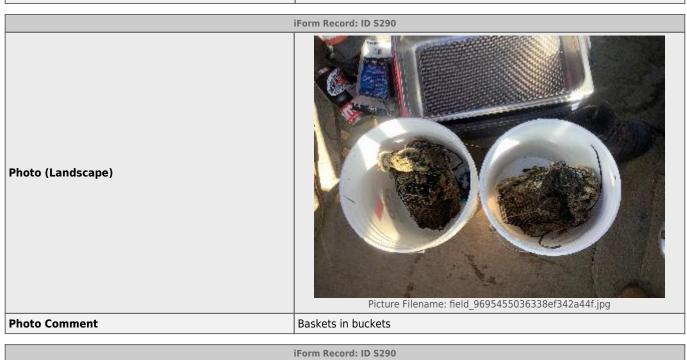
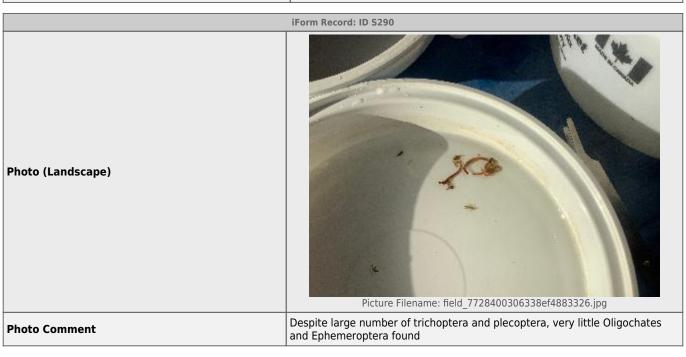


Photo (Landscape) Picture Filename: field 17454421106338ef3af1144.jpg

Photo Comment

Clipping zip ties from one side of rock basket to open it in cleaning bucket

Photo (Landscape) Picture Filename: field_4533840486338ef421b785.jpg Photo Comment Large trichoptera. Greater than 1.5 cm



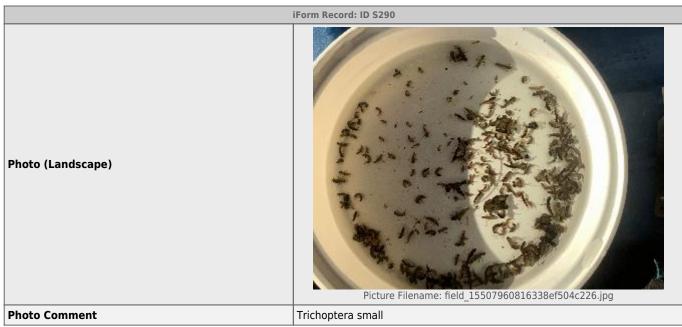


Photo (Landscape) Photo Comment	Picture Filename: field_10151683206338ef5b49d8d.jpg Trichoptera tiny
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Benthic Data	
iForm Record: ID S290	
Basket Location	Latitude:56.202969, Longitude:-121.469598, Altitude:429.559814, Speed:0.010466, Horizontal Accuracy:4.915706, Vertical Accuracy:10.059930, Time:09/27/2022 10:35:45 PDT
Basket Location UTM	10 594943 6229724

Benthic Data	
iForm Record: ID S62	
Basket Depth (m)	2.4
Removal Date	2022-09-27
Removal Time	10:30:00

	iForm Record: ID 293
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.161194, Longitude:-120.743319, Altitude:403.330516, Speed:0.016088, Horizontal Accuracy:3.835326, Vertical Accuracy:9.338025, Time:09/28/2022 09:08:02 PDT
New Site Location UTM	10 640144 6226313
New Site Name	PD1-invert
Date and Time	2022-09-28 07:45:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	13
Air Temperature Time	09:11:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Very low visibility at arrival, gradually clearing up
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Taxa division for this site, with masses Plecoptera big PD1-PB-A - 4.1g (greater then 4cm) Plecoptera big PD1-PB-B - 3.9g Plecoptera big PD1-PB-C - 3.9g Plecoptera small PD1-PS- 2.2g Most plecoptera found in the last / deepest rock baskets Trichoptera big PD1-TB - A - 7.2g (greater than 1.5cm, all were the tree belly species for this site) Trichoptera big PD1-TB - B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera small PD1-TS-B - 7.1g Trichoptera small PD1-TS-C - 7.2g Trichoptera from casings PD1-TB - B - 7.1g Trichoptera small PD1-TG-G - 7.2g Trichoptera from casings PD1-TG - 7.4g Ephemeroptera PD1-E-0.4g (34 ti

Photos	
iForm Record: ID S293	
Photo Caption Looking upstream	



Photo Caption

Looking downstream

Photo (Landscape)



iForm Record: ID S293 **Photo Caption**

RL to RR



Photo (Landscape)

Picture Filename: field_16252471616338ef7f6a7cc.jpg

Photo (Landscape)

Photo Comment

First two baskets - bottom left large trichoptera, bottom right small trichoptera, top case forming trichoptera (bright green, removed from cases) with several mayflies and a plecopteran

Photo (Landscape) Picture Filename: field_14290151646338ef872e5cd.jpg Total inverts at end of day. After 8 baskets. Top left small trichoptera, top right large trichoptera, bottom miscellaneous (plecoptera, ephemeroptera and trichoptera from casings)

Benthic Data	
iForm Record: ID S293	
Basket Location	Latitude:56.161202, Longitude:-120.743313, Altitude:404.328067, Speed:0.070068, Horizontal Accuracy:4.189810, Vertical Accuracy:7.495021, Time:09/28/2022 09:52:58 PDT
Basket Location UTM	10 640144 6226314

Benthic Data	
iForm Record: ID S65	
Basket Depth (m)	2.7
Removal Date	2022-09-28
Removal Time	08:45:00

	iForm Record: ID 296
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.101872, Longitude:-120.227573, Altitude:392.662348, Speed:0.002447, Horizontal Accuracy:4.571794, Vertical Accuracy:5.878679, Time:09/29/2022 09:28:36 PDT
New Site Location UTM	10 672430 6220882
New Site Name	PD3-invert
Date and Time	2022-09-29 09:00:00
Data Recorder	PBP - Patrick Beaupre
ERL Crew	PBP - Patrick Beaupre, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:11:00
Weather Ceiling	Overcast
Weather Precipitation	Drizzle
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Plecoptera big PD3-PB- 4.2g (greater than 4cm) Plecoptera small PD3-PS- 0.2g (2cm and smaller) Trichoptera big PD3-TB - 6.5g Trichoptera small PD3-TS- 6.4g Trichoptera from casings PD3-TC -A - 4.2g PD3-TC -B - 5.4g Ephemeroptera PD3-E- 1.0g More mayflies then. Also larger in size. Found in the upper baskets more. More small caddisflies than big. Largest amount of case trichoptera seen. Most of the large plecoptera came from the last/deepest baskets. No medium size plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, gre

Photos	
iForm Record: ID S296	
Photo Caption Looking upstream	



Photo Caption

iForm Record: ID S296 Looking downstream



Photo (Landscape)

Picture Filename: field_15398285866338ef9bf3f6b.jpg

Photo Caption

RL to RR

iForm Record: ID S296



Photo (Landscape)



Picture Filename: field_532899716338efa36889b.jpg



Photo Comment

and a plecopteran

iForm Record: ID S296 Photo (Landscape) Picture Filename: field_5748376436338efb277881.jpg Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right large trichoptera (TB), bottom left small trichoptera (TS), middle **Photo Comment** plecoptera, bottom right ephemeroptera.

Benthic Data	
iForm Record: ID S296	
Basket Location	Latitude:56.102882, Longitude:-120.231003, Altitude:392.182224, Speed:11.324138, Horizontal Accuracy:4.049040, Vertical Accuracy:6.569921, Time:09/29/2022 16:57:07 PDT
Basket Location UTM	10 672212 6220985

Benthic Data	
iForm Record: ID S68	
Basket Depth (m)	2.3
Removal Date	2022-09-29
Removal Time	09:35:00

iForm Record: ID 299	
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.222980, Longitude:-120.957178, Altitude:412.474393, Speed:0.005357, Horizontal Accuracy:4.328103, Vertical Accuracy:9.356317, Time:09/30/2022 10:01:52 PDT
New Site Location UTM	10 626662 6232774
New Site Name	PR2.81 -invert
Date and Time	2022-09-30 09:15:00
Data Recorder	UTW - Tess Ward
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	09:32:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PR2.81-TB - 6.3g Trichoptera small PR2.81-TS - 6.6g Trichoptera from casings PR2.81-TC - 1.9g Miscellaneous PR2.81-M -0.8g (ephemeroptera, plecoptera, chironomids) More mayflies here. Also larger in size. Found in the upper baskets more. More small caddisflies than big. No medium size plecoptera, only 3 small P found. Tiny chironomids also found. P=plecoptera T=trichoptera B=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera

Photo Caption Looking upstream Photo (Landscape)		Photos
		iForm Record: ID S299
Photo (Landscape)	Photo Caption	Looking upstream
Picture Filename: field_139966216338efbd4e7c1.jpg	Photo (Landscape)	Picture Filename: field 139966216338efbd4e7c1.jpg

	iForm Record: ID S299
Photo Caption	Looking downstream
Photo (Landscape)	Picture Filename: field_15980888806338efc67f1d9.jpg



iForm Record: ID S299



Photo (Landscape)

Picture Filename: field_10308484736338efda2b053.jpg

Photo Comment

First two baskets - top right small trichoptera, top left trichoptera with casings, bottom left large trichoptera, bottom right ephemeroptera. Not as much as other sites.

iForm Record: ID S299



Picture Filename: field_14201504206338efe23c750.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left trichoptera with casing (TC), top right small trichoptera (TS), bottom left large trichoptera (TB), bottom right ephemeroptera and plecoptera

iForm Record: ID S299



Photo (Landscape)

Photo Comment

Grab from the first 2 baskets

Benthic Data	
iForm Record: ID S299	
Basket Location	Latitude:56.223167, Longitude:-120.957509, Altitude:413.287149, Speed:2.692066, Horizontal Accuracy:5.692351, Vertical Accuracy:13.201870, Time:09/30/2022 16:31:54 PDT
Basket Location UTM	10 626640 6232794

Ве	enthic Data
iForm Record: ID S71	
Basket Depth (m)	2.7
Removal Date	2022-09-30
Removal Time	09:35:00

Ecofish Research: RNQA-20053

	iForm Record: ID 302
Form Field ID	2208.2610.0211
Project	1200-25 - Site C Mon 8/9
Existing Waterbody or New Waterbody	Existing Waterbody
Existing Waterbody	Peace River (PCR)
Existing Waypoint or New Site	New
New Site Location	Latitude:56.309927, Longitude:-119.184708, Altitude:358.791652, Speed:0.017736, Horizontal Accuracy:3.146753, Vertical Accuracy:10.726316, Time:10/01/2022 08:48:35 PDT
New Site Location UTM	11 364850 6242719
New Site Name	PD5-invert
Date and Time	2022-10-01 08:50:00
Data Recorder	UTW - Tess Ward
ERL Crew	NWY - Nicole Wolsey, UTW - Tess Ward
Additional Crew	
Air Temperature (Celcius)	11
Air Temperature Time	08:50:00
Weather Ceiling	Foggy
Weather Precipitation	Dry
Weather Recent Precipitation	None in 24 hours
Weather Wind	Light Air
Weather Comments	Foggy morning clearing to overcast and clouds. No delay
Comment	Arrive at site Clean gear with liquinox. 6 buckets, 2 sieve trays, 2 brushes, 2 squirt bottles, 2 potters sieves. Plus clean tote lids as table space. Use boat hook to grab main line and nose in with engine running Follow to first basket closest to shore by hand pulling. Haul up, but keep submerged, place kick net under Plus downstream to catch loose inverts. Unhook first basket via carabiner, haul second basket to surface and repeat. Rock baskets can go in waiting tray. Process two baskets at a time. Processing - first brush off basket itself (exterior) into bucket with river water, then open basket and dump rocks into bucket, then complete brushing of basket. then hand clean every rock individually, placing wiped rocks in separate spent bucket. Rocks will go back into baskets and sealed with two zip ties. Bucket contents through stacked sieve tray - can use river water up from below to spread it out. Bucket and tray can have water added to rinse out through potters sieve. Also rinse out out kicknet trap - this can be gone through twice, including using stacked sieves. Use squirt bottles to dislodge contents into lighter tray. Periphyton masses from trays can be divided up and analzyzed in potters sieves. Do a coarse pick for visible inverts into white bottomed container with water. Then finish site by dividing by taxa last. Two baskets take 1.5 to 2 hr to process. Carabiners all left on baskets. Empty vials weigh 3.9g. Taxa division for this site, with masses Trichoptera big PD5-TB - 2.5g Trichoptera small PD5-TS-A - 3.4g PD5-TS-B - 3.0g Trichoptera from casings PD3-TC - 2.5g Ephemeroptera PD5-E- 2.2g Miscellaneous PD5 - M - 0.1g (1 plecoptera and 2 tiny midges) More mayflies here. Also larger in size. More small caddisflies than big. 1 plecoptera. P=plecoptera T=trichoptera E=ephemoroptera B=big (greater than 1.5cm for T, greater then 4cm for P) S=small (less than 1.5cm, over 1cm) (give or take T=tiny (less than 1cm) C=casings (trichoptera from casings-different species than main trichoptera) M=miscellaneous

Photos	
iForm Record: ID S302	
Photo Caption	Looking upstream





	iForm Record: ID S302
Photo Caption	Looking downstream





Photo Caption RR to RL

Photo (Landscape)



iForm Record: ID S302

Photo (Landscape)



Picture Filename: field_2178041246338f00ebaabe.jpg

Photo Comment

First two baskets - left top large trichoptera, right top small trichoptera, bottom left case forming trichoptera, bottom right ephemeroptera

iForm Record: ID S302



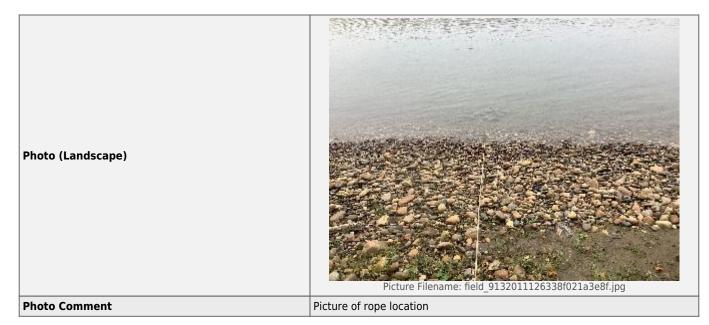
Picture Filename: field_11502572116338f015ec8cf.jpg

Photo Comment

Photo (Landscape)

Total inverts at end of day. After 8 baskets. Top left small trichoptera (TS), top right large trichoptera (TB), bottom right trichoptera with casing (TC), bottom left ephemeroptera.

iForm Record: ID S302	
Photo Caption	RR to RL



Benthic Data	
iForm Record: ID S302	
Basket Location	Latitude:56.309924, Longitude:-119.184723, Altitude:357.906955, Speed:0.055703, Horizontal Accuracy:3.855917, Vertical Accuracy:12.360992, Time:10/01/2022 08:51:39 PDT
Basket Location UTM	11 364849 6242719

В	enthic Data
iForm Record: ID S74	
Basket Depth (m)	2.3
Removal Date	2022-10-01
Removal Time	09:15:00

APPENDIX B5: INVERTEBRATE TISSUE CHEMISTRY ALS REPORTS

ALS Canada Ltd.



CERTIFICATE OF ANALYSIS

Work Order : FJ2203485 Page : 1 of 7

: 2 Amendment

Client Laboratory : Azimuth Consulting Group Inc. : ALS Environmental - Fort St. John

: Ian McIvor **Account Manager** : Brent Mack Contact

Address Address : # 218 - 2902 West Broadway : 11007 Alaska Road

Fort St. John BC Canada V1J 6P3

Telephone Telephone : 778-370-3279 **Date Samples Received Project** : BCH-22-01 : 16-Dec-2022 10:50

Date Analysis Commenced : 02-Mar-2023 C-O-C number Issue Date : 26-Sep-2023 16:29

Sampler : Kevin Ganshorn

Vancouver BC Canada V6K 2G8

Site : ----Quote number : Q75925 No. of samples received : 45 No. of samples analysed : 45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

PO

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Page : 2 of 7

Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	Description
%	percent
μg/kg	micrograms per kilogram
μg/kg wwt	micrograms per kilogram wet weight
mg/kg	milligrams per kilogram
mg/kg wwt	milligrams per kilogram wet weight

<: less than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Accreditation

Accreditation	Description	Laboratory	Address
Α	CALA ISO/IEC 17025:2017	VA ALS Environmental - Vancouver	8081 Lougheed Highway, Burnaby, BC

Applicable accreditations are indicated in the Method/Lab column as superscripts.

Workorder Comments

Amendment (11/07/2023): This report has been amended and re-released to allow the reporting of additional analytical data.

>: greater than.

Page : 3 of 7

Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Analytical Results

Sub-Matrix: Tissue				CI	lient sample ID	PR1-TB	PR1-TS	PR1-M	PR2-P	PR2-TB
(Matrix: Biota)										
				Client samp	oling date / time	26-Sep-2022 00:00	26-Sep-2022 00:00	26-Sep-2022 00:00	27-Sep-2022 00:00	27-Sep-2022 00:00
Analyte	CAS Number	Method/	Lab	LOR	Unit	FJ2203485-001	FJ2203485-002	FJ2203485-003	FJ2203485-004	FJ2203485-005
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%			90.5		
Moisture		E144-H/VA	Α	2.0	%	78.0	82.2		78.7	76.3
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0163	0.0135		0.0050	0.0084
Mercury	7439-97-6	E512A/VA	Α	0.0020	mg/kg wwt			<0.0037		
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	12.7	3.0	3.2	2.8	7.3

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Tissue				Ci	lient sample ID	PR2-TS-A	PR2-TS-B	PR2-TT-A	PR2-TT-B	PD1-PB-A
(Matrix: Biota)										
				Client samp	lling date / time	27-Sep-2022 00:00	27-Sep-2022 00:00	27-Sep-2022 00:00	27-Sep-2022 00:00	28-Sep-2022 00:00
Analyte	CAS Number	Method/	Lab	LOR	Unit	FJ2203485-006	FJ2203485-007	FJ2203485-008	FJ2203485-009	FJ2203485-010
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144-H/VA	Α	2.0	%	79.2	76.9	72.2	73.1	73.8
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0069	0.0075	0.0084	0.0082	0.0062
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	6.3	6.1	5.5	4.4	2.4

Please refer to the General Comments section for an explanation of any result qualifiers detected.

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Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	PD1-PB-B	PD1-PB-C	PD1-PS	PD1-TB-A	PD1-TB-B
(Matrix: Biota)										
				Client samp	ling date / time	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00
Analyte	CAS Number	Method/L	ab	LOR	Unit	FJ2203485-011	FJ2203485-012	FJ2203485-013	FJ2203485-014	FJ2203485-015
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144-H/VA	Α	2.0	%	71.0	71.6	79.6	83.6	78.5
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0064	0.0067	0.0053	0.0055	0.0073
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	2.7	2.5	2.5	4.4	4.4

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Tissue				Ci	lient sample ID	PD1-TB-C	PD1-TS-A	PD1-TS-B	PD1-TS-C	PD1-TC-
(Matrix: Biota)										
				Client samp	oling date / time	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00	28-Sep-2022 00:00
Analyte	CAS Number	Method/L	.ab	LOR	Unit	FJ2203485-016	FJ2203485-017	FJ2203485-018	FJ2203485-019	FJ2203485-020
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144-H/VA	Α	2.0	%	80.6	73.3	76.7	70.7	72.9
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0066	0.0078	0.0077	0.0104	0.0044
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	5.3	4.4	3.9	4.5	2.6

Please refer to the General Comments section for an explanation of any result qualifiers detected.

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Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	PD1-E	PD3-PB	PD3-TB	PD3-TS	PD3-TC-A
(Matrix: Biota)										
				Client samp	ling date / time	28-Sep-2022 00:00	29-Sep-2022 00:00	29-Sep-2022 00:00	29-Sep-2022 00:00	29-Sep-2022 00:00
Analyte	CAS Number	Method/L	_ab	LOR	Unit	FJ2203485-021	FJ2203485-022	FJ2203485-023	FJ2203485-024	FJ2203485-025
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%	87.7				
Moisture		E144-H/VA	Α	2.0	%		76.0	81.0	77.2	73.9
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt		0.0049	0.0042	0.0050	0.0041
Mercury	7439-97-6	E512A/VA	Α	0.0020	mg/kg wwt	0.0023				
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	2.0	2.0	2.4	2.9	2.1

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	PD3-TC-B	PD3-E	PR3-TB	PR3-TS	PR3-TC
(Matrix: Biota)										
				Client samp	ling date / time	29-Sep-2022 00:00	29-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00	30-Sep-2022 00:00
Analyte	CAS Number	Method/L	_ab	LOR	Unit	FJ2203485-026	FJ2203485-027	FJ2203485-028	FJ2203485-029	FJ2203485-030
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%		80.8			
Moisture		E144-H/VA	Α	2.0	%	63.8		83.7	73.0	81.8
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0059		0.0044	0.0072	0.0031
Mercury	7439-97-6	E512A/VA	Α	0.0020	mg/kg wwt		0.0052			
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	2.7	1.9	2.8	3.5	2.4

Please refer to the General Comments section for an explanation of any result qualifiers detected.

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Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	PR3-M	PD5-TB	PD5-TS-A	PD5-TS-B	PD5-TC
(Matrix: Biota)										
				Client samp	ling date / time	30-Sep-2022 00:00	01-Oct-2022 00:00	01-Oct-2022 00:00	01-Oct-2022 00:00	01-Oct-2022 00:00
Analyte	CAS Number	Method/L	_ab	LOR	Unit	FJ2203485-031	FJ2203485-032	FJ2203485-033	FJ2203485-034	FJ2203485-035
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%	86.9				
Moisture		E144-H/VA	Α	2.0	%		83.5	76.1	83.4	77.8
Metals										
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt		0.0033	0.0087	0.0050	0.0040
Mercury	7439-97-6	E512A/VA	Α	0.0020	mg/kg wwt	0.0037				
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	2.2	1.3	2.7	1.6	1.1

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	PD5-E	PR1-Z	W1-Shallow-Z-	W1-Shallow-Z-	D1-Shallow-Z
(Matrix: Biota)								Α	В	
				Client samp	ling date / time	01-Oct-2022 00:00	20-Aug-2022 00:00	16-Aug-2022 00:00	16-Aug-2022 00:00	21-Aug-2022 00:00
Analyte	CAS Number	Method/L	_ab	LOR	Unit	FJ2203485-036	FJ2203485-037	FJ2203485-038	FJ2203485-039	FJ2203485-040
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%		97.9	98.8	98.9	96.7
Moisture		E144-H/VA	Α	2.0	%	84.3				
Metals										
Mercury	7439-97-6	E512/VA	Α	0.010	mg/kg		0.120	0.058	0.062	0.065
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt	0.0042				
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	1.9	1.9	<1.0	<1.0	<1.0

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Page : 7 of 7

Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Analytical Results

Sub-Matrix: Tissue				CI	ient sample ID	W1-Shallow-Z	D1-Shallow-Z-A	D1-Shallow-Z-B	W1-Shallow-Z-	D1-Shallow-Z-D
(Matrix: Biota)									A-DUP	UP
				Client samp	ling date / time	19-Oct-2022 00:00	19-Oct-2022 00:00	19-Oct-2022 00:00	16-Aug-2022 00:00	21-Aug-2022 00:00
Analyte	CAS Number	Method/	Lab	LOR	Unit	FJ2203485-041	FJ2203485-042	FJ2203485-043	FJ2203485-044	FJ2203485-045
						Result	Result	Result	Result	Result
Physical Tests										
Moisture		E144A/VA	Α	2.0	%	97.4	98.7		99.1	94.4
Moisture		E144-H/VA	Α	2.0	%			93.2		
Metals										
Mercury	7439-97-6	E512/VA	Α	0.010	mg/kg	0.049	0.060		0.063	0.099
Mercury	7439-97-6	E511A/VA	Α	0.0010	mg/kg wwt			0.0015		
Speciated Metals										
Methylmercury (as MeHg)	22967-92-6	E538/VA	Α	5.0	μg/kg					25.4
Methylmercury (as MeHg)	22967-92-6	E538A/VA	Α	1.0	μg/kg wwt	<1.0	<1.0	<1.0		

Please refer to the General Comments section for an explanation of any result qualifiers detected.



QUALITY CONTROL INTERPRETIVE REPORT

Work Order : **FJ2203485** Page : 1 of 21

Amendment :2

Client : Azimuth Consulting Group Inc. : ALS Environmental - Fort St. John

Contact : lan McIvor Account Manager : Brent Mack

Address :# 218 - 2902 West Broadway Address :11007 Alaska Road

Vancouver BC Canada V6K 2G8 Fort St. John, British Columbia Canada V1J 6P3

Telephone :---- Telephone :778-370-3279

 Project
 : BCH-22-01
 Date Samples Received
 : 16-Dec-2022 10:50

 PO
 : --- Issue Date
 : 26-Sep-2023 16:29

Sampler : Kevin Ganshorn

Site :---Quote number :Q75925
No. of samples received :45
No. of samples analysed :45

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

C-O-C number

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers: Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

• No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

No Analysis Holding Time Outliers exist.

 Outliers: Frequency of Quality Control S Quality Control Sample Frequency Outliers occur- 	Samples please see following pages for full de	tails.	

Page : 3 of 21

Work Order : FJ2203485 Amendment 2
Client : Azimuth Consulting Group Inc.

Project : BCH-22-01

Matrix: Biota

Analyte Group

LDPE bag

D1-Shallow-Z-DUP



Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

06-Jun-2023

365

days

Analysis

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and/or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Sampling Date

Extraction / Preparation

Method

E512

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

analyte Group	Welliou	Sampling Date		adolion / I i	oparation			7 tiridiy c	,,,,	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eva
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
D1-Shallow-Z-A	E512	19-Oct-2022	04-Apr-2023	365	168	✓	05-Apr-2023	365	168	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
W1-Shallow-Z	E512	19-Oct-2022	04-Apr-2023	365	168	✓	05-Apr-2023	365	168	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
D1-Shallow-Z	E512	21-Aug-2022	04-Apr-2023	365	227	✓	05-Apr-2023	365	227	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
PR1-Z	E512	20-Aug-2022	04-Apr-2023	365	228	✓	05-Apr-2023	365	228	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
W1-Shallow-Z-A	E512	16-Aug-2022	04-Apr-2023	365	232	✓	05-Apr-2023	365	232	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag										
W1-Shallow-Z-B	E512	16-Aug-2022	04-Apr-2023	365	232	✓	05-Apr-2023	365	232	✓
				days	days			days	days	

21-Aug-2022

05-Jun-2023

365

days

289

days

289

days

4 of 21 FJ2203485 Amendment 2 Work Order : Client Azimuth Consulting Group Inc.

BCH-22-01 Project



Matrix: Biota	Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (DRY units, Biopsy)										
LDPE bag W1-Shallow-Z-A-DUP	E512	16-Aug-2022	05-Jun-2023	365 days	294 days	✓	06-Jun-2023	365 days	294 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Biopsy)										
LDPE bag PR3-M	E512A	30-Sep-2022	10-Apr-2023	365 days	193 days	✓	11-Apr-2023	365 days	193 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Biopsy)										
LDPE bag PD3-E	E512A	29-Sep-2022	10-Apr-2023	365 days	194 days	✓	11-Apr-2023	365 days	194 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Biopsy)										
LDPE bag PD1-E	E512A	28-Sep-2022	10-Apr-2023	365 days	195 days	✓	11-Apr-2023	365 days	195 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Biopsy)										
LDPE bag PR1-M	E512A	26-Sep-2022	10-Apr-2023	365 days	197 days	✓	11-Apr-2023	365 days	197 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag D1-Shallow-Z-B	E511A	19-Oct-2022	04-Apr-2023	365 days	168 days	✓	05-Apr-2023	365 days	168 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD5-E	E511A	01-Oct-2022	04-Apr-2023	365 days	186 days	✓	05-Apr-2023	365 days	186 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD5-TB	E511A	01-Oct-2022	04-Apr-2023	365 days	186 days	✓	05-Apr-2023	365 days	186 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD5-TC	E511A	01-Oct-2022	04-Apr-2023	365 days	186 days	✓	05-Apr-2023	365 days	186 days	✓

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BCH-22-01 Project



Matrix: Biota		Evaluation: × =	Holding time exceedance ; ✓ = Within Holding Time
	 	E touris di Bours d'ins	A collective

Analyte Group	Method	Sampling Date	e Extraction / Preparation					Rec Actual 5-Apr-2023 365 186 days days 5-Apr-2023 365 days 5-Apr-2023 365 187 days days 5-Apr-2023 365 187 days days		
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD5-TS-A	E511A	01-Oct-2022	04-Apr-2023	365 days	186 days	✓	05-Apr-2023			✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD5-TS-B	E511A	01-Oct-2022	04-Apr-2023	365 days	186 days	✓	05-Apr-2023			✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
PR3-TB	E511A	30-Sep-2022	04-Apr-2023	365 days	187 days	✓	05-Apr-2023			✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PR3-TC	E511A	30-Sep-2022	04-Apr-2023	365 days	187 days	✓	05-Apr-2023		-	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PR3-TS	E511A	30-Sep-2022	04-Apr-2023	365 days	187 days	✓	05-Apr-2023			✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD3-PB	E511A	29-Sep-2022	04-Apr-2023	365 days	188 days	✓	05-Apr-2023	365 days	188 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD3-TB	E511A	29-Sep-2022	04-Apr-2023	365 days	188 days	✓	05-Apr-2023	365 days	188 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD3-TC-A	E511A	29-Sep-2022	04-Apr-2023	365 days	188 days	✓	05-Apr-2023	365 days	188 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD3-TC-B	E511A	29-Sep-2022	04-Apr-2023	365 days	188 days	✓	05-Apr-2023	365 days	188 days	✓

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Metals: Mercury in Biota by CVAAS (WET units, Micro)

Metals: Mercury in Biota by CVAAS (WET units, Micro)

Metals : Mercury in Biota by CVAAS (WET units, Micro)

Metals: Mercury in Biota by CVAAS (WET units, Micro)

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Matrix: Biota

Analyte Group

LDPE bag PD1-PS

LDPE bag

LDPE bag PD1-TB-B

LDPE bag PD1-TB-C

LDPE bag

PD1-TC-

PD1-TB-A



Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time

Analysis

Analyte Group	Wiethou	Jamping Date	Date = = = = = = = = = = = = = = = = = = =				7 4.7 6.6			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PD3-TS	E511A	29-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	188	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PD1-PB-A	E511A	28-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	189	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PD1-PB-B	E511A	28-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	189	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PD1-PB-C	E511A	28-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	189	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										

28-Sep-2022

28-Sep-2022

28-Sep-2022

28-Sep-2022

28-Sep-2022

04-Apr-2023

04-Apr-2023

04-Apr-2023

04-Apr-2023

04-Apr-2023

365

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188

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188

days

Sampling Date

Method

E511A

E511A

E511A

E511A

E511A

Extraction / Preparation

1

1

✓

1

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Client : Azimuth Consulting Group Inc.



Matrix: Biota	Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Ex	traction / Pr	reparation		J	Analys	is	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PD1-TS-A	E511A	28-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	189	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag	E511A	20 Con 2022	04 Apr 2022	005	400	✓	05 Apr 2022	005	400	✓
PD1-TS-B	ESTIA	28-Sep-2022	04-Apr-2023	365	188 days	•	05-Apr-2023	365 days	189 days	•
With the Market Color Co				days	uays			uays	uays	
Metals : Mercury in Biota by CVAAS (WET units, Micro) LDPE bag				<u> </u>			<u> </u>	<u> </u>		
PD1-TS-C	E511A	28-Sep-2022	04-Apr-2023	365	188	✓	05-Apr-2023	365	189	✓
				days	days		·	days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PR2-P	E511A	27-Sep-2022	04-Apr-2023	365	189	✓	05-Apr-2023	365	190	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag	F544A	07.0 0000	04 4 2002			✓	05 4 2002			✓
PR2-TB	E511A	27-Sep-2022	04-Apr-2023	365	189	∀	05-Apr-2023	365	190	▼
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro) LDPE bag							<u> </u>			
PR2-TS-A	E511A	27-Sep-2022	04-Apr-2023	365	189	✓	05-Apr-2023	365	190	✓
			·	days	days		·	days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag										
PR2-TS-B	E511A	27-Sep-2022	04-Apr-2023	365	189	✓	05-Apr-2023	365	190	✓
				days	days			days	days	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag	E511A	27-Sep-2022	04 Apr 2022	0.05	400	✓	05-Apr-2023	005	400	√
PR2-TT-A	ESTIA	21-Sep-2022	04-Apr-2023	365	189 days	*	uə-Apr-2023	365 days	190 days	*
Marala a Marana in Richa las OVA AO (MET				days	uays			uays	uays	
Metals : Mercury in Biota by CVAAS (WET units, Micro) LDPE bag										
PR2-TT-B	E511A	27-Sep-2022	04-Apr-2023	365	189	✓	05-Apr-2023	365	190	✓
		,		days	days			days	days	
				,-	, -			.,-	, -	

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Matrix: Biota Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	Ext	traction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Metals : Mercury in Biota by CVAAS (WET units, Micro)										
LDPE bag PR1-TB	E511A	26-Sep-2022	04-Apr-2023	365 days	190 days	✓	05-Apr-2023	365 days	191 days	✓
Metals : Mercury in Biota by CVAAS (WET units, Micro)				,	, -					
LDPE bag PR1-TS	E511A	26-Sep-2022	04-Apr-2023	365 days	190 days	✓	05-Apr-2023	365 days	191 days	*
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag D1-Shallow-Z-A	E144A	19-Oct-2022					27-Mar-2023		159 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag W1-Shallow-Z	E144A	19-Oct-2022					27-Mar-2023		159 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag PR3-M	E144A	30-Sep-2022					06-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag PD3-E	E144A	29-Sep-2022					06-Apr-2023		189 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag PD1-E	E144A	28-Sep-2022					06-Apr-2023		190 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag PR1-M	E144A	26-Sep-2022					06-Apr-2023		192 days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag D1-Shallow-Z	E144A	21-Aug-2022					27-Mar-2023		218 days	

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atrix: Biota					Εν	/aluation: 🗴 =	Holding time excee	dance;	✓ = Within	Holding T
nalyte Group	Method	Sampling Date	Ex	traction / Pr	eparation			Analy	sis	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holdin	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
hysical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag										
PR1-Z	E144A	20-Aug-2022					27-Mar-2023		219	
									days	
hysical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag										
W1-Shallow-Z-A	E144A	16-Aug-2022					27-Mar-2023		223	
									days	
hysical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag										
W1-Shallow-Z-B	E144A	16-Aug-2022					27-Mar-2023		223	
									days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag										
D1-Shallow-Z-DUP	E144A	21-Aug-2022					31-May-2023		283	
									days	
Physical Tests : Moisture Content by Gravimetry (Biopsy)										
LDPE bag										
W1-Shallow-Z-A-DUP	E144A	16-Aug-2022					31-May-2023		288	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
D1-Shallow-Z-B	E144-H	19-Oct-2022					04-Apr-2023		167	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
PD5-E	E144-H	01-Oct-2022					04-Apr-2023		185	
									days	
hysical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
PD5-TB	E144-H	01-Oct-2022					04-Apr-2023		185	
									days	
hysical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
PD5-TC	E144-H	01-Oct-2022					04-Apr-2023		185	
									days	

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Matrix: Biota Evaluation: **x** = Holding time exceedance ; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Rec Actual Actual Date Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag E144-H 01-Oct-2022 PD5-TS-A 04-Apr-2023 185 days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag PD5-TS-B E144-H 01-Oct-2022 04-Apr-2023 185 days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag PR3-TB E144-H 30-Sep-2022 04-Apr-2023 186 days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag E144-H 30-Sep-2022 PR3-TC 04-Apr-2023 186 days **Physical Tests: Moisture Content by Gravimetry (Micro)** LDPE bag PR3-TS E144-H 30-Sep-2022 04-Apr-2023 186 days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag E144-H 29-Sep-2022 PD3-PB 04-Apr-2023 ----187 ---days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag PD3-TB E144-H 29-Sep-2022 04-Apr-2023 187 days Physical Tests : Moisture Content by Gravimetry (Micro) LDPE bag 29-Sep-2022 04-Apr-2023 PD3-TC-A E144-H 187 days **Physical Tests: Moisture Content by Gravimetry (Micro)** LDPE bag E144-H 29-Sep-2022 04-Apr-2023 PD3-TC-B 187 days

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Matrix: Biota					Ev	valuation: × =	Holding time excee	edance ;	✓ = Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation			Analys	sis	
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD3-TS	E144-H	29-Sep-2022					04-Apr-2023		187 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-PB-A	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-PB-B	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-PB-C	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-PS	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-TB-A	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-TB-B	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-TB-C	E144-H	28-Sep-2022					04-Apr-2023		188 days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag PD1-TC-	E144-H	28-Sep-2022					04-Apr-2023		188 days	

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atrix: Biota					Εν	aluation: 🗴 =	Holding time excee	dance ;	✓ = Within	Holding Ti
Analyte Group	Method	Sampling Date	Ext	raction / Pr				Analys	sis	
Container / Client Sample ID(s)			Preparation		Times	Eval	Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : Moisture Content by Gravimetry (Micro)				ı						
LDPE bag	E444 II	20 0 2022					0.4.40000			
PD1-TS-A	E144-H	28-Sep-2022					04-Apr-2023		188	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag	E144-H	28-Sep-2022					04-Apr-2023		400	
PD1-TS-B	E144-⊓	26-Sep-2022					04-Apr-2023		188	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)				I						
LDPE bag PD1-TS-C	E144-H	28-Sep-2022					04-Apr-2023		188	
FD1-10-0	C144-11	20-0ep-2022					04-Αρι-2020		days	
									uays	
Physical Tests : Moisture Content by Gravimetry (Micro) LDPE bag							<u> </u>			
PR2-P	E144-H	27-Sep-2022					04-Apr-2023		189	
TIVET		2. 000 2022					0174012020		days	
Physical Tests : Moisture Content by Gravimetry (Micro)									aayo	
LDPE bag							<u> </u>			
PR2-TB	E144-H	27-Sep-2022					04-Apr-2023		189	
							· '		days	
Physical Tests : Moisture Content by Gravimetry (Micro)									,	
LDPE bag										
PR2-TS-A	E144-H	27-Sep-2022					04-Apr-2023		189	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
PR2-TS-B	E144-H	27-Sep-2022					04-Apr-2023		189	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag	1									
PR2-TT-A	E144-H	27-Sep-2022					04-Apr-2023		189	
									days	
Physical Tests : Moisture Content by Gravimetry (Micro)										
LDPE bag										
PR2-TT-B	E144-H	27-Sep-2022					04-Apr-2023		189	
									days	

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Matrix: Biota Evaluation: **x** = Holding time exceedance; ✓ = Within Holding Time Extraction / Preparation Analysis Analyte Group Method Sampling Date Container / Client Sample ID(s) Preparation **Holding Times** Eval Analysis Date **Holding Times** Eval Rec Actual Rec Actual Date Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag E144-H 26-Sep-2022 PR1-TB 04-Apr-2023 190 days Physical Tests: Moisture Content by Gravimetry (Micro) LDPE bag PR1-TS E144-H 26-Sep-2022 04-Apr-2023 190 days Speciated Metals: Methylmercury in Biota by GCAFS (DRY units, Routine) LDPE bag E538 21-Aug-2022 15-Jun-2023 1 27-Jun-2023 1 D1-Shallow-Z-DUP 12 days 365 299 365 days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag E538A D1-Shallow-Z-A 19-Oct-2022 03-Mar-2023 1 03-Mar-2023 365 0 days 1 365 135 days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag E538A 19-Oct-2022 03-Mar-2023 1 03-Mar-2023 0 days 1 D1-Shallow-Z-B 365 135 365 days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag E538A 19-Oct-2022 1 W1-Shallow-Z 03-Mar-2023 365 135 03-Mar-2023 365 0 days 1 days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag PD5-E E538A 01-Oct-2022 03-Mar-2023 03-Mar-2023 ✓ 0 days 365 153 365 days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag PD5-TB E538A 01-Oct-2022 03-Mar-2023 365 153 1 03-Mar-2023 365 0 days ✓ days days days Speciated Metals: Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag E538A 01-Oct-2022 1 1 PD5-TC 03-Mar-2023 03-Mar-2023 0 days 365 153 365 days days days

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Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)

LDPE bag

PD1-PB-C

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atrix: Biota						/aluation: × =	Holding time excee			Holding 1
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation		Analy		sis	
Container / Client Sample ID(s)			Preparation		g Times	Eval	Analysis Date		g Times	Eval
			Date	Rec	Actual			Rec	Actual	
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag										
PD5-TS-A	E538A	01-Oct-2022	03-Mar-2023	365	153	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag						,				
PD5-TS-B	E538A	01-Oct-2022	03-Mar-2023	365	153	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag										
PR3-M	E538A	30-Sep-2022	03-Mar-2023	365	154	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag										
PR3-TB	E538A	30-Sep-2022	03-Mar-2023	365	154	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag										
PR3-TC	E538A	30-Sep-2022	03-Mar-2023	365	154	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
LDPE bag										
PR3-TS	E538A	30-Sep-2022	03-Mar-2023	365	154	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
DPE bag										
PD1-PB-A	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
				days	days			days		
peciated Metals : Methylmercury in Biota by GCAFS (WET units, Ro	utine)									
DPE bag										
PD1-PB-B	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
				days	days			days		

28-Sep-2022

02-Mar-2023

365

days

155

days

E538A

0 days

365

days

✓

02-Mar-2023

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Date Rec Actual	nalyte Group	Method	Sampling Date	Ex	traction / Pr	reparation		Analysis			
Delife Face Actual Face Actual Face Actual Face Actual	Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
DPE bag PD1-TB-A E538A 28-Sep-2022 02-Mar-2023 365 155 V 02-Mar-2023 365 0 days V				•		_		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
E538A 28-Sep-2022 02-Mar-2023 365 155	peciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
E538A 28-Sep-2022 02-Mar-2023 365 155								<u> </u>			
DPE Bag PD1-TB-C E538A 28-Sep-2022 02-Mar-2023 365 155 V 02-Mar-2023 365 0 days V	-	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
DPE Dag PD1-TB-A E538A 28-Sep-2022 02-Mar-2023 365 155 V 02-Mar-2023 365 0 days V			· ·							1	
DPE bag PD1-TB-A E538A 28-Sep-2022 02-Mar-2023 365 days	pociated Metals : Methylmercury in Rieta by CCAES (WET units Routing)				,	,			,		
PDI-TB-A E538A 28-Sep-2022 02-Mar-2023 365 155											
Decisited Metals Methylmercury in Biota by GCAFS (WET units, Routine)	•	F538A	28-Sep-2022	02-Mar-2023	365	155	1	02-Mar-2023	365	0 days	1
DPE bag		2000.1		02 Mai 2020				02 11101 2020		o aayo	
DPE bag					uays	days			days		
E538A 28-Sep-2022 02-Mar-2023 365 155					T	<u> </u>		<u> </u>			
DPE bag PD1-TS-A E538A 28-Sep-2022 02-Mar-2023 365 155 V 02-Mar-2023 365 0 days V Odays	•	E520A	20 San 2022	02 Mar 2022	005	455	./	02 Mar 2022	005	0 days	./
Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine) Deciated Metals : Methylmercury in Blota by GCAFS (WET units, Routine)	PD1-1B-B	E330A	20-3ep-2022	02-IVIAI-2023			•	02-IVIAI-2023		0 days	•
E538A 28-Sep-2022 02-Mar-2023 365 days					days	days			days		
PDI-TB-C E538A 28-Sep-2022 02-Mar-2023 365 days 4 02-Mar-2023 365 days 0 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365 days 4 02-Mar-2023 365											
Comparison of Comparison of	-										
E538A 28-Sep-2022 02-Mar-2023 365 155	PD1-TB-C	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
DPE bag PD1-TC- E538A 28-Sep-2022 02-Mar-2023 365 days 02-Mar-2023 365 days 0 d					days	days			days		
PD1-TC- E538A 28-Sep-2022 02-Mar-2023 365 days	peciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
E538A 28-Sep-2022 02-Mar-2023 365 155 \(\sqrt{2} \)	<u> </u>										
E538A 28-Sep-2022 02-Mar-2023 365 155	PD1-TC-	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
## PD1-TS-A E538A 28-Sep-2022 02-Mar-2023 365 155 ✓ 02-Mar-2023 365 days					days	days			days		
## E538A 28-Sep-2022 02-Mar-2023 365 155 \(\sqrt{202} \) 02-Mar-2023 365 days \(\sqrt{202} \) 04ays \(\s	eciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
DPE bag PD1-TS-B E538A 28-Sep-2022 02-Mar-2023 365 155 ✓ 02-Mar-2023 365 days ✓ 04ys ✓	DPE bag										
DPE bag	PD1-TS-A	E538A	28-Sep-2022	02-Mar-2023	365	155	✓	02-Mar-2023	365	0 days	✓
E538A 28-Sep-2022 02-Mar-2023 365 155 ✓ 02-Mar-2023 365 days ✓ 02-Mar-2023 days ✓ 02-Mar-2023 days ✓ 02-Mar-2023 days					days	days			days		
DPE bag E538A 28-Sep-2022 02-Mar-2023 365 days 155 days ✓ 02-Mar-2023 365 days ✓ PD1-TS-B E538A 28-Sep-2022 02-Mar-2023 365 days 155 days ✓ 02-Mar-2023 365 days ✓ DPE bag PD1-TS-C E538A 28-Sep-2022 02-Mar-2023 365 days 155 days ✓ 02-Mar-2023 365 days ✓ PD4-E bag PD3-E E538A 29-Sep-2022 03-Mar-2023 365 lass 155 lass ✓ 03-Mar-2023 365 lass 0 days ✓	eciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
DPE bag PD1-TS-C E538A 28-Sep-2022 02-Mar-2023 365 days 03-Mar-2023 365 days 03-Mar-2023 365 days 03-Mar-2023 365 days 03-Mar-2023 365 days 03-Mar-2023 365 days 03-Mar-2023 365 days 04 04 05-Mar-2023 365 days											
days days	PD1-TS-B	E538A	28-Sep-2022	02-Mar-2023	365	155	1	02-Mar-2023	365	0 days	✓
DPE bag PD1-TS-C E538A 28-Sep-2022 02-Mar-2023 365 days days ✓ 02-Mar-2023 365 days ✓ 02-Mar-2023 365 days ✓ 03-Mar-2023 365 days ✓ 04 days ✓ 04 days ✓ 05 days ✓ 05 days ✓ 05 days ✓ 05 days ✓ 06 days ✓ 07 days ✓ 08 days Ø 08 days ✓ 08 days Ø 08 days ✓ 08 days Ø 08 days ✓ 08 days Ø 08					days	days			days		
DPE bag PD1-TS-C E538A 28-Sep-2022 02-Mar-2023 365 days 155 days ✓ 02-Mar-2023 365 days ✓ eciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine) DPE bag PD3-E E538A 29-Sep-2022 03-Mar-2023 365 loss 155 loss ✓ 03-Mar-2023 365 loss 0 days ✓	peciated Metals : Methylmercury in Riota by GCAES (WET units, Pouting)										
PD1-TS-C E538A 28-Sep-2022 02-Mar-2023 365 days days 02-Mar-2023 365 days 0 days 0 days ✓ 02-Mar-2023 365 days 0 days ✓ 03-Mar-2023 365 days 0 days ✓ 04-Mar-2023 365 days ✓ 05-Mar-2023 365 days 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days ✓ 05-Mar-2023 365 days Ø 05-Mar-2023 365 days Ø 05-Mar-2023 365 days 05-Mar-2023 365 days Ø 05-Mar-2023 365 days Ø 05-Mar-2023								1			
days days	<u> </u>	E538A	28-Sep-2022	02-Mar-2023	365	155	1	02-Mar-2023	365	0 days	✓
DPE bag PD3-E E538A 29-Sep-2022 03-Mar-2023 365 155 ✓ 03-Mar-2023 365 0 days ✓										, .	
DPE bag E538A 29-Sep-2022 03-Mar-2023 365 155 ✓ 03-Mar-2023 365 0 days ✓	asiated Matela a Matheday array in Birth In COAFO (MITT - 11 B. 41)				days	aayo			aayo		
PD3-E E538A 29-Sep-2022 03-Mar-2023 365 155 ✓ 03-Mar-2023 365 0 days ✓											
300 100 100 100 100 100 100 100 100 100	_	EESOV	20 Son 2022	02 Mar 2022	005	455	./	02 Mar 2022	005	0 deve	
	rus-e	EDSOA	29-3ep-2022	US-IVIAT-ZUZS	365 days	155 days	*	US-IVIAF-2U23	365 days	o days	•

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Matrix: Biota					Εν	⁄aluation: ≭ =	Holding time excee	edance ;	✓ = Within	Holding Tin
Analyte Group	Method	Sampling Date	Ext	raction / Pr	eparation		Analysis			
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag										
PD3-PB	E538A	29-Sep-2022	03-Mar-2023	365	155	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag										
PD3-TB	E538A	29-Sep-2022	03-Mar-2023	365	155	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)				1						
LDPE bag										
PD3-TC-A	E538A	29-Sep-2022	03-Mar-2023	365	155	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag										
PD3-TC-B	E538A	29-Sep-2022	03-Mar-2023	365	155	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)								,		
LDPE bag										
PD3-TS	E538A	29-Sep-2022	03-Mar-2023	365	155	✓	03-Mar-2023	365	0 days	✓
				days	days			days	1	
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)				,-	, -			, -		
LDPE bag										
PD1-E	E538A	28-Sep-2022	03-Mar-2023	365	156	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)								,		
LDPE bag										
PR2-P	E538A	27-Sep-2022	02-Mar-2023	365	156	✓	02-Mar-2023	365	0 days	✓
	2000/1	2. 339 2022	02 Mai 2020	days	days		02 11101 2020	days	o dayo	
Consists d Matella Mathelian and in Birth In COAFO (MET. with Bruting)				days	duys			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag							I			
PR2-TB	E538A	27-Sep-2022	02-Mar-2023	365	156	✓	02-Mar-2023	365	0 days	1
11/2-10	2000/1	21-00p-2022	02-Wai-2020	days	days	·	02-Wai-2020	days	o days	*
				uays	uays			uays		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)							I			
LDPE bag	E538A	27-Sep-2022	00 Mar 2002	005	450	✓	02 Mar 2002	005	0 days	1
PR2-TS-A	EDOOA	21-Sep-2022	02-Mar-2023	365	156	•	02-Mar-2023	365	0 days	•
				days	days			days		

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Matrix: Biota					Εν	/aluation: 🗴 =	Holding time excee	edance ;	✓ = Within	Holding Tir
Analyte Group	Method	Sampling Date	Ext	traction / Pr	eparation			Analysis		
Container / Client Sample ID(s)			Preparation	Holding Times		Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag	E538A	27-Sep-2022	02 Mar 2022	005	450	√	02-Mar-2023	005	0 days	1
PR2-TS-B	ESSOA	27-3ep-2022	02-Mar-2023	365 days	156 days	•	02-War-2023	365 days	0 days	•
				uays	uays			uays		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag							<u> </u>			
PR2-TT-A	E538A	27-Sep-2022	02-Mar-2023	365	156	√	02-Mar-2023	365	0 days	1
				days	days			days	, -	
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)				,	,			,		
LDPE baq										
PR2-TT-B	E538A	27-Sep-2022	02-Mar-2023	365	156	✓	02-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag										
PR1-M	E538A	26-Sep-2022	02-Mar-2023	365	157	✓	02-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag	F520A	00 0 0000	00 M 0000			√	00 M 2002		0 4	√
PR1-TB	E538A	26-Sep-2022	02-Mar-2023	365	157	*	02-Mar-2023	365	0 days	*
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine) LDPE bag								I		
PR1-TS	E538A	26-Sep-2022	02-Mar-2023	365	157	1	02-Mar-2023	365	0 days	1
			02 Mai 2020	days	days		02 2020	days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)				,	,			,		
LDPE baq										
D1-Shallow-Z	E538A	21-Aug-2022	03-Mar-2023	365	194	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag										
PR1-Z	E538A	20-Aug-2022	03-Mar-2023	365	195	✓	03-Mar-2023	365	0 days	✓
				days	days			days		
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)										
LDPE bag	F520A	46 4 2022	00.040000				00.140000		0.1	
W1-Shallow-Z-A	E538A	16-Aug-2022	03-Mar-2023	365	199	✓	03-Mar-2023	365	0 days	✓
				days	days			days		

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Matrix: **Biota**Evaluation: ▼ = Holding time exceedance; ✓ = Within Holding Time

Analyte Group	Method	Sampling Date	ate Extraction / Preparation			Analysis				
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	Times	Eval
			Date	Rec	Actual			Rec	Actual	
Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)	Speciated Metals : Methylmercury in Biota by GCAFS (WET units, Routine)									
LDPE bag										
W1-Shallow-Z-B	E538A	16-Aug-2022	03-Mar-2023	365	199	✓	03-Mar-2023	365	0 days	✓
				days	days			days		

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

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Client : Azimuth Consulting Group Inc.

Project : BCH-22-01



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Biota Evaluation: **x** = QC frequency outside specification; ✓ = QC frequency within specification. Quality Control Sample Type Count Frequency (%) Method QC Lot # QC Regular Expected Evaluation Analytical Methods Actual Laboratory Duplicates (DUP) Mercury in Biota by CVAAS (WET units, Micro) 885923 0 0.0 5.0 E511A × Methylmercury in Biota by GCAFS (DRY units, Routine) 990528 0 5 0.0 5.0 E538 × Methylmercury in Biota by GCAFS (WET units, Routine) 0 43 0.0 5.0 844863 E538A 3C Moisture Content by Gravimetry (Micro) 886396 0 33 0.0 5.0 E144-H 30 Laboratory Control Samples (LCS) Mercury in Biota by CVAAS (DRY units, Biopsy) 971527 4 15 26.6 10.0 E512 Mercury in Biota by CVAAS (WET units, Biopsy) 891378 2 50.0 10.0 4 E512A Mercury in Biota by CVAAS (WET units, Micro) 33 4 12.1 10.0 E511A 885923 ✓ Methylmercury in Biota by GCAFS (DRY units, Routine) 990528 2 5 40.0 10.0 E538 10.0 Methylmercury in Biota by GCAFS (WET units, Routine) 844866 6 43 13.9 E538A Moisture Content by Gravimetry (Biopsy) 3 19 15.7 5.0 963667 E144A 1 Moisture Content by Gravimetry (Micro) 886396 2 33 6.0 5.0 E144-H Method Blanks (MB) Mercury in Biota by CVAAS (DRY units, Biopsy) 971527 2 15 13.3 5.0 E512 Mercury in Biota by CVAAS (WET units, Biopsy) 891378 1 4 25.0 5.0 E512A Mercury in Biota by CVAAS (WET units, Micro) 885923 2 33 6.0 5.0 E511A ✓ Methylmercury in Biota by GCAFS (DRY units, Routine) 990528 1 5 20.0 5.0 1 E538 Methylmercury in Biota by GCAFS (WET units, Routine) 43 6.9 5.0 844863 3 E538A 19 15.7 5.0 Moisture Content by Gravimetry (Biopsy) 963667 3 1 E144A Moisture Content by Gravimetry (Micro) 886396 2 33 6.0 5.0 E144-H

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Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry (Biopsy)	E144A ALS Environmental -	Biota	Puget Sound Water Quality Authority/CCME PHC in	This analysis is carried out gravimetrically by drying the sample at <60 deg. C for a minimum of three days.
	Vancouver		Soil - Tier 1	
Moisture Content by Gravimetry (Micro)	E144-H ALS Environmental -	Biota	Puget Sound Water Quality Authority/BC MOE Lab Manual	Moisture is measured gravimetrically by drying the sample at <60°C for a minimum of 3 days to constant weight. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of soil, expressed as a percentage.
	Vancouver			
Mercury in Biota by CVAAS (WET units, Micro)	E511A ALS Environmental -	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized and sub-sampled prior to hotblock digestion with nitric acid, hydrochloric acid, and hydrogen peroxide. Analysis is by CVAAS.
	Vancouver			
Mercury in Biota by CVAAS (DRY units, Biopsy)	E512 ALS Environmental - Vancouver	Biota	EPA 200.3/1631 Appendix (mod)	Samples are digested with nitric acid, hydrochloric acid, and hydrogen peroxide. Analysis is by CVAAS.
Mercury in Biota by CVAAS (WET units, Biopsy)	E512A ALS Environmental - Vancouver	Biota	EPA 200.3/1631 Appendix (mod)	Samples are homogenized digested with nitric acid, hydrochloric acid, and hydrogen peroxide. Analysis is by CVAAS.
Methylmercury in Biota by GCAFS (DRY units, Routine)	E538 ALS Environmental - Vancouver	Biota	Liang et al. (1994)/EPA 1630 (mod)	This method follows the procedures published by Liang, Bloom and Horvat in Clinical Chemistry (Vol 40, No 4, 1994). Samples are homogenized and then digested in a methanolic potassium hydroxide solution. An aliquot of the digestate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic fluorescence spectroscopy. Results are reported "as MeHq".
Methylmercury in Biota by GCAFS (WET units, Routine)	E538A ALS Environmental - Vancouver	Biota	Liang et al. (1994) /EPA 1630 (mod)	This method follows the procedures published by Liang, Bloom and Horvat in Clinical Chemistry (Vol 40, No 4, 1994). Samples are homogenized and then digested in a methanolic potassium hydroxide solution. An aliquot of the digestate is analyzed by aqueous phase ethylation, purge and trap, desorption and GC separation. The separated species are then pyrolized to elemental Hg and quantified by cold vapour atomic fluorescence spectroscopy. Results are reported "as MeHg".
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals and Mercury Biota Digestion (Micro)	EP472	Biota	EPA 200.3	This method, designed for small sample amounts, uses a heated strong acid digestion with HNO3, HCI, and H2O2 and is intended to provide a conservative estimate of
	ALS Environmental - Vancouver			bio-available metals.

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Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Metals and Mercury Biota Digestion (Biopsy)	EP475	Biota	EPA 200.3/200.8 (mod)	Samples are digested with nitric acid, hydrochloric acid, and hydrogen peroxide. Method Limitation: This method employs a strong acid/peroxide digestion, and is intended to
	ALS Environmental - Vancouver		(mod)	provide a conservative estimate of bio-available metals. Near complete recoveries are achieved for most toxicologically important metals, but elements associated with recalcitrant minerals may be only partially recovered.
Methylmercury Biota Preparation	EP538 ALS Environmental - Vancouver	Biota	Liang et al. (1994)	This method follows the procedures published by Liang, Bloom and Horvat in Clinical Chemistry (Vol 40, No 4, 1994). Samples are homogenized and then digested in a methanolic potassium hydroxide solution.

ALS Canada Ltd.



QUALITY CONTROL REPORT

Page

Work Order FJ2203485

Vancouver BC Canada V6K 2G8

Amendment :2

Client : Azimuth Consulting Group Inc. Laboratory : ALS Environmental - Fort St. John

Contact : Ian McIvor **Account Manager** · Brent Mack

Address :# 218 - 2902 West Broadway Address : 11007 Alaska Road

Fort St. John, British Columbia Canada V1J 6P3

: 1 of 5

Telephone :778-370-3279 Date Samples Received : BCH-22-01 : 16-Dec-2022 10:50

Project PO **Date Analysis Commenced** :02-Mar-2023

C-O-C number Issue Date :26-Sep-2023 16:29

: Kevin Ganshorn

Site Quote number :Q75925 No. of samples received : 45 No. of samples analysed 45

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

Reference Material (RM) Report; Recovery and Data Quality Objectives

- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

Telephone

Sampler

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department					
Jayden Piattelli	Analyst	Vancouver Metals, Burnaby, British Columbia					
Kenson Lo		Vancouver Metals, Burnaby, British Columbia					
Kinny Wu	Lab Analyst	Vancouver Metals, Burnaby, British Columbia					
Ragini Saini	Lab Assistant	Vancouver Metals, Burnaby, British Columbia					
Sam Silveira	Lab Assistant	Vancouver Metals, Burnaby, British Columbia					

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Project : BCH-22-01



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key:

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Page : 3 of 5

Work Order: FJ2203485 Amendment 2
Client: Azimuth Consulting Group Inc.

Project : BCH-22-01



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Biota

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 877148)						
Moisture		E144A	2	%	<2.0	
Physical Tests (QCLot: 886373)						
Moisture		E144-H	2	%	<2.0	
Physical Tests (QCLot: 886396)						
Moisture		E144-H	2	%	<2.0	
Physical Tests (QCLot: 888914)						
Moisture		E144A	2	%	<2.0	
Physical Tests (QCLot: 963667)						
Moisture		E144A	2	%	<2.0	
Metals (QCLot: 885888)						
Mercury	7439-97-6	E511A	0.001	mg/kg wwt	<0.0010	
Metals (QCLot: 885923)						
Mercury	7439-97-6	E511A	0.001	mg/kg wwt	<0.0010	
Metals (QCLot: 886375)						
Mercury	7439-97-6	E512	0.01	mg/kg	<0.010	
Metals (QCLot: 891378)						
Mercury	7439-97-6	E512A	0.002	mg/kg wwt	<0.0020	
Metals (QCLot: 971527)						
Mercury	7439-97-6	E512	0.01	mg/kg	<0.010	
Speciated Metals (QCLot: 844863)						
Methylmercury (as MeHg)	22967-92-6	E538A	1	μg/kg wwt	<1.0	
Speciated Metals (QCLot: 844865)						
Methylmercury (as MeHg)	22967-92-6	E538A	1	μg/kg wwt	<1.0	
Speciated Metals (QCLot: 844866)						
Methylmercury (as MeHg)	22967-92-6	E538A	1	μg/kg wwt	<1.0	
Speciated Metals (QCLot: 990528)						
Methylmercury (as MeHg)	22967-92-6	E538	5	μg/kg	<5.0	

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Work Order: FJ2203485 Amendment 2
Client: Azimuth Consulting Group Inc.

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Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Biota	ub-Matrix: Biota						Laboratory Control Sample (LCS) Report						
					Spike	Recovery (%)	Recovery	Limits (%)					
Analyte	CAS Number Method	d	LOR	Unit	Concentration	LCS	Low	High	Qualifier				
Physical Tests (QCLot: 877148)													
Moisture	E144A		2	%	100 %	100	90.0	110					
Physical Tests (QCLot: 886373)													
Moisture	E144-h	ł	2	%	100 %	100	90.0	110					
Physical Tests (QCLot: 886396)													
Moisture	E144-h	ł	2	%	100 %	100	90.0	110					
Physical Tests (QCLot: 888914)													
Moisture	E144A		2	%	100 %	100	90.0	110					
Physical Tests (QCLot: 963667)													
Moisture	E144A		2	%	100 %	101	90.0	110					
Metals (QCLot: 885888)													
Mercury	7439-97-6 E511A		0.001	mg/kg wwt	0.02 mg/kg wwt	103	80.0	120					
Metals (QCLot: 885923)	7400 07 0 55444		0.004				20.0	400					
Mercury	7439-97-6 E511A		0.001	mg/kg wwt	0.02 mg/kg wwt	95.2	80.0	120					
Metals (QCLot: 886375)	7400 07 0 5540		0.04				00.0	400					
Mercury	7439-97-6 E512		0.01	mg/kg	0.05 mg/kg	97.6	80.0	120					
Metals (QCLot: 891378)	7400 07 0 55404		0.000				00.0	400					
Mercury	7439-97-6 E512A		0.002	mg/kg wwt	0.05 mg/kg wwt	105	80.0	120					
Metals (QCLot: 971527)	7439-97-6 E512		0.04		2.25 #	101	00.0	400					
Mercury	7439-97-6 E512		0.01	mg/kg	0.05 mg/kg	104	80.0	120					
Speciated Metals (QCLot: 844863) Methylmercury (as MeHg)	22967-92-6 E538A		1	μg/kg wwt	100 μg/kg wwt	111	70.0	130					
	22507 02 0 25007			pg///g ·····	100 µg/kg wwt			100					
Speciated Metals (QCLot: 844865) Methylmercury (as MeHg)	22967-92-6 E538A		1	μg/kg wwt	100 μg/kg wwt	102	70.0	130					
				1-55	100 µg/ng wwt	102							
Speciated Metals (QCLot: 844866) Methylmercury (as MeHg)	22967-92-6 E538A		1	μg/kg wwt	100 μg/kg wwt	91.5	70.0	130					
	25. 52 5			15.5	יייי פיייפין פייי	56							
Speciated Metals (QCLot: 990528) Methylmercury (as MeHg)	22967-92-6 E538		5	μg/kg	100 μg/kg	95.1	70.0	130					
			-	פיי פיז	100 µg/ng	55.1	. 2.0	. 30					

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Work Order: FJ2203485 Amendment 2
Client: Azimuth Consulting Group Inc.

Project : BCH-22-01



Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:			Reference Material (RM) Report						
					RM Target	Recovery (%)	Recovery	Limits (%)	
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot:	885888)								
	RM	Mercury	7439-97-6	E511A	0.281 mg/kg wwt	93.1	70.0	130	
Metals (QCLot:	885923)								
	RM	Mercury	7439-97-6	E511A	0.281 mg/kg wwt	98.0	70.0	130	
Metals (QCLot:	886375)								
	RM	Mercury	7439-97-6	E512	0.281 mg/kg	104	70.0	130	
Metals (QCLot:	891378)								
	RM	Mercury	7439-97-6	E512A	0.281 mg/kg wwt	102	70.0	130	
Metals (QCLot:	971527)								
	RM	Mercury	7439-97-6	E512	0.281 mg/kg	102	70.0	130	
Speciated Meta	als (QCLot: 844863)								
	RM	Methylmercury (as MeHg)	22967-92-6	E538A	340 µg/kg wwt	91.9	70.0	130	
Speciated Meta	als (QCLot: 844865)								
	RM	Methylmercury (as MeHg)	22967-92-6	E538A	340 µg/kg wwt	78.3	70.0	130	
Speciated Meta	als (QCLot: 844866)								
	RM	Methylmercury (as MeHg)	22967-92-6	E538A	340 μg/kg wwt	81.6	70.0	130	
Speciated Meta	als (QCLot: 990528)								
	RM	Methylmercury (as MeHg)	22967-92-6	E538	340 μg/kg	81.0	70.0	130	



Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here

COC Number: **14** –

Page <u>1</u> of <u>3</u>

Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Report To		T	Report Forma	t / Distribution	1	l s	elect S	ervic	e Level	Below (Rush Tun	around	Time (TAT) is not a	vailable fo	or all tests)
Company;	Azimuth Consulting Group Inc.	Select Repor	t Format: PDF		EDD (DIGITAL)	-							business	<u> </u>		10000
Contact:	Gary Mann		ol (QC) Report w		(,	i									tact ALS t	a confirm TAT
Address:	218 - 2902 West Broadway	Criteria on Re	port - provide details	below if box che	ked											ALS to confirm
	Vancouver, BC V6K 2G8	Select Distrib	ution: 🗆 EN	1AIL 🗆 MAIL	☐ FAX	E2										
Phone:	604-730-1220	Email 1 or Fa	: gmann@azimu	ubgroup.ca		Specify Date Required for E2,E or P:										
	604-908-0601	Email 2	<u>maciyon@azmi</u>	othgroup.ca							Analy	sis Re	quest			
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ALS Lab Wor	k Order# (lab use only)	ALS Contact:	Brent Mack	Sampler:	Kevin Ganshorn	rcury in	Mercury is	content	tope ar							Ž
ALS Sample #	Sample Identification and/or Coordinates	2	Date	Time	ECOFISH	Ş.	<u>≻</u>	Moisture	Stable Isc nitrogen)							
(lab use only)	(This description will appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	Total Inits)	Methyl	loist	itroc							
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REFER TO BAC	CK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION	1	WH	ITE - LABORAT		YELLO	₩/ - C	IF N	LCOP,			Avistration A	A-FM 08255 v05	Front/04 tenn	mry 2014	

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

^{1.} If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Site/Waypoin	Date	Sample ID	Wet Weight of IV (g)	ALS Instructions	ALS to SINLAB	SINI.AB Storage	e location	Comment
PR1-IV	2022-09-26	PR1-TB	1.2	MeHg>SIA>THg		ALS to send to SINLAB FSI Hor		
PR1-IV	2022-09-26	PR1-TS	6.4	MeHg>SIA>THg		ALS to send to SINLAB FSI Ho		
PR1-IV	2022-09-26	PR1-M	0.6	MeHg>SIA>THg		ALS to send to SINLAB FSI Hor		
PR2-IV	2022-09-27	PR2-P	3.9	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hor		all size classes combined
PR2-IV	2022-09-27	PR2-TB	5.5	MeHg>SIA>THg		ALS to send to SINLAB FSI Hor		
PR2-IV	2022-09-27	PR2-TS-A	5.3	MeHg>SIA>THg		ALS to send to SINLAB FSI Hor		
PR2-IV	2022-09-27	PR2-TS-B	5.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSI Ho	use Freezer	
PR2-IV	2022-09-27	PR2-TT-A	5.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Ho	use Freezer	
PR2 IV		PR2-TT-B	6	MeHg>SLA>THg		ALS to send to SINLAB FSJ Hos		
PR2JV	2022-00-17	CONSTRUCTION OF THE PROPERTY O	4.1	TGNORE stoosmall		ABS western SINLAR ESTAB		The state of the s
PD1-IV	2022-09-28		4.1	MeHg>SIA>THg		ALS to send to SINLAB FS] Hot		
PD1-IV	2022-09-28		3.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FS] Hot	use Freezer	
PD1-IV	2022-09-28		3.9	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hou		
PD1-IV	2022-09-28		2.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hou	use Freezer	
PD1-IV	2022-09-28		7.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hou	use Freezer	
PD1-IV	2022-09-28		7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSI Hou	use Freezer	
PD1-TV	2022-09-28		7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD1-IV	2022-09-28		7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSI Hou	use Freezer	
PD1-IV	2022-09-28		7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSI Hou	use Freezer	
PD1-IV	2022-09-28		7.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD1-IV	2022-09-28		7.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD1-IV	2022-09-28		0.4	MeHg>SlA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSI Hor	use Freezer	sample is made up of 34 tiny mayflies
PD3-IV	2022-09-29		4.2	MeHg>SIA>THg		ALS to send to SINLAB FSJ Ho		
D193-14I	مىيىدىنىدىم 2	<u> </u>	122	KANCKE posmil	and the second	TOLLIA.	uce Property	
PD3-TV	2022-09-29		6.5	MeHg>SIA>THg	dry/gand > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD3-IV	2022-09-29		6.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD3-IV	2022-09-29		4.2	MeHg>SLA>THg	dry/grand > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hot	use Freezer	
PD3-IV	2022-09-29		5.4	MeHg>SLA>THg		ALS to send to SINLAB FSJ Hot		
PD3-IV	2022-09-29		1	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hou		all size classes combined
PR2.81-IV	2022-09-30		6.3	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hor		
PR2.81-IV	2022-09-30		6.6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB FSJ Hor	use Freezer	
PR2.81-IV	2022-09-30		1.9	MeHg>SLA>THg		ALS to send to SINLAB FSJ Hot		
PR2.81-IV	2022-09-30		0.8	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hot		
PD5-IV	2022-10-01		2.5	MeHg>SIA>THg		ALS to send to SINLAB FSJ Hou		
PD5-IV	2022-10-01		3.4			ALS to send to SINLAB FSJ Hou		
PD5-TV	2022-10-01		3			ALS to send to SINLAB FSJ Hou		
PD5-IV	2022-10-01		2.5			ALS to send to SINLAB FSJ Hou		• ***
PD5-IV	2022-10-01		2.2			ALS to send to SINLAB FSJ Hou		
7475.TV	2023-10-04	P[35_M	9.1	CNORE toosing		FSI Has	use Preuzer	estric sample is 1 place ptora and 2 his makes

Bord W

Legend

Abbreviation	Meaning	Comments
Ρ .	Plecoptera	
T	Tricoptera	
E	Ephemeroptera	
0	Oligochaetes	
M	Miscellaneaous	includes taxa not specified in separate sample
PB	P Big	greater than 4cm
PS	P small	less than 4cm
TB	T Big	greater than 1.5cm
TS	T small	between 1.5cm and 1cm
TT	T Tiny	less than 1cm
TC	T Casings	T of a distinct species; smaller, green, and resides in casings
A, B, C	replicates	



SampleID	#Visik Name on Container	Sample Date	Net Drop#	Wet Weight of Zooplankton (g)	ALS Instructions	ALS to SINLAB	SINLAB	Comment
PR1-Z	1 PR1-WQ	2022-08-20	1	4.6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	everything is in 1 jar
W1-Shallow-Z-A	2 W1-Shallow-A x 2	2022-08-16	11	~30	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate A for mercury/methylmercury; jar and vial
W1-Shallow-Z-B	2 W1-Shallow-B x 2	2022-08-16	1	~30	MeHg>SLA>THg	dev/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate B for mercury/methylmercury, jar and vial
D1-Shallow-Z	2 D1-Shallow x 2	2022-08-21	2,3	5.8	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	most of sample is in amber jar, some in a small vial
W1-Shallow-Z	1 W1-Shallow	2022-10-19	n/a	4.5	MeHg>StA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	no dun
D1-Shallow-Z-A	1 D1-Shallow-A	2022-10-19	n/a	2.9	MeHg>\$LA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate A is ~70% zoops and 30% algae
D1-Shallow-Z-B	1 D1-Shallow-B	2022-10-19	n/a	9.7	McHg>SLA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate B is ~20% zoops and 80% algae

Br

2 vials; chlorophytes in samples that could not be separated from the zoops in the sieve stack; Replicate



Chain of Custody (COC) / Analytical Request Form

Affix ALS barcode label here:

COC Number: 14 -

Page <u>1</u> of <u>3</u>

Canada Toll Free: 1 800 668 9878 www.alsglobal.com Report To Report Format / Distribution Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests) R Regular (Standard TAT if received by 3 pm - business days) Azimuth Consulting Group Inc. Select Report Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL) P Priority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS to confirm TAT -Gary Mann-Quality Control (QC) Report with Report Contact: F 🔲 Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TAT 218 - 2902 West Broadway Address: Vancouver, BC V6K 2G8 ☑ EMAIL ☐ MAIL ☐ FAX E2
Same day or weekend emergency - contact ALS to confirm TAT and surcharge Select Distribution: Phone: 604-730-1220 Specify Date Required for E2,E or P: Email 1 or Fa: gmann@azimuthgroup.ca 604-908-0601 imcivor@azimuthgroup.ca Analysis Request Invoice Distribution Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below Invoice To Same as Report To YES NO Copy of Invoice with Report ☑ YES □ NO Select Invoice Distribution: 🛛 EMAIL 🗀 MAIL 🗀 FRANK Azimuth Consulting Group Inc. Email 1 or Fa: engan@azimutheroup.ca Company: Mercury in Biota by GCAFS (WET Gary Mann imcivor@azimuthgroup.ca Project Information Oil and Gas Regulred Fields (client use). ALS Quote #: Q75925 Cost Center: Approver ID: Job #: BCH-22-01 Routing Code: PQ / AFE: Activity Code: Location: ALS ALS Lab Work Order # (lab use only) **Brent Mack** Sampler: Ganshom ECOFISH ALS Sample # Sample Identification and/or Coordinates (lab use only) (This description will appear on the report) (dd-mmm-yy) (hh:mm) See two CoC sheets: one for benthic inverts and one for zoops FJAE Shipping & Receiving 350 Call Out Expedite 797 __ Priority # of Coolers VAir _# of Carboys __ Ground SAMPLE CONDITION AS RECEIVED (lab use only). Drinking Water (DW) Samples¹ (client use) Special Instructions / Specify Criteria to add on report (client Use) SIF Observations Yes No Are samples taken from a Regulated DW System? Sample info sent via email to Brent Mack in Excel file. Cooling Initiater NITIAL COOLER TEMPERATURES Are samples for human drinking water use?

INITIAL SHIPMENT RECEPTION (lab use only):

1. If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form

IPMENT RELEASE (client use)

FINAL SHIPMENT RECEPTION (lab use only)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

PRILY 2022 09.26 PRILTS 1.2 Mefigo-SIAS-THg Grygoin 2 or gar 6 for SIA ALS to send to SINLAR SI House Freeze	Site/Waypoin	Date	Sample II)	Wet Weight of IV (g)	- ALS Instructions	ALS to SINLAB SINLAB Storage location Comment
TRALITY	PR1 IV	2022-09-26	PR1-TB	1.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSI House Freezer
PR2117	PR1-IV	2022-09-26	PR1-TS	6.4	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAP FS] House Freezer
PRZ-IV 2022-09-27 PRZ-TS 5.5 MeHg/SSIA-THg dry/gmod > 2 mg dw for SIA ALS to send to SINLAR FSI House Preceder	PR1-IV	2022-09-26	PR1-M	0.6	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAP FSJ House Freezer
PR2_IV	PR2-IV	2022-09-27	PR2-P	3.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAP FSJ House Freezer all size classes combined
PRZ-1V 2022-09-27 PRZ-TS-B 5.5	PR2-IV	2022-09-27	PR2-TB	5.5	MeHg>SIA>'I'Hg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PR2-1 V 2022-09-27 PR2-TT-A 5.9 MeHg-SIAS-THg dry/gend > 2 mg dw for SIA ALS us send to SINLAB PS House Presence	PR2-IV	2022-09-27	PR2-TS-A	5.3	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PROJECT PROJ	PR2-IV	2022-09-27	PR2-TS-B	5.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB PSJ House Freezer
DRI-FW 2022-09-28 DDI-PB-A	PR2-IV	2022-09-27	PR2-TT-A	5.9	McHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
DDI-IV 2022-09-28 DDI-PB-B 3.9 MeHg-SIA>THig doy/gaind > 2 mg dw for SIA ALIS to send to SINLAR FS] House Freezer	PR2-IV	2022-09-27	PR2-TT-B	6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer
EDI-IV 2022-09-28 EDI-PB-C 3.9 MeHg>SIA>THg day/gand > 2 mg dw for SIA ALS to send to SINLAB SI House Preceet	PRO-114	2022-09-27	PR2-14	0.1	IC SORE TO Small	AbS-m-multi-SIDJAE (S) Honor-Parcy
PD IV 2022-09-28 PD PB-C 3.9 MeHg-SIA>THg dry/gand > 2 mg dw for SIA ALS to send to SINLAR PS House Freezer	PD1-IV	2022-09-28	PD1-PB-A	4.1	MeHg>SIA>THg .	dty/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
DD-LIV 2022-09-28 DD-TB-A 7.2 MeHg-SIA-THg day/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-PB-B	3.9	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
DD-1-IV 2022-09-28 PD-1TB-B 7.1 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TB-B 7.1 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TS-B 7.1 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TS-B 7.1 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TS-B 7.1 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TS-C 7.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TC 7.4 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-28 PD-1TS-C 7.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 4.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 4.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 4.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 4.2 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 6.5 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 6.5 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 5.4 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 5.4 McHg>SIA>THg dy/grind > 2 ring dw for SIA ALS to send to SINLAB FS] House Freezer DD-1-IV 2022-09-29 DD-1-PB 5.4	PD1 IV	2022-09-28	PD1-PB-C	3.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD1-IV 2022-09-28 PD1-TB-B 7.1 McHg>SIA>THg dy/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer My/gnnd > 2 mg dw	PD1-IV	2022-09-28	PD1-PS	2.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PDI-IV 2022-09-28 PDI-TB-C	PD1-IV	2022-09-28	PD1-TB-A	7.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD1-IV 2022-09-28 PD1-TS-A 7.1 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer DF1-IV 2022-09-28 PD1-TC 7.4 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw fo	PD1-IV	2022-09-28	PD1-TB-B	7.1	McHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD1-IV 2022-09-28 PD1-TS-B	PD1-IV	2022-09-28	PD1-TB-C	7.1	MeHg>\$LA>THg	
PD1-IV 2022-09-28 PD1-TC	PD1-IV	2022-09-28	PD1 TS-A	7.1	MeHg>SIA>THg	dry/grind > 2 rng dw for SIA ALS to send to SINLAB FS) House Freezer
PD1-IV 2022-09-28 PD1-C	PD1-IV	2022-09-28	PD1-TS-B	7.1	McHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB PSJ House Freezer
PD1-IV 2022-09-28 PD1-E 0.4 MeHg>SIA>THg dry/grind > 2 rig dw for SIA ALS to send to SINLAB FS] House Freezer sample is made up of 34 tiny mayflies	PD1-IV	2022-09-28	PD1-TS-C	7.2	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer
PD3-IV 2022-09-29 PD3-PB 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-TC	7.4	MeHg>SIA>THg	
PD3-IV 2022-09-29 PD3-TB 6.5 MeHg>SIA>THg day/gaind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer	PD1-IV	2022-09-28	PD1-E	0.4	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer sample is made up of 34 tiny mayflies
PD3-IV 2022-09-29 PD3-TB 6.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer		2022-09-29	PD3-PB		MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD3-IV 2022-09-29 PD3-TS 6.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	300000000000000000000000000000000000000		P134_P5 -	u.7)v.	#IGNORIS too email	
PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer		2022-09-29	PD3-TB	6.5	MeHg>SLA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer all size classes combined					MeHg>SLA>THg	
PD3-IV 2022-09-29 PD3-E 1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer all size classes combined					MeHg>SIA>THg	
PR2.81 IV 2022-09-30 PR2.81-TB 6.3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PR2.81-IV 2022-09-30 PR2.81-M 0.8 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022-10-01 PD5-TS-B 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV				5.4	MeHg>SIA>THg	
PR2.81-IV 2022-09-30 PR2.81-TS 6.6 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PR2.81-IV 2022-09-30 PR2.81-TC 1.9 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PR2.81-IV 2022-09-30 PR2.81-M 0.8 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-E 2.2 McHg>SIA>THg dv/grind > 2 mg dw for SIA ALS to send						
PR2.81-IV 2022-09-30 PR2.81-TC 1.9 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PR2.81-IV 2022-09-30 PR2.81-M 0.8 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer , PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined					MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PR2.81-IV 2022 09-30 PR2.81-M 0.8 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer , PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined				6.6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer						
PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined SINLAB FS] House Freezer Indicated the size of th						
PD5 IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer 7						
PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer House Freezer PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined				3.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer
PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer all size classes combined					MeHg>SIA>1 Hg	dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer
					MeHg>SIA>THg	
PD 15 14 15 15 15 15 15 15						
	PL)(19	2022-1070	PLYL-M	G 1	IGNORE two small	FS House Freeze earlies ample in Epiticopura and Elimy midges

Bord W

Legend

Abbreviation	Meaning	Comments
P	Plecoptera	
T	Tricoptera	
E	Ephemeroptera	
0	Oligochaetes	
M	Miscellaneaous	includes taxa not specified in separate sample
PB	P Big	greater than 4cm
PS	P small	less than 4cm
ТВ	T Big	greater than 1.5cm
TS	T small	between 1.5cm and 1cm
TT	T Tiny	less than 1cm
TC	T Casings	T of a distinct species; smaller, green, and resides in casings
A, B, C	replicates	

Eample ID	#Vials Name on Container	Sample Date	Net Drop#-	Wet Weight of Zooplankton (g)	4) Streemenore	ALS TO SINLAB	SINLAB	Comment
PR1-Z	1 PRI-WQ	2022-08-20	1	4.6	McHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	everything is in 1 jar
W1-Shallow-Z-A	2 WI-Shallow-A x 2	2022-08-16	1	~30	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate A for mercury/methylmercury, jar and vial
W1-Shallow-Z-B	2 Wt-Shallow B x 2	2022-08-16	1	~30	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate B for mercury/methylmercury; jar and vial
D1-Shallow-Z	2 D1-Shallow x 2	2022-08-21	2,3	5.8	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	most of sample is in amber jar, some in a small vial
W1-Shallow-Z	1 W1-Shallow	2022-10-19	n/a	4.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	no dup
D1-Shallow-Z-A	1 D1-Shallow-A	2022-10-19	n/a	2.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate A is ~70% zoops and 30% algae
D1-Shallow-Z-B	1 D1-Shallow-B	2022-10-19	n/a	9.7	McHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	Replicate B is ~20% zoops and 80% algae

B

2 vials; chlorophytes in samples that could not be separated from the zoops in the sieve stack; Replicate



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here

COC Number: 14 -

www.alsglobal.com

Report To	Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company: Azimuth Consulting Group Inc. Select Rep	ort Format: ☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)	R 🖸 Regular (Standard TAT if received by 3 pm - business days)
Contact: Gary Mann Quality Cor	ntrol (QC) Report with Report	P Priority (2-4 bus, days if received by 3pm) 50% surcharge - contact ALS to confirm TAT
Address: 218 – 2902 West Broadway	Report - provide details below if box checked	E Emergency (1-2 bus, days if received by 3pm) 100% surcharge - contact ALS to confirm TA
Vancouver, BC V6K 2G8 Select Distr	nbution: EMAIL	E2 Same day or weekend emergency - contact ALS to confirm TAT and surcharge
Phone: 604-730-1220 Email 1 or	Fa: gmann@azimuthgroun.ca	Specify Date Required for E2,E or P:
604-908-0601 Email 2	imcivor@azimuthgroup.ca	Analysis Request
Invoice To Same as Report To 🗹 YES 🗌 NO	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Copy of Invoice with Report ☑ YES ☐ NO Select Invo	ice Distribution: 🖸 EMAIL 📋 MAIL 🗎 🖪 🖼	
Company: Azimuth Consulting Group Inc. Email 1 or	Fa: gmann@azimuthgroup.ca	
Contact: Gary Mann Email 2	imcivor@azimuthgroup.ca	
Project Information O	l and Gas Required Fields (client use) - 👵 -	GCAFS (WET GCAFS (WET bon and
ALS Quote #: Q75925 Approver if	Cost Center]% % ¿ % % % % % % %
Job #: BCH-22-01 GL Accoun	t 🔧 / 😩 Routing Code	r of Con
PO / AFE: Activity Co.	1e (,)	inta the Biota by y gravity by sis (AB)
LSD: Location:		in Biota by CVAAS (WE mit by gravimetry analysis (carbon and MINLAB A. Number of Containers)
ALS	Kevin	r i ga ga ga ga ga ga ga ga ga ga ga ga ga
ALS Lab Work Order # (lab use only) ALS Contact:	Brent Mack Sampler: Ganshorn ECOFISH	Mercury in Mercury in 30 to 51
ALS Sample # Sample Identification and/or Coordinates	Date Time	Signature A A A A A A A A A
(This description will appear on the report)	(dd-mmm-yy) (hh:mm) Sample Type	units) Methyl M Moisture Stable Is nitrogen)
See two CoC sheets: one for benthic inverts and one for zoops		
5.58		
		3348 861 5517
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— Call C	out Expedite	
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# of Cc	Olom (Ca)	
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	rboys Ground	Fort
	15 ×	Fort S Wor
Bullion Made (BMO Complete Million to an American Inches of Section 1 Sectio	ecify Criteria to add on report (client Use)	SAMPLE CONDITION AS RECEIVED (lab use only)
Drinking Water (DW) Samples¹ (client use) Special Instructions / Sp	ecity Criteria to add on report (client dise)	Frozen SIF Observations Yes No
Are samples taken from a Regulated DW System? Sample info sent via email to Bren	nt Mack in Excel file.	Ice packs. Yes: . No
		Cooling Initiate:
Are samples for human drinking water use?	•	INHTIAL COOLER TEMPERATURES
		1-814 97 (aua 6)
FIIPMENT RELEASE (client use) — INITIAL	SHIPMENT RECEPTION (fab use only)	FINAL SHIPMENT RECEPTION (lab use only)
	The Court of the C	A PROCESS AND ASSESSMENT OF THE PROC
Released by Date: Time: Received by:	12-16-29,80	Received by True DEC 1 7 2002 Fine 21004

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form.

PD3-IV 2022-09-29 PD3-TB 6.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	Site/Waypoin	Date	Sample ID	Wet Weight of IV (g)		ALS to SINLAB			Comment
PRI IV	PR1-IV	2022-09-26	PR1 TB	1.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PRZ-IV 0122-09-27 PRZ-P 3.9 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-27 PRZ-TSA 5.5 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-27 PRZ-TSA 5.3 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-27 PRZ-TS-A 5.5 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-27 PRZ-TT-A 5.9 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-27 PRZ-TT-A 5.9 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-28 PRZ-TT-A 5.9 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-28 PRZ-TT-A 5.9 Mells-PSIA-THR dar/zental ≥ nmg de for SIA ALS to send to SINLARI PSI House Freezer PRZ-IV 0122-09-28	PR1-IV	2022-09-26	PR1-TS	6.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PRZ-1V	PR1 IV	2022-09-26	PR1-M	0.6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
FRE-117 2012-09-27 FRE-TEA 5.3 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.5 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg Afrygand > 2 mg dw for SIA ALS to send to SINLAR FSI House Freezec FRE-TEA 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-THg 5.9 MeHg-SIA-TH	PR2-IV	2022-09-27	PR2-P	3.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	all size classes combined
PRE-11V 2022-09-27 PRE-TITA S. S. MeHg-SIA-71Hg PRE-11V 2022-09-28 PRE-TITA S. S. MeHg-SIA-71Hg PRE-TITA S. S. S. MeHg-SIA-71Hg PRE-TITA S. S. S. MeHg-SIA-71Hg PRE-TITA S. S. MeHg-SIA-71Hg PRE-TITA S. S. S. MeHg-SIA-71Hg PRE-TITA S. S. S. S. S. S. S. S. S. S. S. S. S.	PR2-IV	2022-09-27	PR2-TB	5.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PRE-11V 2022-09-27 PRE-TT-A 5-9 McHg-SIA-PTHg dry/grand > 2 mg dw for SIA ALS to send to SINLAR FSI House Precent	PR2-IV	2022-09-27	PR2-TS-A	. 5.3	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PRE-ITV 2022-09-28 PDI-PB-A 4.1 MeHg>SIA>THg dry/gand > 2 mg dw for SIA ALS to send to SINLAB FS House Feezer	PR2-IV	2022-09-27	PR2-TS-B	5.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD-11V 2022-09-28 PD1-PB-A A.1 MeHg-SIA>THg dry/gaind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PR2-IV	2022-09-27	PR2-TT-A	5.9	McHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
DD.11V 2022-09-28 DD.1-B-B 3.9 MeHg-SIAN-THg dar/gand > 2 mg dw for SIA ALS to send to SINLAE FS] House Freezer	PR2-IV	2022-09-27	PR2-TT-B						
DDI-IV 2022-09-28 DDI-PB-B 3.9 MeHg-SIAN-THg dry/gaind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezet	PRATTY.	20,22,499,477	PAU-24	. +	(ISNOR) - for small		ALC in sent to SINIAD	Fri House treese	•
PD-1-IV 2022-09-28 PD1-PS 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TB-A 7.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TB-B 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TB-B 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TS-A 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TS-A 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TS-B 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TS-B 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TC 7.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-28 PD1-TC 7.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD1-IV 2022-09-29 PD3-FB 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TB 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 m	PD1-IV	2022-09-28	PD1-PB-A	4.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-FB-A 7.2 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-PB-B	3.9	MeHg>\$IA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PDI-IV 2022-09-28 PDI-TB-A 7.2 MeHg>SIA>THg diy/gaind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-PB-C	3.9	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-TB-B				2.2	MeHg>SIA>THg	dry/grand > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer.	
PD1-IV 2022-09-28 PD1-TB-C 7.1 MeHg>SIA>THg dry/gand > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-TB-A	7.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-TS-A 7.1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD1-IV 2022-09-28 PD1-TC 7.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/grind > 2 mg dw f	PD1-IV	2022-09-28	PD1-TB-B	7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-TS-B 7.1 MeHg>SIA>THg dty/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer	PD1-IV	2022-09-28	PD1-TB-C	7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-TS-C 7.2 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer sample is made up of 34 tiny mayflies PD3-IV 2022-09-29 PD3-PB 4.2 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer FP3-IV 2022-09-29 PD3-TS 6.5 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer FP3-IV 2022-09-29 PD3-TS 6.4 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer FP3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer MeHg>SIA>THg dry/gind > 2 mg dw for SIA A	PD1-IV	2022-09-28	PD1-TS-A	7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PDI-IV 2022-09-28 PDI-C 7.4 MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer MeHg-SIA>THg dry/gi	PD1-IV	2022-09-28	PD1-TS-B	7.1	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD1-IV 2022-09-28 PD1-E	PD1-IV	2022-09-28	PD1-TS-C	7.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD3-IV 2022-09-29 PD3-PB 4.2 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TS 6.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TS 6.4 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-29 PD3-E 1 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 6.3 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 6.3 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 6.3 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 6.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 1.9 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-09-30 PD3-IT 2.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-10-01 PD3-IT 2.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-10-01 PD3-IT 3.4 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-10-01 PD3-IT 2.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD3-IV 2022-10-01 PD3-IT 2.5 MeHg>SIA>THg dy/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer P	PD1-IV	2022-09-28	PD1-TC	7.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	·
PD3-IV 2022-09-29 PD3-TB 6.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD3-IV 2022-09-29 PD3-TS 6.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD3-IV 2022-09-29 PD3-TC-A 4.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD3-IV 2022-09-29 PD3-TC-B 5.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD3-IV 2022-09-29 PD3-E 1 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TB 6.3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PR2.81-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer		2022-09-28	PD1-E	0.4					sample is made up of 34 tiny mayflies
PD3-IV 2022-09-29 PD3-TB 6.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer				4.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD3-IV 2022-09-29 PD3-TS 6.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer	PE2-112	2022-00-20	PD3-PS	6. 2 ,					
PD3-IV 2022-09-29 PD3-TC-A 4.2 McHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer				6.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD3-IV 2022-09-29 PD3-E 1 McHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS House Freezer All size classes combined				6.4					
PD3-IV 2022-09-29 PD3-E 1 McHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined				4.2	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PR2.81-IV 2022-09-30 PR2.81-TB 6.3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer		2022-09-29	PD3-TC-B	5.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PR2.81-IV 2022-09-30 PR2.81-TS 6.6 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer					McHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	all size classes combined
PR2.81-IV 2022-09-30 PR2.81-TC 1.9 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PR2.81-IV 2022-09-30 PR2.81-M 0.8 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined		2022-09-30	PR2.81-TB	6.3	MeHg>SIA>THg				
PR2.81-IV 2022-09-30 PR2.81-M 0.8 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer				6.6	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD5-IV 2022-10-01 PD5-TB 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022 10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined					MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD5-IV 2022-10-01 PD5-TS-A 3.4 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer				0.8	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ I Iouse Freezer	
PD5-IV 2022-10-01 PD5-TS-B 3 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined PD5-IV 2022-10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined PD5-IV				2.5	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD5-IV 2022-10-01 PD5-TC 2.5 MeHg>SIA>THg dry/prind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer PD5-IV 2022 10-01 PD5-E 2.2 MeHg>SIA>THg dry/grind > 2 mg dw for SIA ALS to send to SINLAB FSJ House Freezer all size classes combined				3.4	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
PD5-IV 2022 10-01 PD5-E 2.2 MeHg>SIA>THg dry/gand > 2 mg dw for SIA ALS to send to SINLAB FS] House Freezer all size classes combined				3	MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
					MeHg>SIA>THg	dry/grind > 2 mg dw for SIA	ALS to send to SINLAB	FSJ House Freezer	
DESCRIPTION OF THE PROPERTY OF									
12 A 1	PER-IX	2432-10-01	PD5-M	.: 94 7	IGNORE stoo small:		4 1 2 2	Fill House Pecace	critic sample is Epice-pters and 2-time radges

Bord &

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Legend

Abbreviation	Meaning	Comments
P	Plecoptera	
Т	Tricoptera	
E	Ephemeroptera	
0	Oligochaetes	
M	Miscellaneaous	includes taxa not specified in separate sample
PB	P Big	greater than 4cm
PS	l ³ small	less than 4cm
ТВ	T Big	greater than 1.5cm
TS	T small	between 1.5cm and 1cm
ТΓ	T Tiny	less than 1cm
TC	T Casings	T of a distinct species; smaller, green, and resides in casings
-A, B, C	ceplicates	

Comment	everything is in 1 iar	Renlicate A for mercure/methylmerchan is and vial	Replicate B for mercury/merhalmercury is and vial	most of sample is in amber iar, some in a small mal	no duo	Replicate A is -70% zoons and 30% algae	Replicate B is ~20% zoops and 80% algae
SINLAB	ALS to send to SINI, AB	ALS to send to SINLAB	ALS to send to SINLAB	ALS to send to SINLAB	ALS to send to SINLAB	ALS to send to SINLAB	ALS to send to SINLAB
AIS to SINEAB	dry/grind > 2 mg dw for SLA	dry/grind > 2 mg dw for SLA	dry/grind > 2 mg dw for SIA	dry/grind > 2 mg dw for SIA	day/grind > 2 mg dw for SIA	dry/grind > 2 mg dw for SIA	day/grind > 2 mg dw for SIA
ALS Instructions	McHg>SIA>THg	MeHg>SIA>THg	MeHg>SIA>THg	McHg>SIA>THg	MeHg>SIA>THg	MeHg>SLA>THg	MeHg>SLA>THg
Wet Weight of Zooplankton (g)	4.6	~30	~30	5.8	4.5	2.9	9.7
et Drop#	. 1	1	1	2,3	n/a	n/a	n/a
Sample Date Net Drop #	2022-08-20	2022-08-16	2022-08-16	2022-08-21	2022-10-19	2022-10-19	2022-10-19
#Right Name on Container	1 PR1-WQ	2 W1-Shallow-A x 2	2 W1-Shallow-B x 2	2 D1-Shallow x 2	1 Wil-Shallow	1 D1-Shallow-A	1 D1-Shallow-B
Gladomes.	PR1-Z	W1-Shallow-Z-A	W1-Shallow-Z-B	D1-Shallow-Z	W1-Shallow-Z	D1-Shallow-Z-A	D1-Shallow-Z-B

and

2 vials, chlorophytes in samples that could not be secarated from the zoons in the sieve earle Renlierne

APPENDIX B6: INVERTEBRATE TISSUE SIA SINLAB REPORTS

CLIENT ID	SINLAB ID	Date	Row	Amount	CO2 Area	N2 Area	d13C	d15N	%C	%N	C/N	Comment	Preparation	Notes
PR1-TB	23AZ 034	10-Aug-23		1.202	3.00	2.3	-34.2	6.5	49.9	8.9	5.6		DELTA V-NC2500	110100
PR1-TS	23AZ 035	10-Aug-23		1.184	2.98	2.1	-34.3	6.7	50.2		6.0		DELTA V-NC2500	
PR2-P	23AZ 036	10-Aug-23	38	1.209	2.75	2.1	-29.3	4.3	45.0	7.9	5.7		DELTA V-NC2500	
PR2-TB	23AZ 037	10-Aug-23		0.998	2.64	1.9	-32.1	6.8	52.7		6.1		DELTA V-NC2500	
PR2-TS-A	23AZ 038	10-Aug-23		1.097	2.91	2.1	-32.5	6.3	52.8	8.9	5.9		DELTA V-NC2500	
PR2-TS-B	23AZ 039	10-Aug-23		0.983	2.80	1.6	-32.7	6.1	56.8	7.6 7.6	7.4		DELTA V-NC2500 DELTA V-NC2500	
PR2-TT-A PR2-TT-B	23AZ 040 23AZ 041	10-Aug-23 10-Aug-23		1.244 1.025	2.46 2.31	2.0 1.8	-31.6 -29.3	7.0 3.2	39.3 44.5	7.6 8.1	5.2 5.5		DELTA V-NC2500 DELTA V-NC2500	
PD1-PB-A	23AZ 041	10-Aug-23		1.171	3.51	2.1	-32.5	7.0	60.3	8.3	7.3		DELTA V-NC2500	
PD1-PB-B	23AZ 043	10-Aug-23	45	1.098	2.48	2.1	-28.8	2.4	44.8	9.0	5.0		DELTA V-NC2500	
PD1-PB-C	23AZ 044	10-Aug-23	46	1.074	2.21	1.9	-28.9	2.5	40.6	8.1	5.0		DELTA V-NC2500	_
PD1-PS	23AZ 045R	_	53	1.057	2.21	2.2	-28.2	3.7	41.2		4.3		DELTA V-NC2500	
PD1-PS	23AZ 045R	•	71	1.106	2.37	2.5	-28.5	4.0	42.7				DELTA V-NC2500	
PD1-TB-A	23AZ 046	10-Aug-23		1.113	2.47	2.0	-29.6	4.9	43.9	8.2	5.4		DELTA V-NC2500	
PD1-TB-B PD1-TB-C	23AZ 047 23AZ 048	10-Aug-23 10-Aug-23		1.255 1.004	3.01 2.26	2.5 2.0	-29.0 -29.0	5.2 5.1	48.2 44.6	9.3 9.1	5.2 4.9		DELTA V-NC2500 DELTA V-NC2500	
PD1-TS-A	23AZ 048 23AZ 049	10-Aug-23		1.062	2.57	1.8	-30.5	4.6		7.9	6.1		DELTA V-NC2500 DELTA V-NC2500	
PD1-TS-B	23AZ 050	10-Aug-23		1.118	2.76	1.9	-30.7	5.3	49.3	8.1	6.1		DELTA V-NC2500	
PD1-TS-C	23AZ 051	10-Aug-23	59	1.083	2.73	1.6	-31.4	4.3	50.4		7.3		DELTA V-NC2500	
PD1-TC	23AZ 052	10-Aug-23	60	1.203	3.00	1.1	-32.0	5.7	49.7	4.1	12.0		DELTA V-NC2500	
PD3-PB	23AZ 053	10-Aug-23		1.227	2.52	2.0	-28.6	2.3	41.0	7.4	5.5		DELTA V-NC2500	
PD3-TB	23AZ 054	10-Aug-23		1.115	2.69	2.0	-31.2	4.0	47.9	8.4	5.7		DELTA V-NC2500	
PD3-TS PD3-TC-A	23AZ 055 23AZ 056	10-Aug-23		1.138 1.094	2.71 3.08	1.8 1.6	-31.8 -31.9	4.6 3.5		7.2 7.0	6.6 8.1		DELTA V-NC2500 DELTA V-NC2500	
PD3-TC-A PD3-TC-B	23AZ 056 23AZ 057	10-Aug-23 10-Aug-23		1.094	3.05	1.0	-33.0	3.5 3.1	57.5		13.3		DELTA V-NC2500 DELTA V-NC2500	
PR2.81-TB	23AZ 058	10-Aug-23	66	1.221	2.86	2.3	-31.1	4.7	47.1	8.7	5.4		DELTA V-NC2500	
PR2.81-TS	23AZ 059	10-Aug-23	67	1.013	3.24	1.9	-32.3	3.9	64.4	8.7	7.4		DELTA V-NC2500	
PR2.81-TC	23AZ 060	10-Aug-23	68	1.102	2.93	1.6	-31.5	4.4	53.4	6.8	7.9		DELTA V-NC2500	
PD5-TB	23AZ 061	10-Aug-23	69	1.029	2.54	1.7	-32.1	2.7	49.3	7.6	6.5		DELTA V-NC2500	
PD5-TS-A	23AZ 062	10-Aug-23	70	1.076	2.66	1.3	-33.6	2.3	49.2	5.7	8.7		DELTA V-NC2500	
PD5-TS-B	23AZ 063R	•	76	1.024	2.33	1.7	-32.6	3.5	45.4		6.0		DELTA V-NC2500	
PD5-TS-B PD5-TC	23AZ 063R 23AZ 064	_		0.973	2.12 2.77	1.5	-32.4 -32.5	3.8	43.4 48.5	7.3 5.2	6.0 9.4		DELTA V-NC2500 DELTA V-NC2500	
PD5-TC PD5-E	23AZ 064 23AZ 065	10-Aug-23 10-Aug-23	77 78	1.143 1.093	2.64	1.3 1.6	-32.5	2.4 3.3	48.3	5.2 6.7	7.2		DELTA V-NC2500 DELTA V-NC2500	
PR1-Z	23AZ 066	10-Aug-23		1.045	1.90	1.3	-34.2	6.7	36.1	5.9	6.2		DELTA V-NC2500	
W1-Shallow-Z-A		10-Aug-23		1.150	2.59	1.6	-36.5	5.8	44.9	6.7	6.7		DELTA V-NC2500	
W1-Shallow-Z-B	3 23AZ 068	10-Aug-23	81	1.240	2.84	2.0	-36.9	5.9	45.8	7.4	6.2		DELTA V-NC2500	
D1-Shallow-Z		10-Aug-23	82	1.018	2.48	1.8	-37.0	9.2	48.6	8.1	6.0		DELTA V-NC2500	
W1-Shallow-Z		10-Aug-23		1.080	2.47	1.6	-35.7	12.0	45.5	6.8	6.7		DELTA V-NC2500	
D1-Shallow-Z-A		10-Aug-23		1.189	1.74	1.0	-35.6	11.2	29.0	3.9	7.5		DELTA V NC2500	
D1-Shallow-Z-B Hg-2022-3301		10-Aug-23	85 11	1.016 1.150	0.98 2.97	0.6 3.5	-37.5 -29.0	7.4 9.1	18.8 44.3	2.6	7.2		DELTA V-NC2500 DELTA V-NC2500	l
Hg-2022-3301		04-Aug-23	27	1.132	2.90	3.5	-28.8	9.1		13.0			DELTA V-NC2500	
FSJ-18	23AZ 074	04-Aug-23	12	1.005	2.56	3.2	-27.9	7.3	43.7				DELTA V-NC2500	
FSJ-18DUP	23AZ 075	04-Aug-23	13	1.065	2.97	3.1	-29.1	7.5	48.0	12.2	3.9		DELTA V-NC2500	
Hg-2022-3302		04-Aug-23	14	1.188	3.11	3.7	-30.2	10.5	45.2				DELTA V-NC2500	
Hg-2022-3311		04-Aug-23	15	1.193	3.02	3.6	-27.1	7.2	43.7	12.8	3.4		DELTA V-NC2500	
Hg-2022-3312		04 442 22	16	1 010	2.40	2.0	20.0	10.7	4E 0	12.0	2.4		DELTA V/ NC2500	no sample
Hg-2022-3320 Hg-2022-3321		04-Aug-23 04-Aug-23	16 17	1.218 1.123	3.19 2.93	3.8 3.5	-30.9 -30.8	10.7 10.5	45.2 45.0				DELTA V-NC2500 DELTA V-NC2500	
Hg-2022-3332		04-Aug-23		1.123	2.83	3.5	-28.2	6.8	42.4				DELTA V-NC2500 DELTA V-NC2500	
Hg-2022-3338		04-Aug-23		1.185	2.99	3.5	-30.2	6.9	43.5				DELTA V-NC2500	
Hg-2022-3342		04-Aug-23		1.042	2.67	3.3	-29.8	7.1	44.1				DELTA V-NC2500	
Hg-2022-3343	23AZ 084	04-Aug-23	21	1.121	2.89	3.2	-30.1	11.3	44.4				DELTA V-NC2500	
Hg-2022-3366		04-Aug-23		1.022	2.63	3.2	-27.1	7.3		13.4			DELTA V-NC2500	
Hg-2022-3367		04-Aug-23		1.154	2.92	3.6	-27.1	7.3	43.6				DELTA V-NC2500	
Hg-2022-3384 HH-641	23AZ 087 23AZ 088	04-Aug-23	24 25	1.098 1.154	2.82 3.12	3.3 3.4	-28.4 -28.9	6.8 8.7	44.2 46.8				DELTA V-NC2500 DELTA V-NC2500	ı
	23AZ 089	04-Aug-23 04-Aug-23	26	1.154	2.76	3.4	-28.8	9.3	44.8				DELTA V-NC2500 DELTA V-NC2500	
HH-696	23AZ 090R	04-Aug-23	31	1.135	3.02	3.5	-28.1	7.8	45.9				DELTA V-NC2500	
HH-696	23AZ 090R			1.155	2.93	3.6	-27.9	7.5	43.7				DELTA V-NC2500	
HH-767	23AZ 091	04-Aug-23	32	1.182	3.13	3.6	-29.7	9.2	45.7		3.5		DELTA V-NC2500	
•	23AZ 092	04-Aug-23		1.085	2.93	3.4	-29.8	9.1	46.6				DELTA V-NC2500	
Hg-2022-3397		04-Aug-23		1.058	2.74	3.0	-28.7	8.0	44.6		3.7		DELTA V-NC2500	
Hg-2022-3398		04-Aug-23		1.155	3.24	3.2	-32.5	10.6	48.5				DELTA V-NC2500	
HH-797	23AZ 095	04-Aug-23	36	1.223	3.39	3.4	-31.9	10.3					DELTA V NC2500	
HH-797Dup Hg-2022-3400	23AZ 096 23AZ 097	04-Aug-23 04-Aug-23		1.094 0.980	2.92 2.60	3.3 3.1	-31.0 -30.8	10.4	46.0 45.4				DELTA V-NC2500 DELTA V-NC2500	I
HH-1037	23AZ 097 23AZ 098	04-Aug-23	39	1.158	2.96	3.5	-26.9	8.2	44.0				DELTA V-NC2500	
HH-1037Dup		04-Aug-23	40	1.183	2.94	3.6	-27.0	8.2	42.9				DELTA V-NC2500	
FSJ-1066	23AZ 100	04-Aug-23	41	1.058	3.06	2.6	-31.9	11.7	49.8				DELTA V-NC2500	
FSJ-1066Dup		04-Aug-23	42	1.188	3.57	2.9	-32.3	12.0	52.1				DELTA V-NC2500	
Hg-2022-3412		04-Aug-23		1.166	3.01	3.5	-28.6	7.0	44.5				DELTA V-NC2500	
Hg-2022-3411	23AZ 103	04-Aug-23	44	1.109	2.97	3.3	-29.0	8.0	46.2	12.6	J./		DELTA V-NC2500	

Hg-2022-3418	23AZ 104	04-Aug-23	45	1.105	2.82	3.5	-26.1	10.9	44.1	13.2	3.3	DELTA V-NC2500
Hg-2022-3419	23AZ 105	04-Aug-23	46	1.149	3.06	3.5	-26.5	11.1	45.9	12.7	3.6	DELTA V-NC2500
Hg-2022-3420		04-Aug-23	47	1.244	3.11	3.9	-25.6	11.2	43.3	13.5	3.2	DELTA V-NC2500
Hg-2022-3421		04-Aug-23	48	1.014	2.59	3.3	-25.4	11.0		13.7		DELTA V-NC2500
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Hg-2022-3425		04-Aug-23	49	1.174	3.17	3.3	-29.0	9.0		11.8		DELTA V-NC2500
Hg-2022-3426	23AZ 109	04-Aug-23	50	1.242	3.44	3.5	-29.0	8.5	48.0	12.1	4.0	DELTA V-NC2500
Hg-2022-3435	23AZ 110R	04-Aug-23	57	0.984	2.56	3.0	-27.4	11.3	44.7	13.0	3.4	DELTA V-NC2500
Hg-2022-3435	23AZ 110R	04-Aug-23	75	1.131	3.00	3.4	-27.7	11.3	45.8	12.9	3.5	DELTA V-NC2500
Hg-2022-3447		04-Aug-23	58	1.170	2.95	3.7	-27.1	7.5		13.3	3.3	DELTA V-NC2500
•		•						7.3				DELTA V-NC2500
Hg-2022-3448		04-Aug-23	59	1.059	2.62	3.3	-27.0			13.2		
Hg-2022-3449	23AZ 113	04-Aug-23	60	1.003	2.55	3.2	-27.9	6.5		13.4		DELTA V-NC2500
Hg-2022-3450	23AZ 114	04-Aug-23	61	1.075	2.53	3.2	-27.9	6.3	40.5	12.6	3.2	DELTA V-NC2500
Hg-2022-3452	23AZ 115	04-Aug-23	62	1.094	2.76	3.5	-25.3	7.7	43.5	13.6	3.2	DELTA V-NC2500
Hg-2022-3453		04-Aug-23	63	1.113	3.04	3.8	-25.8	7.5	47.2		3.2	DELTA V-NC2500
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Hg-2022-3465		04-Aug-23	64	1.098	2.77	3.5	-26.7	7.1		13.3	3.3	DELTA V-NC2500
Hg-2022-3466	23AZ 118	04-Aug-23	65	1.001	2.49	3.2	-26.7	7.1	42.8	13.3	3.2	DELTA V-NC2500
Hg-2022-3464	23AZ 119	04-Aug-23	66	1.059	2.66	3.3	-27.9	10.9	43.3	13.1	3.3	DELTA V-NC2500
Hg-2022-3457		04-Aug-23	67	1.133	2.87	3.6	-26.8	11.1	43.6	13.5	3.2	DELTA V-NC2500
Hg-2022-3458		04-Aug-23	68	1.156	2.86	3.6	-26.4	11.0		13.2		DELTA V-NC2500
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Hg-2022-3482		04-Aug-23	69	1.188	2.97	3.8	-28.2	8.2		13.4		DELTA V-NC2500
Hg-2022-3499	23AZ 123	04-Aug-23	70	1.045	2.68	3.2	-28.1	8.5	44.2	12.9	3.4	DELTA V-NC2500
Hg-2022-3674	23AZ 124	04-Aug-23	71	1.079	2.81	3.3	-26.6	9.1	44.6	12.8	3.5	DELTA V-NC2500
Hg-2022-3673		04-Aug-23	72	1.068	2.74	3.4	-26.3	9.6	44 2	13.4	3.3	DELTA V-NC2500
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Hg-2022-3681		04-Aug-23	73	1.173	3.00	3.6	-26.5	9.5				
Hg-2022-3200		04-Aug-23	74	1.117	2.93	3.3	-28.5	10.9		12.4	3.6	DELTA V-NC2500
HG-2022-3201	23AZ 128R	04-Aug-23	80	1.053	2.74	3.2	-28.7	11.3	45.0	12.9	3.5	DELTA V-NC2500
HG-2022-3201	23AZ 128R	04-Aug-23	96	1.162	2.90	3.5	-28.5	11.3	43.0	12.9	3.3	DELTA V-NC2500
HG-2022-3230	23AZ 129	04-Aug-23	81	1.061	2.63	3.3	-28.1	5.8	42.8	13.3	3.2	DELTA V-NC2500
HG-2022-3232		•			2.79	3.5	-27.2			13.2		DELTA V-NC2500
		04-Aug-23	82	1.109				7.2				
HG-2022-3668		04-Aug-23	83	1.226	3.13	3.9	-30.1	10.9		13.7		DELTA V-NC2500
HH-2628	23AZ 132	04-Aug-23	84	1.035	2.59	3.2	-28.0	7.7	43.2	13.3	3.2	DELTA V-NC2500
HH-2628Dup	23AZ 133	04-Aug-23	85	1.145	2.94	3.3	-28.9	8.3	44.4	12.2	3.6	DELTA V-NC2500
HG-2022-3679		04-Aug-23	86	1.137	2.81	3.6	-28.6	10.2	42.9		3.2	DELTA V-NC2500
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HG-2022-3658		04-Aug-23	87	1.135	2.82	3.5	-28.3	7.9		13.2		DELTA V-NC2500
FSJ-2840	23AZ 136	04-Aug-23	88	1.147	2.98	3.5	-27.8	7.3	44.7		3.4	DELTA V-NC2500
FSJ-2840Dup	23AZ 137	04-Aug-23	89	1.201	3.02	3.5	-28.0	8.1	43.7	12.4	3.5	DELTA V-NC2500
HG-2022-3652	23AZ 138	04-Aug-23	90	1.223	3.14	4.0	-25.7	11.0	44.4	13.8	3.2	DELTA V-NC2500
HG-2022-3600		04-Aug-23	91	1.108	2.88	3.4	-27.7	5.7		13.1	3.4	DELTA V-NC2500
HG-2022-3601		04-Aug-23	92	1.141	2.86	3.6	-27.5	5.5	43.3		3.2	DELTA V-NC2500
FSJ-3144	23AZ 141	04-Aug-23	93	1.119	2.99	3.3	-28.9	7.7	46.4		3.7	DELTA V-NC2500
FSJ-3144Dup	23AZ 142	04-Aug-23	94	1.103	2.85	3.4	-28.2	7.7	44.7	13.1	3.4	DELTA V-NC2500
HG-2022-3604	23AZ 143	04-Aug-23	95	1.111	2.98	3.4	-29.6	11.0	46.5	12.9	3.6	DELTA V-NC2500
HG-2022-3605	23AZ 144R	10-Aug-23	6	1.026	2.48	3.0	-28.6	9.0	47.9	13.4	3.6	DELTA V-NC2500
HG-2022-3605		10-Aug-23	23	1.070	2.60	3.1	-28.3	8.8		13.5	3.6	DELTA V-NC2500
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HG-2022-3606		10-Aug-23	7	1.179	2.83	3.5	-29.4	9.8	47.7	14.0	3.4	DELTA V-NC2500
HG-2022-3607		10-Aug-23	8	1.022	2.39	3.0	-29.5	9.7		13.5	3.4	DELTA V-NC2500
FSJ-3456	23AZ 147	10-Aug-23	9	1.063	2.73	2.9	-29.0	9.6	51.0	12.5	4.1	DELTA V-NC2500
FSJ-3456Dup	23AZ 148	10-Aug-23	10	1.095	2.72	3.0	-28.9	9.5	49.4	12.7	3.9	DELTA V-NC2500
HH-3594	23AZ 149	10-Aug-23	11	1.195	2.74	3.7	-28.3	8.0	45.4		3.1	DELTA V-NC2500
		•			2.74	3.7	-28.3	8.0				DELTA V-NC2500
HH-3594Dup		10-Aug-23	12	1.195						14.6		
Hg-2022-3609		16-Aug-23	46	1.198	2.97	3.4	-28.6	11.7	45.9	12.5	3.7	DELTA V-NC2500
Hg-2022-3129	23AZ 152	16-Aug-23	47	1.031	2.33	3.1	-26.4	11.1	41.2	13.1	3.1	DELTA V-NC2500
Hg-2022-3134	23AZ 153	10-Aug-23	15	1.103	2.54	3.3	-26.6	11.0	45.7	14.2	3.2	DELTA V-NC2500
Hg-2022-3141	23AZ 154	10-Aug-23	16	1.062	2.46	3.1	-28.8	10.9	46.1	13.6	3.4	DELTA V-NC2500
FSJ-5581	23AZ 155	10-Aug-23	17	1.118	2.72	3.3	-27.7	7.7	48.2		3.5	DELTA V-NC2500
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FSJ-5894	23AZ 156	10-Aug-23	18	1.096	2.60	3.2	-27.4	8.6		13.8	3.4	DELTA V-NC2500
FSJ-5895	23AZ 157	10-Aug-23	19	1.059	2.57	3.0	-27.1	8.7	47.9	13.0	3.7	DELTA V-NC2500
FSJ-5896	23AZ 158	10-Aug-23	20	1.088	2.59	3.3	-27.0	7.8	47.3	14.0	3.4	DELTA V-NC2500
FSJ-5897	23AZ 159	10-Aug-23	21	1.022	2.43	3.1	-27.2	7.2	47.2	14.0	3.4	DELTA V-NC2500
FSJ-5979	23AZ 160	10-Aug-23	22	1.107	2.75	3.2	-27.3	8.8	49.0		3.6	DELTA V-NC2500
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FSJ-5979Dup		10-Aug-23	27	1.176	2.76	3.5	-26.8	8.7		14.0	3.3	DELTA V-NC2500
FSJ-5979Dup		10-Aug-23	47	1.042	2.42	3.1	-26.6	8.6	46.3	13.9	3.3	DELTA V-NC2500
FSJ-6385	23AZ 162	10-Aug-23	28	1.136	2.63	3.5	-27.0	7.6	46.0	14.4	3.2	DELTA V-NC2500
FSJ-6385Dup		10-Aug-23	29	1.235	2.86	3.7	-27.2	7.4	46.3	14.1	3.3	DELTA V-NC2500
FSJ-8391	23AZ 164	10-Aug-23	30	1.078	2.45	3.2	-27.7	8.3	45.0		3.3	DELTA V-NC2500
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FSJ-8391Dup		10-Aug-23	31	1.098	2.51	3.3	-27.7	7.7		13.9		DELTA V-NC2500
Hg-2022-3539		10-Aug-23	32	0.992	2.38	3.1	-26.8	8.8		14.5		DELTA V-NC2500
Hg-2022-3551	23AZ 167	10-Aug-23	33	0.997	2.29	2.8	-28.3	9.2	45.4	13.1	3.5	DELTA V-NC2500
Hg-2022-3589		10-Aug-23	34	0.999	2.37	2.9	-25.6	7.9		13.7		DELTA V-NC2500
Hg-2022-3619		10-Aug-23	35	1.208	3.03	3.8	-25.8	8.5		14.8		DELTA V-NC2500
9 2022 0010	_0, 1_ 100	. 5 / lag 20	55	55	5.55	5.0	20.0	0.0	55.1	. 7.0	J. 1	22277 1102000