

2022 Aquatic Effects Monitoring Program

Norman Wells Operations

Imperial Oil Resources Ltd.

27 April 2023

417085-42051-22200

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Executive Summary

Water quality samples were collected in the Mackenzie River, Bosworth Creek, and Bear Island between June and October in 2017-2022 to discern potential effects of ongoing Norman Wells operations and/or presence of legacy contaminants. This aquatic effects monitoring program (AEMP) is executed annually during spring, summer, and for the first time, winter sampling was included in March 2022. The 2022 monitoring activities follow Version 3 of the AEMP since Version 4 was under development during the 2022 field season. Subsequent years of the AEMP propose to execute the sampling four times per year and are anticipated to follow methods outlined in Version 4 of the AEMP once it is approved.

Many analytes quantified in surface water samples were below laboratory method detection limits. All hydrocarbon analytes, including benzene, toluene, ethylbenzene, xylenes and petroleum hydrocarbon fractions 1 and 2, were below method detection limits with no exceedances of relevant guidelines. The proposed AEMP version 4 includes passive sampling techniques that can more reliably approximate chronic exposure conditions for these parameters than is afforded via discrete sampling events.

Control charting with normal ranges and applicable guideline comparisons were coupled with screening trend analyses on uncorrected chemistry data. All total metal parameters had new historic maxima for at least one sampling location in 2022 potentially related to high Spring and Summer discharge. These historical maxima did not occur at the farthest upstream and downstream sites on the Mackenzie River but both of these sites were only monitored in the fall when flows were low. Key indicator parameters (KIPs) were adopted from the draft version 4 of the AEMP and supplemented with additional parameters of concern identified through the screening tools described.

Flow-weighted trend analysis using local regression (Loess) smoothing and subsequent trend analysis on residuals from the Loess model provided a quantitative method of reducing variability introduced by river discharge. The Loess relationships for dissolved parameters typically remained constant as flow increased or showed a decreasing relationship with flow. Alternatively, the total fraction of indicator parameters typically increased in an exponential fashion as discharge increased. This increase resulted in statistically significant increasing trends for many parameters since flow in the Mackenzie River has increased in recent years. Consequently, only a few statistically significant temporal and spatial trends were documented following flow-correction of the chemistry data.

In summary, the 2022 AEMP has concluded and recommended the following:

- All hydrocarbon analyses were below detection limits as well as all applicable guidelines.
- A few dissolved metal parameters exceeded applicable guidelines for the first time during the AEMP and this coincided with the first winter samples analyzed. These results demonstrate the importance of winter sampling when the river is at baseflow. Therefore, winter sampling should continue to be incorporated into monitoring activities during future years of the AEMP.
- Screening tools such as trend analyses on uncorrected chemistry data and control charting provide a useful method for effectively monitoring parameters that remain relatively consistent and pose limited risk.

- Several significant trends were identified using screening tools and flow-correction of contaminant data suggest that these trends are most likely related to elevated flow in recent years. Significant temporal trends observed using flow-correction are two increasing trends for dissolved arsenic, and three decreasing trends for sulphate, manganese, and dissolved aluminum. The only significant spatial trend identified following flow-correction is for total zinc which had an increasing trend from upstream to downstream sampling locations.
- Continue the use of piper plots as a useful multi-variate tool for characterizing water chemistry at this stage of the AEMP given their ability to characterize ionic composition between sampling events and the limitations of principal component analysis (PCA) for detecting long-term trends.
- As previously agreed upon, the raw data collected during the AEMP to date will be provided as supplementary information along with the report submission in an excel format.

1 Introduction

Imperial Oil Resources Ltd. requested that Tłegǫ̀hłı̨ Reclamation Services Advisian (TRSA), prepare a report to summarize results of the 2022 Aquatic Effects Monitoring Program (AEMP) surface water sampling near Norman Wells, Northwest Territories (NT; Figure 1).

The 2022 AEMP represents the sixth year of the sampling program, and this report comprises statistical analysis of spatial and temporal patterns in data accumulated between 2017-2022. The main goal of the AEMP is to determine if routine or historic activities at the Imperial site at Norman Wells are introducing substances into the receiving environment that could cause acute or chronic effects by altering the accumulated environmental state of the aquatic environment.

Limitation of Liability, Scope of Report and Third-Party Reliance are provided in Appendix A.

1.1 Background

The AEMP (Imperial 2016, 2019) was developed as part of Imperial's 10-year Water License Renewal Application submitted to the Sahtu Land and Water Board (SLWB) in 2015. This approval permits Imperial to use water from the Mackenzie River, and stipulates that Imperial is to develop and execute a variety of monitoring programs, including an AEMP.

A stakeholder and regulator-approved AEMP for Norman Wells Operations is a requirement of Imperial's Water Licence and the work completed in 2022 followed the approach defined in Version 3 of the AEMP design. Version 4 of the AEMP is currently under regulatory review to ensure that requirements are met and that the program continues to monitor for potential effects from Imperial's operation (Advisian 2022a). This includes evaluating immediate or long-term potential aquatic effects, measuring the influence that activities may be having on water, and identifying if steps are needed to prevent adverse effects to aquatic life. The proposed outline for AEMP Version 4 was submitted to the SLWB in December 2022 and is currently being reviewed. Although the design and execution of the 2022 AEMP is based on Version 3, some components of Version 4 have been incorporated into the following report to provide continuity between versions and highlight changes anticipated in AEMP Version 4. The 2023 monitoring program will follow the design outlined in Version 4 of the AEMP with results being reported in the 2023 Annual report submitted April 2024.

The 2022 AEMP involves sampling at 13 monitoring locations (see Figure 2) three times per year (spring, summer, and fall). Notably, winter sampling was included in March for the first time since the program began in 2017. Monitoring locations were established to allow characterization of normal (background) water quality conditions and detect potential surface water quality issues across the area surrounding Imperial's Norman Wells Operations.

1.2 Scope of Work

The scope of work for the 2022 AEMP included the following:

- Collect surface water samples at AEMP locations for laboratory analysis of general, indicator, and organic parameters; nutrients; benzene, toluene, ethylbenzene and xylenes (BTEX) compounds; petroleum hydrocarbon fractions F1 and F2; polycyclic aromatic hydrocarbons; and metals and trace elements (total and dissolved); and
- Provide a summary report presenting the work completed since the first year of sampling (2017) and any highlights.

1.3 Assessment Guidelines

No water quality guidelines currently exist that are specific to NT. Instead, tabulated surface water parameters in this report are compared with the Canadian Council of Ministers of the Environment (CCME) Canadian Environmental Quality Guidelines (CEQG) for the Protection of Freshwater Aquatic Life (FWAL; CCME 2014), as surface water bodies (e.g. Bosworth Creek and the Mackenzie River) and their resident biota are receptors of interest

All analytical results have therefore been compared to generic CCME Environmental Quality Guidelines for the Protection of FWAL (CCME 2014), where available. Where guidelines are dependent on water chemistry characteristics such as hardness or pH, the guideline presented provides the most conservative comparison with guideline values (i.e. the lowest possible guideline value based on the equation is presented). For example, the manganese FWAL guideline is calculated using Appendix B of the Canadian Water Quality Guideline calculator based on pH and hardness at the time of sampling (CCME 2019). The Water Quality Guideline criterion provided in tabulated results and summary figures is the lowest possible chronic guideline that can be calculated for manganese, ensuring that a conservative comparison with guidelines is maintained.

Note that guidelines are presented in tables and figures to provide context, but discussion is limited given that the intent of the program is to detect changes over time within sampling locations, and differences between sampling locations.

1.4 Objectives

The AEMP at Norman Wells consists of seasonal surface water sampling in the spring, summer, fall, and for the first time since 2017, winter. Winter, spring, summer and fall sampling correspond to March, June, July/August, and September/October, respectively. The first step of the AEMP is to detect and quantify any possible changes in water quality near Imperial's operations. As outlined in the AEMP (Imperial 2016, 2019), if any anomalous chemistry, increasing trend or CCME FWAL exceedances that are not within the expected range are identified, the results are further reviewed to understand whether additional investigation is required.

Environmental datasets are complex, and the complexity observed in water quality in the Mackenzie River Basin is the product of variability in local/regional geology, flow regime, watershed characteristics, and anthropogenic activities/inputs. Consequently, temporal, and spatial trends in water chemistry can be masked by this naturally high variability. Results below analytical detection limits also contribute to complexity by virtue of producing "left-censored" data which restricts the statistical tools available to environmental scientists.

Various techniques are available to address issues caused by left-censored data including substituting values below detection with a "zero" value, the value of the detection limit itself, or half of the detection limit as reflected in human health risk assessment guidance (Health Canada 2010). Substitution techniques have however been shown to bias statistical analyses such as principal component analysis (PCA) and can amount to data fabrication given that this approach serves to obscure any relevant spatial or temporal relationships that may exist below the reliable detection limit (Helsel et al. 2020). Considering these challenges, a key objective of the AEMP is to control and/or categorize statistical variability in a manner that maintains the ability to identify patterns within the dataset that are relevant to Imperial's Norman Wells operations. For example, many water chemistry variables co-vary differently in relation to river flow depending on if they are introduced via or diluted by higher flows. This effect can be minimized statistically by normalizing chemistry data to discharge and testing for trends on flow-corrected measurements. Accordingly these objectives are in support of the overall goal of the data analysis activities to identify statistically significant temporal and spatial trends within the AEMP dataset and whether or not they are attributable to natural processes or anthropogenic activities.

Achieving stakeholder confidence in the results and analysis presented in this report is another main objective. Accordingly, monitoring indicators have been selected via expressed concern and/or relevance to anthropogenic activities to enable identification of areas of potential concern for further investigation in a statistically rigorous, scientifically defensible manner. Multivariate analyses provide a useful tool for validating key indicators since water chemistry variables that reflect the dominant patterns present within the dataset can be identified. Results from the AEMP can be interpreted alongside those of the surveillance network program (SNP) and groundwater chemistry to provide an opportunity to identify patterns in chemistry that are common between programs and/or represent potential exposure pathways relevant to Norman Wells Operations.

1.4.1 AEMP Locations

Monitoring locations on Bosworth Creek, along the northern shore of the Mackenzie River and on islands within the Mackenzie River were selected to:

- Obtain data both upstream and downstream from potential points of input;
- Capture the longitudinal nature of these watercourses so that the potential effects attributable to position along channel can be quantified; and
- Support quantifying seasonal variability and trends.

The distribution of sampling locations is intended to allow comparison of water potentially influenced by operations with water that is unaffected. The AEMP document submitted to the SLWB (Imperial 2016, 2019) develops this rationale in relation to program design and resulted in the 13 sampling points listed in Table 1-1 and illustrated in Figure 2-5.

Sampling locations include sites upstream (AEMP-10, AEMP-06, and AEMP-04) to characterize background conditions in the Mackenzie River and Bosworth Creek. There are three sampling locations on Bosworth Creek and one at the inflow of a creek into a small waterbody on Bear Island (AEMP-05), near where it drains into the Mackenzie River. Most of the remaining locations are along the right (northern) bank of the

Mackenzie River, AEMP-13 is adjacent to Bear Island, and AEMP-11 is downstream and reflective of any net incremental change in water quality as indicated by effluent modeling.

Sampling began in summer 2017 at some locations (AEMP-01 to -09), and in summer 2018 at others (AEMP-10 to -13) as the breadth of the program expanded.

Sampling locations have been modified in Version 4 of the AEMP as per direction form the SLWB and other stakeholders in the region. Some locations will remain while sampling at others will be discontinued as outlined in Table 1-1. The discontinued sites will be replaced with different locations intent on improving resolution within the Mackenzie River and Bosworth Creek upstream and downstream from Norman Wells, including new sampling locations in Tulita and Fort Good Hope. A full list of sampling locations under Version 4 of the AEMP is available in the Version 4 monitoring plan (Advisian 2022a).

Table 1-1 AEMP Monitoring Locations

Location	AEMP Version 4 Location	Name	Relation to Facility	Description	Stressors	Latitude	Longitude
Mackenzie River Locations							
AEMP-01	AEMP-DS-03	Man-made Islands	Within facility footprint	Most downstream island in Mackenzie River	Flowline, Island Maintenance	65°16'37.13"N	126°55'3.13"W
AEMP-06	AEMP-UP-03	Natural Seep	Upstream of facility influence – reference location	Near observed natural seep on Mackenzie River, near Town Dock	Seep	65°16'41.29"N	126°50'25.99"W
AEMP-07	---	Historical – Refinery	Within facility footprint	On Mackenzie River near refinery basin discharge	Fuel Storage, Historical, Surface Water Release, Waste Storage	65°16'46.39"N	126°50'59.46"W
AEMP-08	AEMP-DS-02	Imperial's Main dock on Mackenzie River	Within facility footprint	On downstream side of dock projecting into Mackenzie River channel	Boat Activity, Bunker, Surface Water Release, Water Use	65°16'46.01"N	126°52'27.93"W
AEMP-09	---	Downstream Central processing facility (CPF) Effluent Discharge	Within facility footprint	Where effluent enters the Mackenzie River	Water Return, Water Use	65°16'57.61"N	126°53'10.86"W
AEMP-10	AEMP-US-02	Main channel, upstream from Imperial Site	Upstream of facility influence (approx., 10 km) – reference location	Background; Upstream from Imperial's Norman Wells Operations		65°14'0.06"N	126°44'9.66"W
AEMP-11	AEMP-DS-05	Downstream from Imperial Site	Downstream of facility influence (approx. 10 km)	Downstream at Radar Island and downstream of Imperial's Norman Wells Operations	Net input from operations and natural contributions from seeps	65°18'11.70"N	127° 3'30.30"W
AEMP-12	---	Seep	Within facility footprint	Downstream from Bosworth Creek inflow, near natural seep	Natural input of hydrocarbons	65°16'51.10"N	126°52'27.04"W
AEMP-13	---	Bear Island	Within facility footprint	Edge of the Mackenzie River adjacent to island	Run off from nearby roads and facilities. Outflow of a creek and wetland.	65°15'43.21"N	126° 52'42.32"W
Bosworth Creek Locations							
AEMP-02	AEMP-DS-01	Downstream Bosworth Creek	Within facility footprint	Near mouth with the Mackenzie River	Fuel Storage, Historical, Surface Water Release, Waste Storage	65°16'58.66"N	126°51'55.83"W
AEMP-03	---	Midstream Bosworth Creek	Within facility footprint	Downgradient from SNP – GWP Well	Fuel Storage, Historical, Surface Water Release, Waste Storage	65°17'4.81"N	126°52'34.54"W
AEMP-04	AEMP-UP-04	Upstream Bosworth Creek	Upstream of facility influence – reference location	Upstream of Imperial Norman Wells Operations		65°17'24.50"N	126°52'29.39"W
Bear Island Surface Water							
AEMP-05	---	Bear Island	Within facility footprint	Surface water on island	Bunker, Flowline, Surface Water Release	65°15'37.76"N	126°52'36.48"W

Notes: --- indicates that sampling at the associated site is not included under Version 4 of the AEMP and has been moved to a new location (Refer to Advisian 2022a for additional information)

2 Sampling and Methods

2.1 Water Quality Sampling

TRSA personnel sampled surface water for the AEMP between June and October of 2017-2021, and between March and October in 2022. Water quality analyses included in the AEMP are provided alongside the ecological significance in the analytical schedule (Table 2-1). Water temperature, pH, turbidity and dissolved oxygen (DO) are measured in situ at the time of sampling since these parameters are key to determining the suitability of habitat for aquatic organisms (e.g. aquatic invertebrates and fish) and can be influenced by anthropogenic inputs (Roberts 2012). Field procedures followed are described further in Appendix B.

In 2022, Imperial completed the Special Effects Study which included identification of key indicator parameters (KIPs) that could potentially indicate site impacts based on site inputs and historical data. Selection of KIPs considered the concentrations of parameters historically found during the AEMP, the SNP, and the annual groundwater monitoring program. Parameters that contributed most to the first principal component (PC1) during previous PCAs also align with the KIPs selected from the Special Effects Study (Advisian 2022a; Advisian 2022b). The KIPs incorporated into the 2022 AEMP data analyses are denoted in bold in Table 2-1. Notably, organic KIPs including BTEX compounds have been consistently below the detection limit in surface water sampled during the AEMP. These parameters are typically highly volatile. In addition, heavier hydrocarbons and Polycyclic Aromatic Hydrocarbons (PAHs) are hydrophobic and adsorb to sediment. Consequently, organic parameters do not remain in the water column which may contribute to the low concentrations below detection observed in Mackenzie River and Bosworth Creek surface water.

Version 4 of the AEMP addresses the dynamics of organic parameters by incorporating passive sampling devices (PSD) that remain in the water column for an extended period (i.e. several weeks) and accumulate organic parameters that quickly partition out of the water column. In 2022, a pilot study included deployment of three PSD technologies (passive diffusion bags [PDBs], low-density polyethylene [LDPE]-thin film devices and triolein film semi-permeable membrane devices [SPMDs]) for varying lengths of time at Tulita and Norman Wells in the Mackenzie River and in Bosworth Creek. The intent of the pilot study was to determine the feasibility of using PSDs in the Mackenzie River and Bosworth Creek to integrate sampling temporally over longer durations and address the limitations of discrete sampling. The results from the PSD study are appended to the AEMP Version 4 draft that was submitted to the SLWB in December 2022 (Advisian 2022a). Consequently, AEMP Version 4 also incorporates PSD sampling into the study design to better characterize organic parameters that are transient within the water column. The PSD sampling is planned to begin during the open water period (Spring/Summer/Fall) in 2023 as part of the ongoing AEMP.

Table 2-1 Analytical Schedule for Surface Water Quality Analyses in the 2022 AEMP

Category	Parameters	Ecological Significance
General	Electrical conductivity (measured and calculated), pH, Turbidity, Total hardness as $CaCO_3$, Total alkalinity as $CaCO_3$	Extreme pH values can have direct toxic effects on aquatic organisms, and alter toxicity and mobility of many pollutants. Toxicity of many metals is inversely related to hardness
Indicators	**Chloride**, **Sulphate**, **Iron**, Manganese, **Total dissolved solids (TDS),** Total suspended solids (TSS)	High TDS levels can have a negative effect on aquatic life. High TSS may hinder photosynthetic activity, and hinder the exchange of gases over the gills of fish and other aquatic organisms.
Cations, Anions, and Ion Balance	**Calcium**, **Magnesium**, Potassium, Sodium, Bicarbonate, Carbonate, Hydroxide, Ion balance	May affect toxicity of other constituents.
Organics	Total organic carbon, Dissolved organic carbon,	Elevated levels of organic compounds may be harmful to aquatic organisms.
Nutrients	Nitrite as N, Nitrate as N, Nitrate plus nitrite as N, Total Kjeldahl nitrogen (TKN), Ammonia as N, Sulphide, Sulphur (as H2S)	Un-ionized ammonia is toxic to aquatic organisms, and toxicity increases with both temperature and pH. Nitrite can be toxic to fish.
BTEX compounds	**Benzene, Toluene, Ethylbenzene,** m&p-xylene, o-xylene**, Total xylenes**	Varying degrees of toxicity
Select Hydrocarbons	Oil and grease, PHC F1 (C6-C10), PHC F1 (C6-C10) – BTEX, PHC F2 (C10-C16)	Varying degrees of toxicity
Polycyclic Aromatic Hydrocarbons	Acenaphthene, Acenaphthylene, Acridine, Anthracene, Benzo(a)Anthracene, Benzo(a)Pyrene, Benzo(b,j)Fluoranthene, Benzo(c)Phenanthrene, Benzo(e)Pyrene, Benzo(g,h,i)Perylene, Benzo(g,h,i)Perylene, Benzo(k)Fluoranthene, Chrysene, Dibenzo(a,h)Anthracene, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)Pyrene, Naphthalene, Perylene, Phenanthrene, Pyrene, Quinoline	Varying degrees of toxicity
Metals and Trace Elements (total and dissolved	**Aluminum**, Antimony, **Arsenic**, **Barium**, Beryllium, Boron, **Cadmium**, **Chromium**, Cobalt, Copper, Lead, lithium, Mercury, **Molybdenum**, **Nickel**, Phosphorus, **Selenium**, Silicon, Silver, Strontium, Thallium, Tin, Titanium, **Uranium**, Vanadium, **Zinc**	Elevated levels of metals can be harmful to aquatic organisms.

Notes: Bold text identifies that the associated parameter is a key indicator parameter (KIP) for the AEMP based on potential site inputs and the 2022 Special Effects Study (Advisian 2022a).

2.2 Hydrometric Data Collection

It is known that water quality is highly correlated with seasonal patterns of discharge in the river, and that trend analysis in the absence of flow data is not an acceptable statistical method. Water Survey Canada (WSC) currently operates hydrometric stations on the Mackenzie River (Mackenzie River at Norman Wells [10KA001]) and Bosworth Creek (Bosworth Creek near Norman Wells [10KA007]). The WSC operates a historical and real-time dataset for each station. Notably, the real-time dataset usually contains discharge data that has not undergone a quality assurance review and is considered preliminary. There is typically a data gap between the historical and real-time datasets while measurements are reviewed by WSC for accuracy and quality. Hydrometric data sources for the Mackenzie River and Bosworth Creek during the AEMP since 2017 are summarized in Table 2-2.

Table 2-2 Hydrometric Data Sources for Mackenzie River and Bosworth Creek (2017 to 2022)

Watercourse	Timeframe	Data Source	Data Quality
Mackenzie River	2017 to 2020	WSC Historical Data	Finalized
	2021	WSC Data Request	QAQC Reviewed - Preliminary
	2022	WSC Real-time Data	QAQC Reviewed - Preliminary
Bosworth Creek	2017 to 2018	WSC Historical Data	QAQC Reviewed; Stage-Discharge relationship not well-defined over 3.5 m^3/s
	2019 to Aug 2020	Average Daily Discharge calculated from WSC Historical Data	Preliminary
	Sept 2020 to Jul 2021	WSC Real-time Data	Preliminary
	Jul 2021 to Nov 2022	WSC Real-time Data	QAQC Reviewed
WSC refers to Water Survey Canada Hydrometric Data from the Mackenzie River at Norman Wells (Station #10KA001) and Bosworth Creek near Norman Wells (Station #10KA007)			

The WSC historical dataset for the Mackenzie River at Norman Wells contains flow and level data from 1943 to 2020, while the real-time dataset contains flow and level data from the open-water period in 2022, up to November (Table 2-2). Flow data from 2021 was supplied by the WSC and is currently undergoing review before being added to the historical dataset. Reviewed or preliminary discharge measurements from the WSC station on the Mackenzie River were available for all AEMP sampling events included in this report.

For Bosworth Creek, discharge is available in the historical database from 1980 to the end of 2018, while preliminary discharge is available in the real-time database from September 2020 to November 2022. Since no flow or level data was available for Bosworth Creek from January 2019 to August 2020, the average daily flow was calculated from the historical dataset and the gap was filled with the average flow

for each day based on the historical data. This method does not provide an absolute discharge measurement where discharge data is not available but does provide relative discharges between sampling events.

2.3 Data Analysis and Interpretation

The data analysis methods incorporated into the 2022 AEMP include trend analyses based on AEMP Version 3 but PCA analysis has not been included. The PCA approach previously employed has been useful for identifying KIPs and patterns in water chemistry between sites. While PCA has been useful for understanding surface water chemistry near Norman Wells, its ability to quantitatively track changes temporally and spatially are limited compared with methods proposed in AEMP Version 4.

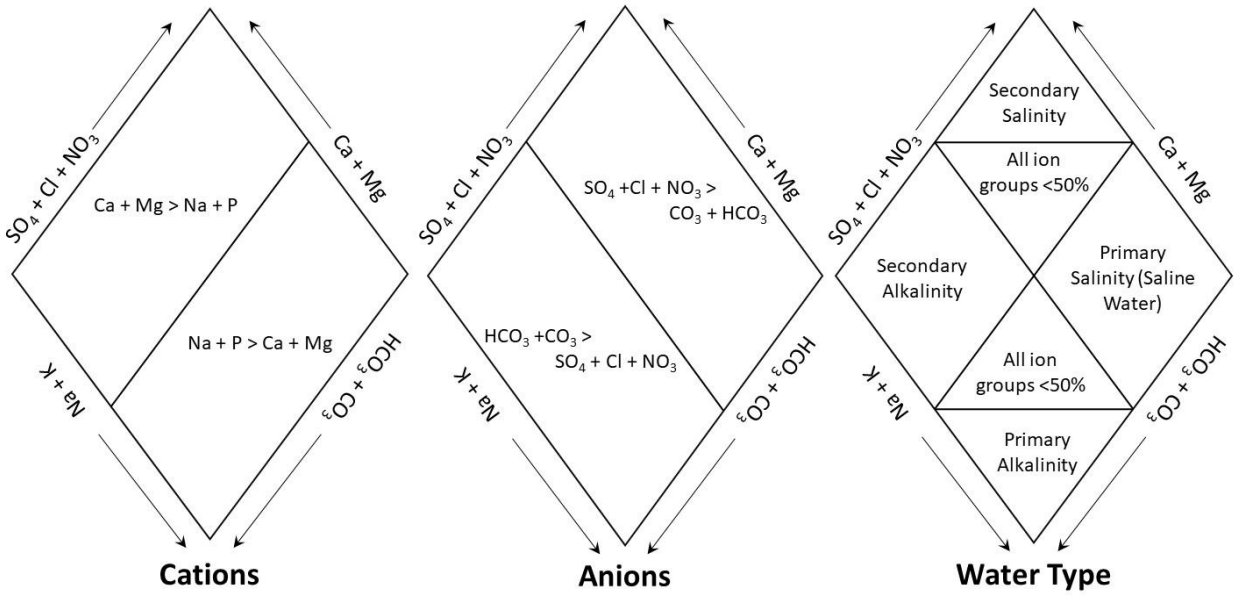
Some of the analysis and interpretation methods outlined in AEMP Version 4 have been incorporated into this report since future monitoring activities are likely to follow these methods. In addition, the proposed changes in AEMP Version 4 are intended to improve the program's ability to identify spatial and temporal trends, important shifts from historical conditions, and concentrations that exceed water quality criteria for the protection of aquatic life. Consequently, analysis of normal ranges and guideline comparisons using control charting has been incorporated into the 2022 AEMP data analysis. Piper plots have also been included to compare water chemistry of potentially impacted and upstream locations. In addition, trend analyses of flow-corrected contaminant concentrations has also been expanded in the 2022 AEMP for sites on the Mackenzie River.

2.3.1 Major Ions and Piper Plots

Piper plots were first introduced in 1944 by Arthur Piper to graphically characterize the ionic composition of surface water and groundwater based on the understanding that the concentration of cations and anions will reach equilibrium (Piper 1944). While piper plots account for all the ions typically found in water, it only provides a visual representation of the major cations (magnesium [Mg^+], calcium [Ca^+], sodium [Na^+], and potassium [K^+]) and major anions (sulphate [SO_4^-], chloride [Cl^-], and bicarbonate [HCO_3^-]). There are three main components of a piper plot including two triangular plots, one for cation composition and another for anion composition. The third field consists of a diamond containing a projection of both the cationic and anionic compositions. Each triangular plot gives the weighted proportion of each major ion in the water sample analyzed. This information is projected into the diamond which is subdivided into nine potential water types based on the projected location of the cationic and anionic components (Piper 1944). Piper plot-based water types are summarized in Figure 2-1 and interpretation is discussed further in Section 3.2.1.

Major ions measured during the AEMP from 2017 to 2022 were plotted on piper plots to determine water types upstream and downstream from Norman Wells operations on the Mackenzie River and Bosworth Creek. Results below detection were replaced with the detection limit and water types were determined for each site. The piper plots were used to identify spatial patterns in water chemistry between sites. These patterns are discussed in relation to water source, sampling location, and site activities in Section 3.2.1. A main goal of the piper plot analysis is to compare upstream with downstream water chemistry and identify potential areas of mixing near the Norman Wells operations.

Figure 2-1 Piper Plot Water Types



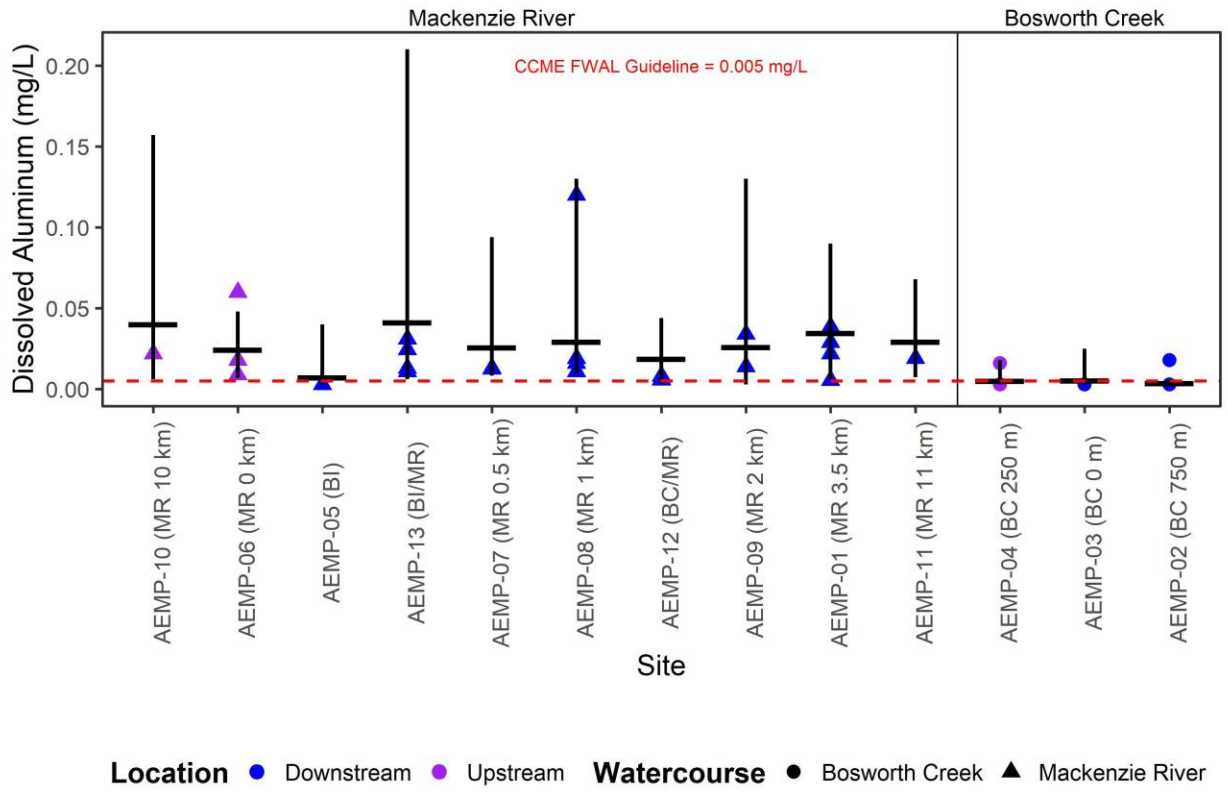
2.3.2 Control Charting Analysis

Control charts were developed for all analytes with more than 50% of measurements above detection in the historical dataset, including 2022. Each control chart provides the range of values (historical minimum to maximum) measured for each sampling location throughout the AEMP to date as a vertical line. The historical mean measured for each parameter during the AEMP for each sampling location are indicated by a horizontal line. Concentrations measured during the 2022 AEMP are plotted as individual points for comparison with the historical range and mean. Measurements below detection were replaced with the detection limit value for establishing normal ranges.

Water quality criteria based on CCME guidelines are presented in relation to 2022 AEMP results and historical ranges as described in Section 1.3 where applicable. Measurements above guidelines for protection of aquatic life are highlighted and discussed in the context of the historical dataset and water chemistry near Norman Wells in Section 3.3.

The control chart for dissolved aluminum provides an example of a typical control chart developed during the 2022 AEMP (Figure 2-2). To aid in interpretation, the site locations are arranged from farthest upstream to downstream for the Mackenzie River and Bosworth Creek, and sites upstream/downstream from Imperial's Norman Wells operations have been color coded.

Figure 2-2 Control Chart for the Dissolved Fraction of Aluminum in 2022



2.4 Temporal and Spatial Trend Analysis

Identifying trends in water quality is complicated by the high variability that is inherent in biological systems, especially the variability introduced by seasonal changes and as mentioned previously, discharge. Statistical tools are available to aid in removing systematic variation in water chemistry with statistical power increasing as more data becomes available over time. For example, Weighted Regressions on Time, Discharge, and Season (WRTDS) is a method of flow-normalizing water quality measurements when over 100 observations are available. Although the total number of samples exceeds 100 the number of observations at each site are well below this threshold (approximately 20 observations per site). In addition, recent flow data from 2021 and 2022 are still undergoing quality control review and are subject to change in future years. This is anticipated to be an ongoing issue for the AEMP since recent flow data will continually require confirmation and review before being finalized within the WSC historical dataset. As more data becomes available more advanced statistical approaches such as WRTDS may become more useful.

Temporal and spatial trends were characterized using a two-step approach in the 2022 AEMP. The first approach investigates the presence of trends for all variables that have greater than 50% detection within the historical dataset, including data collected in 2022. The second approach employs flow-weighted

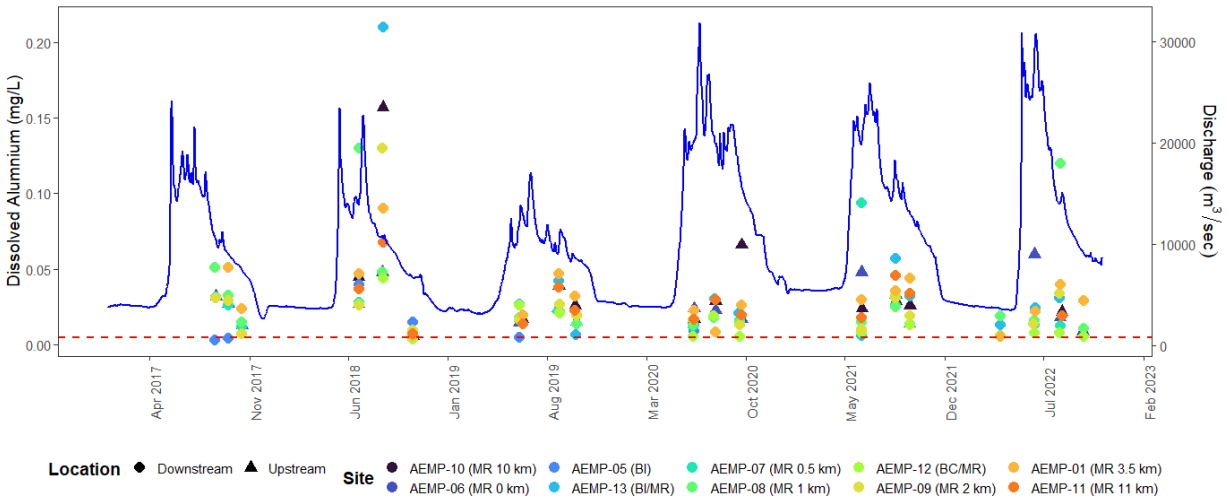
spatial and temporal trend analysis for the KIPs identified in AEMP Version 4 and analytes of concern identified from the initial trend screening, control charting, and guideline comparisons.

2.4.1 Screening Trend Analysis

The initial trend screening assessed chemistry data for significant increasing or decreasing trends using ordinary least squares (OLS) regression, annual Mann-Kendall trend analysis, and seasonal Mann-Kendall trend analysis. This screening step analyzed raw concentration data without flow-correction and is intended to ensure the AEMP has a robust method of monitoring for potential trends for parameters that haven't been identified as contaminants of concern based on historical data.

Seasonal patterns were visually investigated in water chemistry plots overlaid with flow data for both the Mackenzie River and Bosworth Creek. Results below detection are not shown on data summary plots. An example showing dissolved aluminum in relation to flow data is provided in Figure 2-3. Sites are organized from upstream to downstream on the Mackenzie River in the legend to aid in interpretation of spatial trends. Upstream sampling locations are those that are upstream from the Norman Wells townsite and facility operations and act as reference locations for the AEMP. Values shown in brackets indicate the distance the site is from the upstream end of the Norman Wells townsite (AEMP-06).

Figure 2-3 Data Summary for the Dissolved Fraction of Aluminum in the Mackenzie River from 2017 to 2022



The OLS regression provides a useful tool for identifying increasing or decreasing trends however for the test to be reliable specific assumptions regarding the distribution of the data must be met. This includes assumptions relating to a normal distribution of model residuals and equal variance for each parameter over time. Data transformations such as a logarithmic transformation can be applied in some cases to meet these assumptions however the assumptions may still not be met following transformation. The OLS regression analysis is also sensitive to outliers which can be problematic when testing many parameters over multiple sampling locations (Helsel et al. 2020). Despite the limitations of OLS regression applied to raw data, it provides a useful tool for identifying potential trends that may warrant further investigation.

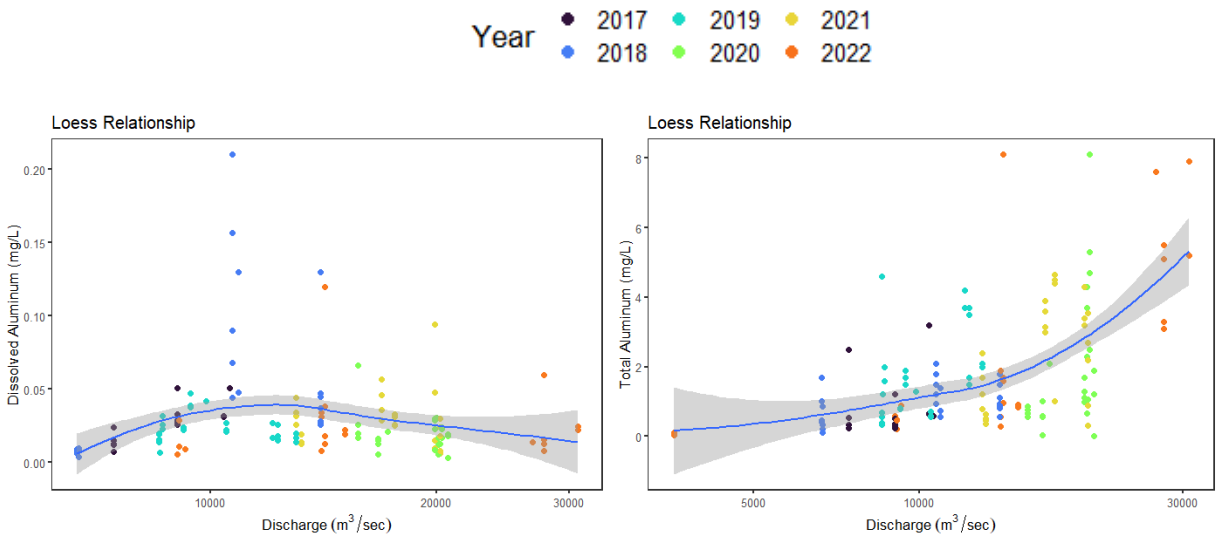
The OLS regression was accompanied by a power analysis to quantify statistical power using the pwr() package in R-Studio (Version 2022.02.3).

The Mann-Kendall and seasonal Mann-Kendall tests are non-parametric and based on the rank of each measurement in the analysis rather than the reported concentration. This attribute removes some of the quantitative information between measurements but limits the effects of outliers compared with OLS regression and avoids the effect of substituting arbitrary values to left-censored data during trend analysis. The Mann-Kendall tests are not subject to the same assumptions as OLS regression allowing them to be applied broadly across many parameters. Lastly, the seasonal Mann-Kendall independently measures for trends within each season allowing for a quantitative method of accounting for seasonal variability.

2.4.2 Flow-Weighted Trend Analysis

Local regression (Loess) smoothing was fit to concentration data plotted as a function of log discharge to adjust chemical concentrations according to flow in the Mackenzie River at the time of sampling. Trends in the residuals from the Loess function were tested using the Mann-Kendall Theil-Sen slope as described in Helsel et al (2020). The Mann-Kendall approach was employed given the reduced effect of outliers and censoring due to concentrations below detection limits. Loess relationships of both fractions of aluminum are provided in Figure 2-4. The plots provide examples of typical relationships observed between total and dissolved water chemistry results and river discharge (Section 3.4).

Figure 2-4 Dissolved and Total Aluminum Scatterplots with Local Regression (Loess) Smoothing Functions



Spatial trends were assessed by analyzing the Loess residuals as a function of distance from the upstream reference location (AEMP-10) on the Mackenzie River. Flow-weighted temporal trends for these variables were analyzed by plotting residuals over time for each site on the Mackenzie River and using the Mann-Kendall/Theil-Sen slope estimator to test for a trend over time (Figure 2-5). The goal of the Loess smoothing is to reduce the variation introduced by changes in flow on the chemical concentration.

Flow-weighted trend analysis only included samples from the Mackenzie River and was not done for any sites on Bosworth Creek given that nearly two years of data within the sampling period were based on historical daily averages for Bosworth Creek. Flow data from 2021 and 2022 are being reviewed by WSC and have not been added to the finalized historical dataset. This is an important consideration for accurate interpretation of the flow-weighted trend analysis. Flow-weighted spatial and temporal analysis was supported by the rkt() package in the R programming language and is based on the methods used in Helsel et al. (2020).

Analytes included in the flow-weighted trend analysis are summarized in Table 2-3. In addition to the KIPs identified in AEMP Version 4, total suspended solids (TSS), hardness, dissolved and total copper, and total lead and manganese were included in the flow-weighted trend analysis. The TSS and hardness were included because they influence the concentration and toxicity of many metals (Pyle et al. 2002; Tiwary 2001). Dissolved copper and total copper, manganese, and lead were included because historical maxima were observed in 2022, statistically significant trends were identified, and concentrations exceeding the CCME guideline occurred for at least one of the sampling locations (Sections 3.3 and 3.4). These parameters occur in concentrations generally above detection therefore censored data is limited (Table 2-3). The percent detections provided in Table 2-3 include only the Mackenzie River sites included in the flow-weighted trend analysis and non-detections are replaced with the detection limit.

Figure 2-5 Scatterplot of Loess Residuals used to Identify Spatial Trends for Dissolved Aluminum

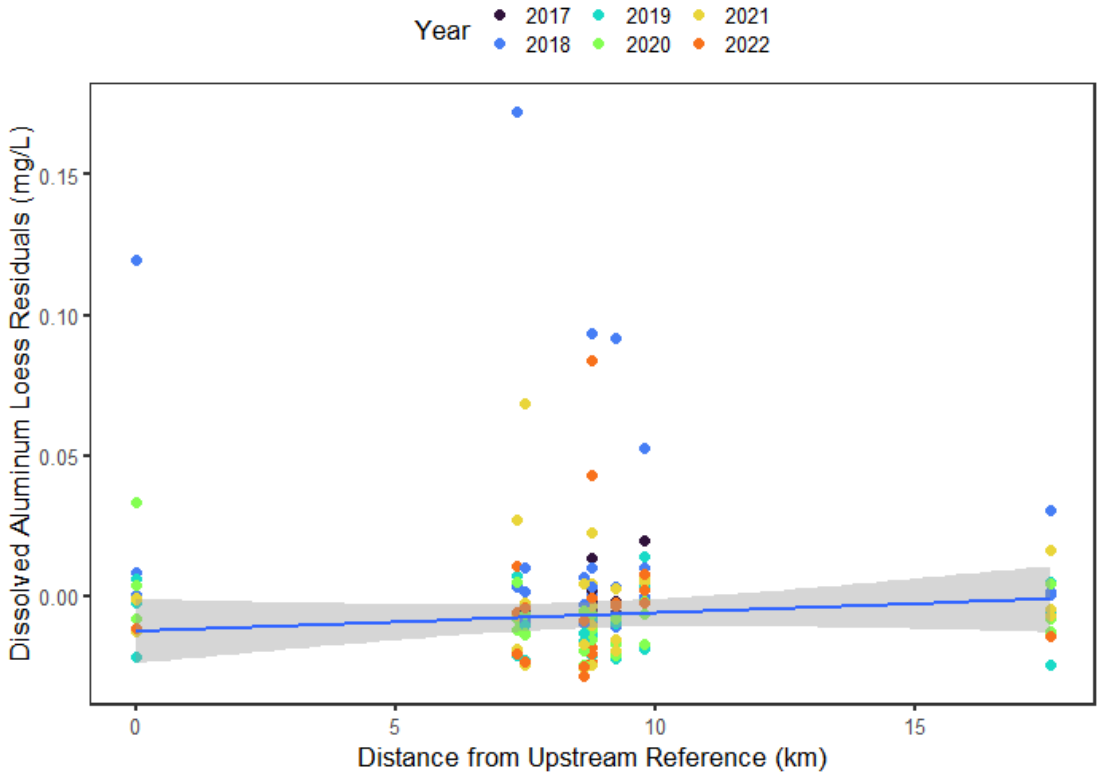


Figure 2-6 Temporal Trends based on Loess Residuals at each Sampling Location on the Mackenzie River

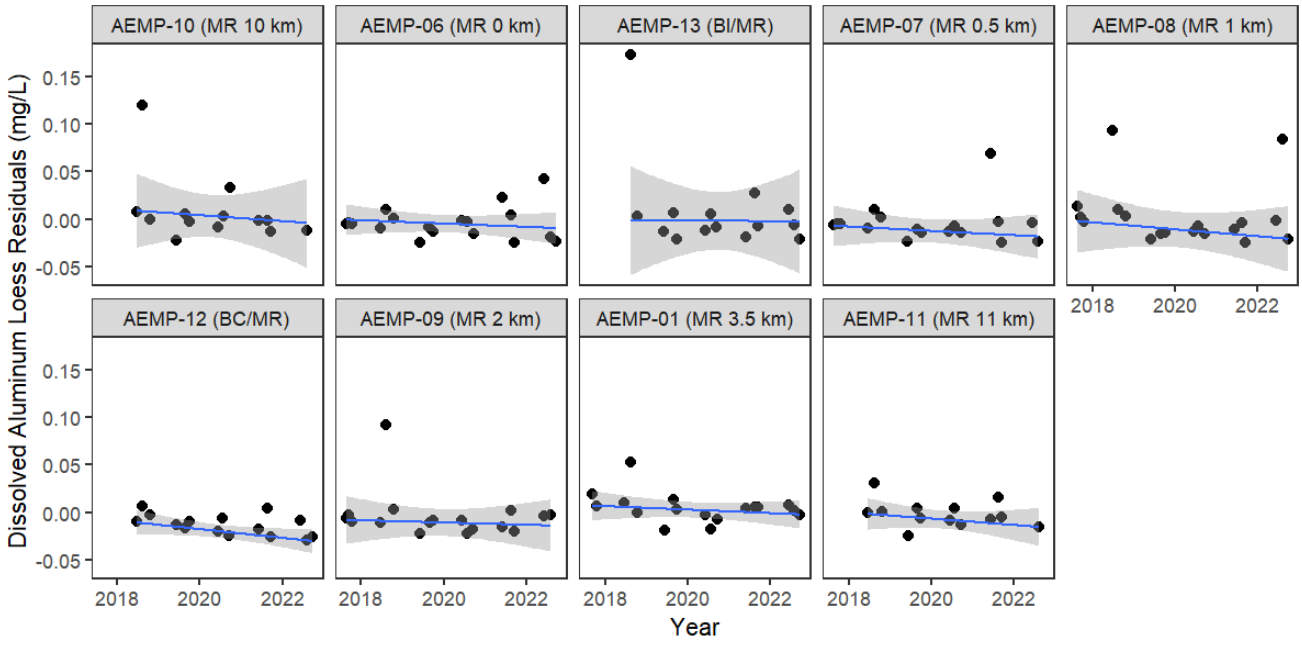


Table 2-3 Parameters included in Flow-Weighted Trend Analyses and their Percent Detection

Parameter	Percent Detection	Rationale
Chloride	100%	Key Indicator Parameter
Sulphate	100%	Key Indicator Parameter
Iron	100% Total	Key Indicator Parameter
Total Dissolved Solids	100%	Key Indicator Parameter
Total Suspended Solids	99%	Established relationship with many total metal concentrations
Calcium	100%	Key Indicator Parameter
Hardness	100%	Influences toxicity of many metals
Magnesium	100%	Key Indicator Parameter
Aluminum	99% Dissolved; 100% Total	Key Indicator Parameter
Arsenic	96% Dissolved; 100% Total	Key Indicator Parameter
Barium	100% Dissolved; 100% Total	Key Indicator Parameter
Cadmium	98% Total	Key Indicator Parameter

Parameter	Percent Detection	Rationale
Chromium	79% Total	Several historical maxima above guideline and toxicologically relevant
Copper	98% Dissolved; 100% Total	Historical maxima above guideline and toxicologically relevant dissolved concentrations
Lead	98% Total	Historical maxima above guideline and toxicologically relevant
Manganese	100% Total	Historical maximums at several Mackenzie River Locations
Molybdenum	100% Dissolved; 100% Total	Key Indicator Parameter
Nickel	99% Dissolved; 100% Total	Key Indicator Parameter
Selenium	84% Dissolved; 96% Total	Key Indicator Parameter
Uranium	100% Dissolved; 100% Total	Key Indicator Parameter
Zinc	94% Total	Key Indicator Parameter

3 Results and Discussion

Water quality data for the duration of the AEMP (2017-2022) are presented in Tables 1 to 5 and hydrometric data for the Mackenzie River and Bosworth Creek are summarized in Figures 6 and 7. General surface water characteristics and ionic composition is provided in piper plots for upstream and downstream sites on the Mackenzie River and Bosworth Creek in Figures 8 to 11. Control charts comparing concentrations measured in 2022 to historical ranges and CCME guidelines are provided in Appendix C. The Loess relationship between concentrations of KIPs and discharge are provided alongside residual trend analyses in Appendix D. Spatial flow-weighted trend results are also summarized in Table 6 and significant temporal trends are summarized in Section 3.4. Data summary sheets are provided for KIPs included in the flow-weighted trend analysis with OLS regressions on uncorrected data shown for each sampling location in Appendix E. Significant trends identified and statistical power of the screening trend analyses are provided in Table 7. Laboratory certificates of analysis are provided in Appendix F.

3.1 Hydrometric Data

Flow data for the Mackenzie River and Bosworth Creek from 2017 to 2022 is summarized in Figures 6 and 7, respectively. Flow within the Mackenzie River has been high from 2020 to 2022 with peak discharge exceeding 25,000 m^3/sec (Figure 6). Flow data from 2021 and 2022 remain under review but anecdotal evidence suggests flow within the river was high in 2022. Break up appears to begin in May with peak flows typically occurring in June based on monthly flow statistics (Figure 6). The flow regime of Bosworth Creek includes peak flows occurring in May with discharge peaking near 3.0 m^3/sec in most years (Figure 7). A second peak occurs in late-Summer/Fall in August and September.

3.2 General Water Chemistry

Field parameters such as pH and dissolved oxygen are within acceptable ranges in the Mackenzie River and Bosworth Creek based on the CCME FWAL guidelines. Petroleum hydrocarbons were below detection in 2022 which is consistent with historical data (Table 3). Consequently, petroleum hydrocarbons including those listed as KIPs are not included in subsequent analyses.

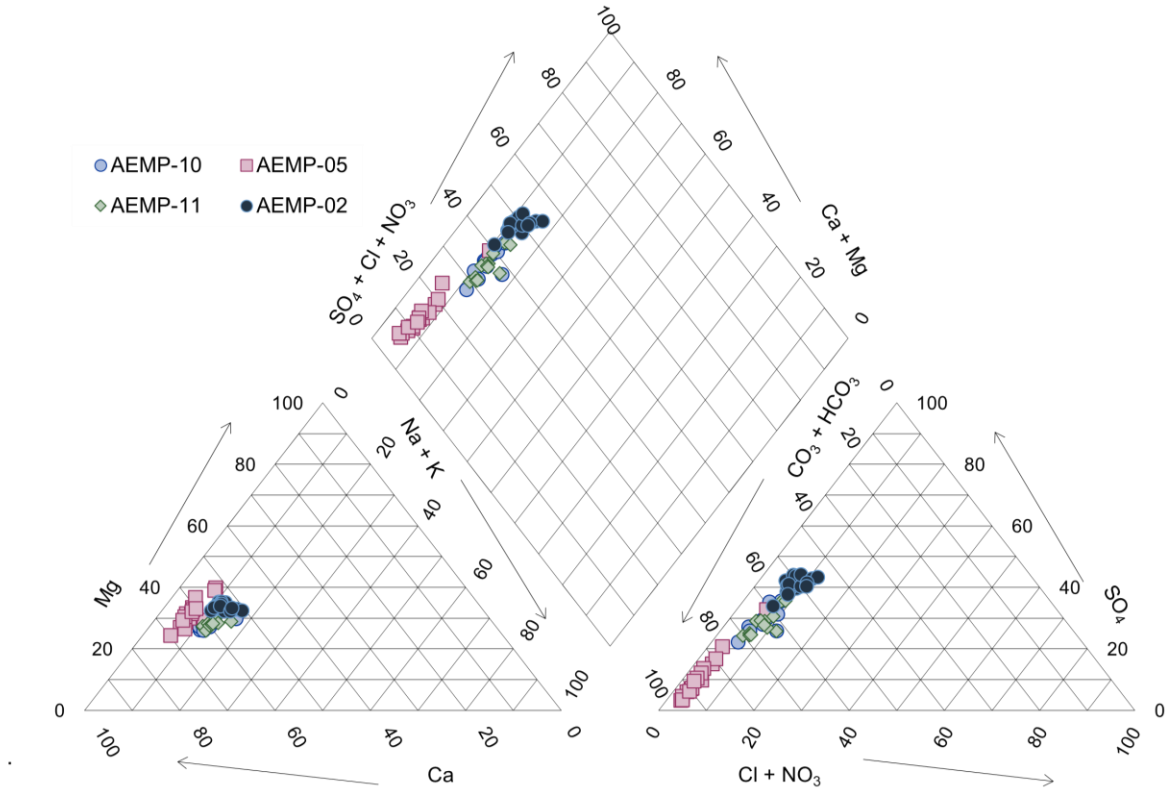
3.2.1 Major Ions

Piper plots provide a visual tool to describe ionic composition of water to compare between water types and identify mixing between different sources. The water chemistry of the Mackenzie River upstream and downstream from Norman Wells (AEMP-10 and AEMP-11), on Bear Island (AEMP-05), and in Bosworth Creek (AEMP-02) is characterized in Figure 3-1. The Mackenzie River near Norman Wells plots within the secondary alkalinity subdivision of the piper plot indicating that it is predominantly alkaline earths (calcium and magnesium) and weak acids (bicarbonate). Ionic composition of the Mackenzie River is similar upstream and downstream from Norman Wells given the overlap observed between AEMP-10 and AEMP-11 in Figure 3-1. Bear Island has a higher proportion of bicarbonate given that it plots closer to the right vertex of the diamond in the secondary alkalinity subdivision. Bear Island (AEMP-05) is subjected to a different hydrological regime than Bosworth Creek and the Mackenzie River which will influence water chemistry including ionic composition.

Imperial operations on Bear Island have the potential to alter water chemistry as well but other indicators must be considered. The PCA in 2021 identified that AEMP-05 on Bear Island contains elevated dissolved barium and molybdenum than other sites on the Mackenzie River (Advisian 2022b). However, the occurrences of existing trends, historical maxima, and concentrations above guideline were similar between Bear Island and the other sampling locations (Section 3.3). The water chemistry between upstream and downstream sampling locations on the Mackenzie River is similar and characteristics are similar between sampling events based on low variability between samples on the piper plots (Figures 8 to 11).

Bosworth Creek partially plots within the region that secondary alkalinity makes up 50% or more of the ionic composition, however the proportion of strong acids (chloride, sulphate, and nitrate) are higher than that of the Mackenzie River. The sampling location at the mouth of Bosworth Creek (AEMP-12) overlaps samples collected from Bosworth Creek and the Mackenzie River identifying this as an area of mixing between the two watercourses (Figure 9).

Figure 3-1 Piper Plot of Mackenzie River, Bosworth Creek, and Bear Island near Norman Wells



There are no water quality criteria related to major ion composition, but the ionic composition of water has important implications for osmoregulatory processes in fish and affects the toxicity of ammonia and several metals by influencing pH and hardness (CCME 2014; Roberts 2012).

3.3 Control Chart Comparison with Normal Ranges and Guidelines

Parameters with concentrations outside historical ranges and/or exceeding the CCME FWAL guideline are summarized in Table 3-1. At least one historical maxima was documented for each of the total metals analyzed on the Mackenzie River in 2022 (Table 3-1). Total metal historical maxima were observed at Mackenzie River sampling locations near Norman Wells but not at AEMP-10 or AEMP-11, which are located farther upstream and downstream (Figures AC-6 to 9). Sites with historical maxima in 2022 included AEMP-06 which is upstream from Imperial operations on the Mackenzie River. These results suggest that concentrations of many total metals in the Mackenzie River were elevated in 2022 compared with previous years of the AEMP, particularly at sites near Norman Wells. It is notable that high flow on the Mackenzie River during Spring sampling resulted in unsafe conditions at both AEMP-10 and AEMP-11, and logistical issues made sampling during the Summer sampling period infeasible at these sites. Therefore, AEMP-10 and AEMP-11 could only be sampled during the fall sampling season when discharge in the river was low. Alternatively, sites closer to Norman Wells could be sampled during each season. Elevated total suspended solids (TSS) in the Mackenzie River during periods of higher flow may contribute to the frequency of total metal historical maxima near Norman Wells in 2022 (Section 3.4). Total metal concentrations in Bosworth Creek and on Bear Island were considerably lower than that observed in the Mackenzie River, which is consistent with the historical dataset.

Concentrations of dissolved metals also exceeded the historical range at several sites in 2022 (Table 3-1). Exceedances of guidelines were consistent with historical results from previous AEMPs and not influenced by historical maxima documented. For example, most dissolved aluminum concentrations measured during the AEMP have exceeded the most conservative CCME FWAL guideline and many have exceeded the guideline for copper as well. All other dissolved metal concentrations above the historical range remain well below CCME FWAL guidelines.

The 2022 AEMP included winter sampling for the first time since the program started in 2017. Several total metal historical minima were documented during this sampling event. Alternatively, some dissolved parameters were detected for the first time in samples collected in Winter (Table 4). For example, lead concentration exceeded the detection limit and CCME FWAL guideline at AEMP-01, AEMP-12, and AEMP-13 for the first time in 2022. In addition, dissolved cadmium concentration at AEMP-08 in 2022 is the only measurement collected during the AEMP to exceed the cadmium CCME FWAL guideline. Lastly, the dissolved fraction of zinc was equal to the CCME FWAL guideline at AEMP-12 during the winter sampling. This was the first measurement at or exceeding this water quality criterion since the AEMP started in 2017.

When relating analytical data to water quality criteria it is important to consider the bioavailability of potential contaminants of concern as well as the influence of water chemistry on toxicity. Guideline comparisons in tables and figures provided in the AEMP take a conservative approach that compares concentrations in the Mackenzie River, Bosworth Creek, and Bear Island to the most stringent CCME FWAL guideline for both dissolved and total fractions. The total fraction of metals are not typically bioavailable in an aquatic environment (de Paiva Magalhaes et al. 2015) but these concentrations have been compared with water quality criteria to maintain this conservative approach. Additionally, the criterion applied for aluminum (0.005 mg/L) is based on water with a pH of less than 6.5 however the lowest pH measured during the AEMP is 6.68, therefore the less stringent CCME FWAL guideline could be applied.

If this were the case then only three dissolved aluminum measurements would be over the guideline rather than all observations as is the case in Table 4. These exceedances were measured in Summer 2018 at AEMP-09, AEMP-10, and AEMP-13. Similarly, historical maxima for total manganese exceed the CCME FWAL guideline in 2022 however when adjusted for pH and hardness, only the concentrations in the Mackenzie River at AEMP-01, AEMP-06, and AEMP-09 exceed the chronic CCME FWAL guideline.

Table 3-1 Summary of Parameters with Concentrations Outside the Historical Range and/or Exceeding Water Quality Criteria in 2022

Indicators				Dissolved Metals				Total Metals			
Parameter	**Sample Location**	**Normal Range Comparison**	**Guideline Comparison**	**Parameter**	**Sample Location**	**Normal Range Comparison**	**Guideline Comparison**	**Parameter**	**Sample Location**	**Normal Range Comparison**	**Guideline Comparison**
Chemical Oxygen Demand (COD)	AEMP-01	*Historical Minima*	NA	Aluminum	AEMP-06, AEMP-02	**Historical Maxima**	Normal ranges exceed guideline	Aluminum	AEMP-08, AEMP-01, AEMP-04	*Historical Minima*	Exceeds guideline
	AEMP-02, AEMP-03, AEMP-04, AEMP-06, AEMP-09, AEMP-12	**Historical Maxima**							AEMP-06, AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Potassium	AEMP-01, AEMP-07	**Historical Maxima**	NA	Arsenic	AEMP-07, AEMP-08	**Historical Maxima**	Below CCME FWAL guideline	Arsenic	AEMP-13, AEMP-08	*Historical Minima*	Historical Maxima exceed guideline
									AEMP-06, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Sodium	AEMP-01	**Historical Maxima**	NA	Barium	AEMP-10, AEMP-06, AEMP-08, AEMP-01	**Historical Maxima**	NA	Barium	AEMP-13, AEMP-12, AEMP-02, AEMP-03, AEMP-04	*Historical Minima*	NA
									AEMP-06, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Chloride	AEMP-01, AEMP-06: AEMP-07, AEMP-08, AEMP-09, AEMP-13	*Historical Minima*	Below CCME FWAL guideline	Copper	AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-04	**Historical Maxima**	Normal ranges exceed guideline	Cadmium	AEMP-13, AEMP-12, AEMP-01	*Historical Minima*	Sites near Norman Wells above guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Conductivity	AEMP-01, AEMP-06, AEMP-09	*Historical Minima*	NA	Manganese	AEMP-07	**Historical Maxima**	AEMP-13 Exceeds guideline	Chromium	AEMP-06, AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	Historical Maxima exceed guideline
Total Dissolved Solids (TDS)	AEMP-08, AEMP-12	*Historical Minima*	NA	Molybdenum	AEMP-12	*Historical Minimum*	Below CCME FWAL guideline	Cobalt	AEMP-13, AEMP-01	*Historical Minima*	NA
					AEMP-06, AEMP-05, AEMP-07, AEMP-08, AEMP-01, AEMP-02	**Historical Maxima**			AEMP-06, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Total Kjeldahl Nitrogen (TKN)	AEMP-12	**Historical Maxima**		Nickel	AEMP-08, AEMP-12	*Historical Minima*	Below CCME FWAL guideline	Copper	AEMP-06, AEMP-07, AEMP-12, AEMP-09, AEMP-01, AEMP-04	**Historical Maxima**	Normal ranges exceed guideline
Dissolved Organic Carbon (DOC)	AEMP-07, AEMP-09	**Historical Maxima**	NA	Selenium	AEMP-13, AEMP-07, AEMP-08, AEMP-09	**Historical Maxima**	Below CCME FWAL guideline	Iron	AEMP-13, AEMP-02	*Historical Minima*	Normal ranges exceed guideline
									AEMP-06, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Turbidity	AEMP-01, AEMP-06, AEMP-07, AEMP-09, AEMP-12	**Historical Maxima**	NA	Silicon	AEMP-08, AEMP-09, AEMP-02, AEMP-03	**Historical Maxima**	NA	Lead	AEMP-13, AEMP-01	*Historical Minima*	Normal ranges exceed guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
Total Suspended Solids (TSS)	AEMP-01, AEMP-06, AEMP-08, AEMP-09, AEMP-12	**Historical Maxima**	NA	Strontium	AEMP-08, AEMP-12, AEMP-09, AEMP-01 AEMP-06	*Historical Minima* **Historical Maxima**	NA	Manganese	AEMP-05, AEMP-13, AEMP-08, AEMP-12, AEMP-01, AEMP-02,	*Historical Minima*	Historical Maxima exceed guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	

Indicators				Dissolved Metals				Total Metals			
pH	AEMP-02, AEMP-12	*Historical Minima*	Within Guideline	Uranium	AEMP-12	*Historical Minima*	Below CCME FWAL guideline	Molybdenum	AEMP-08, AEMP-12	*Historical Minima*	Below CCME FWAL guideline
					AEMP-07	**Historical Maxima**			AEMP-06, AEMP-05, AEMP-13, AEMP-07, AEMP-08, AEMP-12	**Historical Maxima**	
---	---	---	---	---	---	---	---	Nickel	AEMP-13, AEMP-08, AEMP-12, AEMP-01, AEMP-04	*Historical Minima*	Historical Maxima exceed guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
---	---	---	---	---	---	---	---	Potassium	AEMP-12	*Historical Minima*	NA
									AEMP-06, AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
---	---	---	---	---	---	---	---	Selenium	AEMP-06, AEMP-07, AEMP-08, AEMP-09, AEMP-01	**Historical Maxima**	Below CCME FWAL guideline
---	---	---	---	---	---	---	---	Silicon	AEMP-06, AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	NA
---	---	---	---	---	---	---	---	Strontium	AEMP-12	*Historical Minima*	NA
									AEMP-07	**Historical Maxima**	
---	---	---	---	---	---	---	---	Titanium	AEMP-13, AEMP-08, AEMP-01	*Historical Minima*	NA
									AEMP-13, AEMP-12, AEMP-01	**Historical Maxima**	
---	---	---	---	---	---	---	---	Uranium	AEMP-08, AEMP-12	*Historical Minima*	Below CCME FWAL guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-01	**Historical Maxima**	
---	---	---	---	---	---	---	---	Vanadium	AEMP-13, AEMP-01	*Historical Minima*	NA
									AEMP-06, AEMP-13, AEMP-07, AEMP-12, AEMP-09, AEMP-01	**Historical Maxima**	
---	---	---	---	---	---	---	---	Zinc	AEMP-13, AEMP-01	*Historical Minima*	Normal ranges exceed guideline
									AEMP-06, AEMP-07, AEMP-08, AEMP-12, AEMP-09, AEMP-02	**Historical Maxima**	

Notes: *Italic* text indicates that at least one 2022 concentration for the adjacent parameter is a historical minimum at the listed sampling locations.
Bold text indicates that at least one 2022 concentration for the adjacent parameter is a historical maximum at the listed sampling locations.

3.4 Flow-Weighted Spatial and Temporal Trend Analysis

Graphics showing the Loess relationship between parameter concentration and log-discharge for each KIP identified in Table 2-3 are provided alongside trend analyses on Loess residuals in Appendix D. Trend statistics for flow-weighted spatial trend analyses are summarized in Table 6. Total zinc was the only KIP with a statistically significant spatial trend and the analysis indicated an increasing trend from upstream (AEMP-10) to downstream (AEMP-11) sampling locations. Total zinc is not monitored during the SNP however dissolved zinc is characterized near Norman Wells as part of the SNP. In 2022, dissolved zinc in groundwater was below background and guideline levels at all but one location on Goose Island (TRSA 2023). In addition, total zinc in Bosworth Creek was below detection at upstream and downstream sampling locations during 2022. These results suggest that the spatially increasing trend for total zinc is not related to loading from mainland operations. Operations on the islands cannot be ruled out as a potential source of total zinc to the Mackenzie River near Norman Wells. Total metal concentrations correlate with suspended sediment load, are not biologically active in comparison to the dissolved fraction, and zinc concentrations near Norman Wells remain close to or below the CCME guideline. Consequently, this spatially significant trend does not indicate adverse effects on aquatic biota in the area but identifies total zinc as a particularly important parameter for monitoring activities during upcoming years. Small-bodied fish tissue sampling is planned for September 2023 during the 2023 AEMP and will provide useful information to further investigate potential biological effects from zinc and other metals. In addition, improved sampling resolution upstream and downstream from Norman Wells along the mainstem of the Mackenzie River is planned under Version 4 of the AEMP. This additional information along the mainstem will be important for confirming an increase in total zinc in the Mackenzie River as it flows through Norman Wells.

Five statistically significant temporal trends were documented based on analysis of Loess residuals at each site over time (Table 3-2). Flow-weighted trend analysis identified increasing dissolved arsenic concentrations at sites downstream from Norman Wells including AEMP-01 and AEMP-11. Dissolved arsenic concentrations remain one order of magnitude below the CCME FWAL guideline (Table 4) and a decreasing trend that was not statistically significant was documented at AEMP-09 (Mann-Kendall test, slope = -3.05×10^{-5}, Kendall Stat = -48, p-value = 0.053). Consequently, the potentially increasing dissolved arsenic does not appear to pose an immediate risk to aquatic biota in the area and it is unclear if the trends observed are related to Imperial operations at Norman Wells. These results reaffirm the importance of arsenic as a KIP for the ongoing AEMP and should be monitored closely during subsequent years. The remaining three temporally significant trends are decreasing and unlikely to pose an immediate risk. Temporal changes to sulphate and magnesium concentrations have the potential to affect overall ionic composition that can be tracked using piper plots as discussed in Section 2.3. Future monitoring should continue to incorporate the major ion analysis given the potential temporal trends associated with sulphate and magnesium.

Table 3-2 Significant temporal trends Identified by Flow-weighted Trend Analysis

Site	Variable	Direction	Statistical Test	Slope	p-value
AEMP-09 (MR 2 km)	Sulphate	Decreasing	Seasonal Mann-Kendall	-1.43	0.014
AEMP-01 (MR 3.5 km)	Magnesium	Decreasing	Seasonal Mann-Kendall	-0.23	0.041
AEMP-12 (BC/MR)	Dissolved Aluminum	Decreasing	Mann-Kendall	-0.0046	0.038
AEMP-01 (MR 3.5 km)	Dissolved Arsenic	Increasing	Seasonal Mann-Kendall	$2.48x10^{-5}$	0.013
AEMP-11 (MR 11 km)	Dissolved Arsenic	Increasing	Mann-Kendall	$3.41x10^{-5}$	0.044

Loess smoothing of KIP concentrations by log-discharge indicates that concentrations of total fractions of KIPs tend to increase exponentially with flow (Appendix D). Dissolved fractions tend to remain consistent as is the case for dissolved calcium (Figure AD-3) or decrease similarly to chloride (Figure AD-1). The increase in total metals as flow increases is most likely related to increased TSS during high flow (Figure AD-8) given that elevated TSS is typically associated with elevated total metal concentrations (Pyle et al. 2002; Tiwary 2001). The relationship between flow and total metals is important in the context of the trend screening analysis. Many more statistically significant temporal trends were observed in the screening analysis (Table 7) compared with flow-weighted trend analysis. Increasing trends were documented for many total metal parameters. In addition, hydrometric flow data also indicates higher flows in 2022 compared with previous years of the AEMP. Given the Loess relationships observed for total metals, it is probable that many trends identified in the screening analysis reflect the higher discharge in recent years and the tendency for total parameters to increase along with flow.

3.4.1 Screening Results

The intent of the screening trend analysis to provide an assessment of parameters that haven't been identified as a KIP for the SNP or AEMP. Trends that were statistically significant for at least one of the screening tools employed are summarized in Table 7. Total chromium, lead, and manganese, as well as both the dissolved and total fractions of copper were added to the flow-weighted trend analysis during the 2022 AEMP based on the occurrence of increasing trends documented during the screening process. Further analysis of these parameters was also supported by control charting which documented results above the historical range and water quality criteria.

Significant trends were documented primarily at sites AEMP-06, AEMP-07, and to a lesser extent AEMP-08, AEMP-09, AEMP-02 and AEMP-03. The AEMP-06 site is upstream from Imperial operations and acts as a reference for the AEMP suggesting that trends observed are not a result of Imperial operations at Norman Wells. As discussed in the previous section, many of the trends identified during the screening process were no longer present following correction for varying flow between measurements.

4 Summary

The AEMP seasonally monitors many parameters that have the potential to act as contaminants of concern in the Mackenzie River and Bosworth Creek near Norman Wells. Hydrocarbons including BTEX and the F1 and F2 fractions are below detection in 2022 which is consistent with historical hydrocarbon measurements. Piper plots were included in the 2022 AEMP for the first time to characterize major ion composition near Norman Wells. The water chemistry of the Mackenzie River was similar upstream and downstream from Norman Wells, whereas Bear Island runoff had a higher proportion of bicarbonate. Seasonal sampling also included winter sampling for the first time during the AEMP in 2022, resulting in detections of dissolved parameters such as lead, cadmium, and zinc at levels that haven't been documented previously during the AEMP.

The data analysis in 2022 partially followed the previous AEMP reporting under Version 3 and expanded on the flow-weighted trend analysis that was introduced during the 2021 AEMP. While the seasonal data summary and screening trend analyses were still completed in 2022, the PCA analysis was not incorporated into the 2022 analysis given that more quantitative statistical tools are available. Previous PCA analyses were used to assist in the development of KIPs that primarily came from the proposed AEMP Version 4 that is currently being reviewed.

Total metal concentrations were high in the Mackenzie River in 2022 with historical maxima documented for many parameters. Additionally, several increasing trends were observed during the screening process for various total metals at sites near Norman Wells. Historical maxima were documented during the high-flow period which was notably higher in 2022 compared with previous monitoring years. It is well-known that increased discharge is usually associated with increased sediment loading that is quantified using TSS. Flow-correction using Loess smoothing established a relationship between flow and KIP concentrations, including TSS. The TSS concentration clearly increased with discharge as did the total fractions of many metals. Spatial and temporal trends were subsequently assessed using the residuals from the Loess relationship for each KIP to minimize the influence of flow on chemical composition. Following flow-correction the only spatially significant trend in the Mackenzie River was for total zinc and five temporally significant trends remained. Dissolved arsenic was increasing temporally at two sites downstream from Norman Wells but decreasing at a site immediately adjacent to Imperial Norman Wells operations. In addition, the dissolved arsenic concentration remains an order of magnitude below the CCME FWAL guideline suggesting there is no immediate risk to aquatic biota from a potential increase in arsenic. The remaining temporal trends were decreasing and are unlikely to pose a risk currently.

In summary, the 2022 AEMP has concluded and recommended the following:

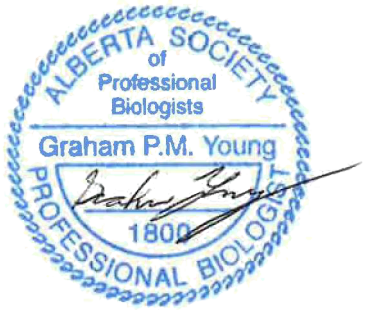
- All hydrocarbon analyses were below detection limits as well as all applicable guidelines.
- A few dissolved metal parameters exceeded applicable guidelines for the first time during the AEMP and this coincided with the first winter samples analyzed. These results demonstrate the importance of winter sampling when the river is at baseflow. Therefore, winter sampling should continue to be incorporated into monitoring activities as proposed in Version 4 of the AEMP.
- Screening tools such as trend analyses on uncorrected chemistry data and control charting provide a useful method for effectively monitoring parameters that remain relatively consistent and pose limited risk.

- The only statistically significant spatial trend based on flow-corrected trend analysis is for total zinc in 2022. Results from the mainland sampling locations and SNP remain low and concentrations in the mainstem marginally exceed or are below the CCME guideline. Changes implemented under Version 4 of the AEMP will be useful for confirming the presence of an increasing spatial trend for total zinc in the Mackenzie River as it flows through Norman Wells, and for characterizing potential effects on biota in the area.
- Several significant temporal trends were identified using screening tools and flow-correction of contaminant data suggest that these temporal trends are most likely related to elevated flow in recent years. The only significant temporal trends observed using flow-correction are two increasing trends for dissolved arsenic, and three decreasing trends for sulphate, manganese, and dissolved aluminum. Arsenic concentrations remain an order of magnitude below the CCME guideline but potential increases reaffirm the importance of arsenic as an important KIP during upcoming monitoring activities. The decreasing trends are unlikely to pose a risk to aquatic biota in the vicinity of Norman Wells.
- Continue the use of piper plots as a useful multi-variate tool for characterizing water chemistry at this stage of the AEMP given their ability to characterize ionic composition between sampling events and the limitations of PCA for detecting long-term trends.
- As previously agreed upon, the raw data collected during the AEMP to date will be provided as supplementary information along with the report submission in an excel format.

5 Closure

We trust that this report satisfies your current requirements and provides suitable documentation for your records. If you have any questions or require further details, please contact the undersigned at any time.

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Tłegǫ̀hłı̨ Reclamation Services Advisian

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Tables

Table 1

Surface Water Analytical Results: Field Measurements

PROJECT No.: 417085-42051-22200

Monitoring Station	Date (dd-mmm-yyyy)	Dissolved Oxygen (mg/L)	Electrical Conductivity (uS/cm)	Oxidation/Reduction Potential (mV)	pH (pH Units)	Temperature (ºC)	Turbidity (NTU)	Sample Comment
SURFACE WATER								
AEMP-01	12-Jun-2020	12.84	179	-241	8.37	9.7	259	
	28-Jul-2020	10.83	273.1	-116.3	8.11	16.3	211.7	
	22-Sep-2020	10.88	219.7	62.4	8.22	9.6	81.02	Brown, Slightly turbid.
	07-Jun-2021	9.20	204.9	---	8.10	11.0	67.48	
	19-Aug-2021	9.37	232.5	201.4	8.16	14.9	300.8	
	18-Sep-2021	8.3	304	---	8.30	10.6	56.40	Clear
	14-Jun-2022	10.96	228	---	8.07	9.7	231	
	06-Aug-2022	8.62	232.5	131.9	7.41	18	50.05	
	25-Sep-2022	9.8	227	89.1	8.2	10.9	---	
AEMP-02	10-Jun-2020	10.87	446.1	-193	9.57	11.7	2.89	
	24-Jul-2020	---	557	---	7.0	16.0	---	Clear
	18-Sep-2020	12.18	444	73.8	8.35	7.1	0	Clear
	06-Jun-2021	7.45	648.8	---	7.47	8.8	2.68	Beaver dam directly upstream
	18-Aug-2021	9.48	546	257.7	7.78	13.1	4.6	
	19-Sep-2021	8.27	705	---	8.27	6.3	1.66	Clear
	11-Jun-2022	---	347.5	---	7.98	11.3	2.44	
	06-Aug-2022	9.02	536	146.7	8.23	16.3	95.8	
	26-Sep-2022	10	435	-20	8.25	3.8	---	
AEMP-03	10-Jun-2020	11.82	438.8	156	8.57	11.2	3.05	
	24-Jul-2020	---	545	---	6.5	14.0	---	Clear
	18-Sep-2020	12.35	442	145	7.87	7.0	0	Clear
	06-Jun-2021	7.69	661.0	---	7.31	8.5	4.35	
	18-Aug-2021	10.11	557	240	8.37	14.1	1.87	
	19-Sep-2021	8.24	729	---	8.24	6.3	0.75	Clear
	11-Jun-2022	---	575.6	---	8.36	10.6	1.83	
	06-Aug-2022	9.17	550	164.7	8.11	17.5	11.34	
	26-Sep-2022	12.4	403	-41	8.23	3.8	---	
AEMP-04	10-Jun-2020	12.26	417.0	14.2	8.56	10.4	3.01	
	24-Jul-2020	---	564	---	7.0	17.5	---	Clear
	18-Sep-2020	11.99	442	85.1	8.34	7.0	0	Clear
	06-Jun-2021	7.84	675.1	---	6.91	8.0	3.61	
	18-Aug-2021	10.21	568	244.2	8.37	14.3	0.61	
	19-Sep-2021	8.09	723	---	8.09	6.2	0.59	Clear
	11-Jun-2022	12.03	576.4	---	8.4	10.8	1.73	
	06-Aug-2022	9.12	546	174.5	8.22	17.2	13.42	
	24-Sep-2022	12.3	586	122.2	8.34	4.8	---	
AEMP-05	11-Jun-2020	6.33	242	-201	7.82	14.1	1.62	
	26-Jul-2020	---	214	---	6.5	18.5	---	Clear
	26-Sep-2020	9.57	2265	-480	7.83	7.1	0.58	Clear
	07-Jun-2021	6.17	268.4	---	7.76	10.5	8.52	
	19-Aug-2021	6.7	182.3	204.6	8.4	14.9	2.08	
	18-Sep-2021	8.64	251	---	8.64	10.8	3.92	Clear
	14-Jun-2022	7.78	304.1	---	7.6	11.7	14.57	
	05-Aug-2022	6.28	290	130.6	7.15	19.7	5.29	
	25-Sep-2022	8.1	205	62.9	8.08	5.7	---	
AEMP-06	12-Jun-2020	13.02	166	-234	8.36	9	159	
	28-Jul-2020	11.16	235.4	-241.5	8.10	14.9	78.31	
	22-Sep-2020	11.61	268.7	72	8.24	8.5	82.26	Brown, slightly turbid
	06-Jun-2021	7.89	285.2	---	7.14	10.3	95.2	
	18-Aug-2021	9.71	282.5	151.2	8.21	14.3	227.3	
	17-Sep-2021	8.03	250	---	8.03	9.9	18.80	Clear, sheen from seep
	12-Jun-2022	12.16	217.2	---	8.13	8.5	290.2	
	06-Aug-2022	7.71	206.6	225	8.16	16.9	89.43	
	24-Sep-2022	10.7	184	101	8.17	8.6	---	

Table 1

Surface Water Analytical Results: Field Measurements

PROJECT No.: 417085-42051-22200

Monitoring Station	Date (dd-mmm-yyyy)	Dissolved Oxygen (mg/L)	Electrical Conductivity (uS/cm)	Oxidation/Reduction Potential (mV)	pH (pH Units)	Temperature (ºC)	Turbidity (NTU)	Sample Comment
AEMP-07	10-Jun-2020	12.27	157	-225	8.36	8.2	166	
	24-Jul-2020	---	227	---	6.0	15.0	---	Light brown, slightly turbid
	18-Sep-2020	13.27	166	-225	8.15	9.0	367	Slight brown colour, clear
	06-Jun-2021	8.06	335.1	---	6.90	10.7	99.9	
	18-Aug-2021	9.37	202.6	142.8	8.13	14.3	146.8	
	17-Sep-2021	8.00	249	---	8.00	9.1	26.88	Clear, sheen from seep
	12-Jun-2022	11.87	192	---	8.18	8.6	220.7	
	06-Aug-2022	9.12	206.6	143.6	7.45	16.5	461	turbidity elevated by high winds
	24-Sep-2022	10.8	180	111.2	8.11	8.2	---	sheen and odour from seep
AEMP-08	10-Jun-2020	12.95	162	-200	8.31	8.7	126	
	24-Jul-2020	---	227	---	6.0	15.5	---	Light brown, slightly turbid
	18-Sep-2020	12.61	168	-232	8.17	9.0	23.9	Slight brown colour, clear
	06-Jun-2021	7.82	315.3	---	7.03	12.0	94.8	
	18-Aug-2021	9.84	212.4	29.7	8.21	14.3	204.2	
	17-Sep-2021	7.96	259	---	7.96	10.0	24.51	Clear
	12-Jun-2022	12.25	225.8	---	8.2	8.4	148.8	
	06-Aug-2022	9.38	220.2	155.5	7.38	16	243.1	
	25-Sep-2022	10.9	186	89	8.13	8.7	---	
AEMP-09	10-Jun-2020	13.01	161	-216	8.33	8.7	154	
	24-Jul-2020	---	235	---	6.0	17	---	Light brown, slightly turbid
	18-Sep-2020	10.50	147	61.7	8.4	8.9	52.54	Light brown, slightly turbid
	06-Jun-2021	7.71	317.3	---	6.89	10.8	106.0	
	18-Aug-2021	9.64	295.9	131.2	8.19	14.4	324.2	
	17-Sep-2021	7.77	294	---	7.77	9.4	25.24	Clear
	11-Jun-2022	11.82	219.5	---	8.12	9.2	216.5	
	05-Aug-2022	8.77	251.8	84	7.55	20.4	124.8	
	24-Sep-2022	10.7	196	118.6	8.14	8.8	---	
AEMP-10	12-Jun-2020	12.68	169.8	-221	8.30	9.2	2764	
	28-Jul-2020	10.78	262.2	-71.9	8.14	16.4	99.5	
	22-Sep-2020	10.99	213.0	70.2	8.29	9.6	62.80	Brown, slightly turbid
	07-Jun-2021	9.53	231.7	---	8.11	11.0	82.80	
	19-Aug-2021	9.42	225	207.2	8.61	15.2	215	
	18-Sep-2021	8.16	294	---	8.16	10.9	50.95	Light brown
	10-Aug-2022	9.28	207.9	182.2	7.49	16.4	---	
AEMP-11	12-Jun-2020	12.70	169	-252	8.41	9.11	308	
	28-Jul-2020	11.05	258.4	-33.7	8.10	16.2	83.28	
	22-Sep-2020	11.06	203	663	7.94	9.4	63.71	Brown, slightly turbid
	07-Jun-2021	9.47	228.3	---	8.12	10.8	145.6	
	19-Aug-2021	9.39	220.5	190.8	8.21	15.1	265.3	
	18-Sep-2021	8.24	286	---	8.24	10.3	42.91	Clear
	10-Aug-2022	9.3	204.1	182.8	7.33	16.1	---	
AEMP-12	10-Jun-2020	11.16	480	-167	8.53	14.7	18.86	
	24-Jul-2020	---	302	---	6.0	15.5	---	Light brown, slightly turbid
	18-Sep-2020	10.56	451	71.5	8.36	7.5	1.09	Light brown, slightly turbid
	07-Jun-2021	8.85	399.6	---	7.14	10.4	29.05	
	18-Aug-2021	9.58	446.9	169.5	8.27	12.7	42.7	
	17-Sep-2021	8.05	295	---	8.05	8.9	23.09	Clear, sheen from seep
	12-Jun-2022	12.22	378.3	---	8.32	8.6	226.8	
	05-Aug-2022	9.94	391.4	12.4	7.89	19.6	27.88	
	26-Sep-2022	11.3	140	40.3	8.17	8	---	sheen and odour from seep

Table 1

Surface Water Analytical Results: Field Measurements

PROJECT No.: 417085-42051-22200

Monitoring Station	Date (dd-mmm-yyyy)	Dissolved Oxygen (mg/L)	Electrical Conductivity (uS/cm)	Oxidation/Reduction Potential (mV)	pH (pH Units)	Temperature (ºC)	Turbidity (NTU)	Sample Comment
AEMP-13	11-Jun-2020	931	219	-184	7.83	13.1	89.12	
	26-Jul-2020	---	254	---	6.0	19.0	---	
	16-Sep-2020	11.04	226	78.0	8.2	9.4	23.23	Brown, turbid
	07-Jun-2021	7.46	275.7	---	7.83	12.9	22.03	
	19-Aug-2021	9.67	162.5	215.5	8.1	14.1	332.7	
	18-Sep-2021	8.19	309	---	8.19	10.7	86.68	Clear/light brown
	14-Jun-2022	11.1	257.8	---	7.9	10.9	352.6	
	05-Aug-2022	8.44	275.4	153.8	7.72	21.1	29.24	
	25-Sep-2022	10.2	268	4.7	7.65	5.3	---	

NOTES:

1. --- in detail data row(s) denotes parameter not analyzed.

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	120	---	---	---	0.3	---	0.2	---	---		---	---	---	---	---	(6.5 - 9)	---	---	---
AEMP																						
AEMP-01	16-Sep-2017	120	< 0.50	9.4	48	< 0.50	42	< 0.060	11	< 0.0040	0.94	9.0	---	99	< 0.50	---	320	150	---	160	22	---
	16-Oct-2017	120	< 1.0	10	47	< 1.0	37	< 0.060	11	< 0.0040	0.94	9.3	---	97	< 1.0	---	310	140	---	170	8.0	---
	23-Jun-2018	100	< 1.0	6.3	44	< 1.0	33	< 0.060	9.5	< 0.0040	0.82	6.1	---	82	< 1.0	---	260	120	---	160	71	60
	14-Aug-2018	120	< 1.0	8.7	57	< 1.0	38	< 0.060	12	< 0.0040	0.84	7.6	---	98	< 1.0	---	330	140	---	190	220	130
	18-Oct-2018	110	< 1.0	11	32	< 1.0	30	< 0.060	10	0.0093	0.91	10	---	86	< 1.0	---	260	120	---	160	58	7.3
	10-Jun-2019	98	< 1.0	5.8	37	< 1.0	31	< 0.060	8.1	< 0.0040	0.78	5.7	---	80	< 1.0	19	250	110	8.00	180	150	120
	26-Aug-2019	120	< 1.0	9.6	57	< 1.0	38	< 0.060	12	< 0.0040	0.86	8.2	---	99	< 1.0	9.8	330	150	8.20	190	55	49
	01-Oct-2019	120	< 1.0	11	60	< 1.0	39	< 0.060	11	< 0.0040	0.93	8.9	---	96	< 1.0	21	320	140	8.07	220	76	92
	12-Jun-2020	120	< 1.0	4.7	40	< 1.0	32	< 0.060	8.9	< 0.0040	0.74	5.2	---	100	< 1.0	29	250	120	6.69	180	190 [#3]	100
	28-Jul-2020	120	< 1.0	5.8	45	< 1.0	35	< 0.060	9.9	< 0.0040	0.70	6.1	---	95	< 1.0	22	280	130	7.66	170	130	60
	22-Sep-2020	140	< 1.0	6.4	44	< 1.0	35	< 0.060	9.8	< 0.0040	0.85	6.7	---	110	< 1.0	20	300	130	7.75	190 [#6]	39	22
	07-Jun-2021	110	< 1.0	5.8	35	< 1.0	32	< 0.060	8.5	< 0.0040	1.1	6.4	---	91	< 1.0	33	260	120	---	240	140	72
(Duplicate)	07-Jun-2021	110	< 1.0	5.8	34	< 1.0	33	0.070	8.6	< 0.0040	1.1	6.4	---	87	< 1.0	32	260	120	---	210	120	78
	19-Aug-2021	110	< 1.0	6.8	42	< 1.0	37	< 0.060	11	< 0.0040	1.1	7.0	0.093	90	< 1.0	28	290	140	---	180	230 [#3]	180
	18-Sep-2021	160	< 1.0	7.5	45	< 1.0	37		10	< 0.0040	1.0	8.0	0.10	130	< 1.0	21	300	140	---	250	61	43
	31-Mar-2022	---	---	---	---	---	45	< 0.060	12	< 0.0040	1.4	13	---	---	---	13	---	---	8.02	210	3.5	7
	14-Jun-2022	99	< 1.0	2.7	34	< 1.0	30	< 0.060	7.7	< 0.0040	0.87	3.9	0.077	81	< 1.0	41	220	110	7.45	160	550 [#3]	410 [#4]
	06-Aug-2022	110	< 1.0	7.1	47	< 1.0	38	< 0.060	11	< 0.0040	1.1	8.0	0.090	94	< 1.0	14	290	140	7.75	200	63	45
(Duplicate)	06-Aug-2022	130	< 1.0	6.8	49	< 1.0	36	< 0.060	9.6	< 0.0040	1.0	7.4	0.090	110	< 1.0	14	300	130	7.76	190	92	49
	25-Sep-2022	140	< 1.0	9.7	46	< 1.0	37	< 0.060	10	< 0.0040	0.99	8.4	0.10	120	< 1.0	8.3	300	130	7.36	190	19	15
AEMP-02	18-Aug-2017	230	< 0.50	24	140	< 0.50	76	< 0.060	28	0.0077	1.1	23	---	190	< 0.50	---	650	310	---	400	4.0	---
	16-Sep-2017	220	< 0.50	19	130	< 0.50	80	< 0.060	29	0.0081	1.0	18	---	180	< 0.50	---	630	320	---	390	2.7	---
(Duplicate)	16-Sep-2017	220	< 0.50	19	130	< 0.50	79	< 0.060	29	0.0078	0.96	18	---	180	< 0.50	---	630	320	---	380	1.3	---
	16-Oct-2017	220	< 1.0	20	150	< 1.0	75	< 0.060	30	0.0091	0.97	19	---	180	< 1.0	---	650	310	---	420	21	---
	23-Jun-2018	230	< 1.0	19	130	< 1.0	78	< 0.060	28	0.0058	1.1	17	---	180	< 1.0	---	620	310	---	400	2.0	1.3
	12-Aug-2018	220	< 1.0	14	140	< 1.0	74	< 0.060	29	0.0079	1.0	16	---	180	< 1.0	---	610	300	---	400	3.3	---
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Oct-2018	230	< 1.0	17	160	< 1.0	78	< 0.060	31	0.0046	1.0	18	---	190	< 1.0	---	660	320	---	410	19	1.5
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	190	< 1.0	17	120	< 1.0	65	< 0.060	24	0.0050	0.85	14	---	160	< 1.0	16	560	260	8.21	350	4.7	3.7
(Duplicate)	03-Jun-2019	190	< 1.0	17	120	< 1.0	65	< 0.060	24	0.0049	0.84	14	---	160	< 1.0	18	560	260	8.18	360	4.0	4.1
	28-Aug-2019	230	< 1.0	17	140	< 1.0	76	< 0.060	27	0.0069	0.96	16	---	190	< 1.0	15	630	300	8.29	400	3.3	2.0
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Oct-2019	230	< 1.0	19	160	< 1.0	83	< 0.060	32	0.0069	1.0	19	---	190	< 1.0	7.0	670	340	---	430	3.3	2.0
	10-Jun-2020	210	< 1.0	16	130	< 1.0	70	< 0.060	24	0.0043	0.96	14	---	180	< 1.0	15	600	270	8.25	320	7.5	2.1
	24-Jul-2020	220	< 1.0	25	140	< 1.0	81	0.062	29	0.0075	1.0	22	---	180	< 1.0	11	710	320	8.29	470	1.0	0.43

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
	18-Sep-2020	220	< 1.0	21	160	< 1.0	80	< 0.060	31	0.0062	0.97	19	---	180	< 1.0	6.0	690	330	8.25	490	3.6	0.64
	06-Jun-2021	240	1.5	17	110	< 1.0	72	< 0.060	26	0.0063	1.0	15	0.20	200	1.3	23	610	290	---	430	9.1	3.1
	18-Aug-2021	220	< 1.0	30	160	< 1.0	83	< 0.060	32	0.0058	1.2	28	0.23	180	< 1.0	6.4	720	340	---	510	< 1.0	0.48
	19-Sep-2021	250	< 1.0	38	190	< 1.0	83	< 0.060	32	0.0072	1.1	31	0.26	200	< 1.0	3.7	780	340	8.27	490	1.8	0.69
	11-Jun-2022	200	< 1.0	18	110	< 1.0	69	< 0.060	26	0.0076	1.2	16	0.17	170	< 1.0	12	580	280	8.22	370	< 1.0	1.7
	06-Aug-2022	220	< 1.0	28	150	< 1.0	79	< 0.060	29	0.0061	1.2	24	0.20	180	< 1.0	6.4	680	310	8.28	430	4.7	1.5
	26-Sep-2022	230	< 1.0	30	150	< 1.0	78	< 0.060	30	0.0055	1.0	24	0.22	190	< 1.0	5.5	720	320	7.91	460	1.2	1.1
AEMP-03	18-Aug-2017	220	2.6	24	140	< 0.50	76	< 0.060	28	0.0056	1.1	22	---	190	2.2	---	650	310	---	400	1.3	---
	16-Sep-2017	220	< 0.50	19	130	< 0.50	79	< 0.060	29	0.0057	1.0	17	---	180	< 0.50	---	630	320	---	400	2.7	---
	16-Oct-2017	220	< 0.50	20	150	< 0.50	75	< 0.060	30	0.0063	0.94	19	---	180	< 0.50	---	650	310	---	420	10	---
	23-Jun-2018	230	< 1.0	20	140	< 1.0	77	< 0.060	28	0.0060	1.1	18	---	190	< 1.0	---	630	310	---	380	2.0	1.4
	12-Aug-2018	220	< 1.0	14	140	< 1.0	73	< 0.060	29	0.0057	1.0	15	---	180	< 1.0	---	610	300	---	400	2.7	---
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Oct-2018	220	< 1.0	17	160	< 1.0	78	< 0.060	31	< 0.0040	1.0	17	---	180	< 1.0	---	660	320	---	420	42	3.6
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	190	< 1.0	17	110	< 1.0	65	< 0.060	24	0.0052	0.91	14	---	160	< 1.0	16	560	260	8.29	370	3.3	3.2
	28-Aug-2019	220	< 1.0	17	140	< 1.0	76	< 0.060	28	0.0055	1.0	16	---	180	< 1.0	14	630	300	8.22	400	3.3	1.8
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Oct-2019	230	< 1.0	19	150	< 1.0	79	< 0.060	30	0.0044	0.99	18	---	180	< 1.0	7.9	680	320	8.31	440	2.7	0.55
	10-Jun-2020	230	< 1.0	15	130	< 1.0	70	< 0.060	24	< 0.0040	0.94	13	---	190	< 1.0	15	600	280	8.30	360	7.1	2.8
	24-Jul-2020	220	< 1.0	24	150	< 1.0	82	< 0.060	29	0.0051	1.0	21	---	180	< 1.0	12	700	320	8.23	460	< 1.0	0.54
	20-Sep-2020	260	< 1.0	20	170	< 1.0	80	< 0.060	30	< 0.0040	1.1	19	---	220	< 1.0	7.6	670	320	7.75	450	1.4	0.30
	06-Jun-2021	240	< 1.0	17	110	< 1.0	72	< 0.060	26	0.0042	1.0	15	0.19	200	< 1.0	22	600	290	---	440	4.3	3.2
	18-Aug-2021	210	< 1.0	30	160	< 1.0	83	< 0.060	32	< 0.0040	1.2	28	0.24	180	< 1.0	6.9	720	340	---	480	< 1.0	0.43
	19-Sep-2021	250	< 1.0	39	190	< 1.0	79	< 0.060	30	0.0043	1.1	29	0.27	210	< 1.0	6.2	790	320	8.30	470	< 1.0	0.29
	11-Jun-2022	200	< 1.0	18	120	< 1.0	70	< 0.060	27	< 0.0040	1.2	16	0.18	170	< 1.0	13	580	290	8.24	360	1.0	1.2
	06-Aug-2022	220	< 1.0	28	150	< 1.0	79	< 0.060	29	0.0045	1.1	24	0.20	180	< 1.0	6.4	680	310	8.27	430	1.0	0.82
	26-Sep-2022	230	< 1.0	30	150	< 1.0	77	< 0.060	30	0.0042	1.0	23	0.22	190	< 1.0	5.1	710	320	7.97	450	< 0.99	0.50
AEMP-04	18-Aug-2017	230	< 0.50	24	140	< 0.50	76	< 0.060	28	0.0047	1.1	21	---	190	< 0.50	---	650	310	---	440	3.3	---
	16-Sep-2017	210	< 0.50	19	130	< 0.50	73	< 0.060	28	0.0049	0.99	17	---	180	< 0.50	---	620	300	---	390	2.0	---
	16-Oct-2017	210	< 1.0	21	150	< 1.0	75	< 0.060	30	0.0050	0.98	19	---	170	< 1.0	---	660	310	---	420	6.0	---
(Duplicate)	16-Oct-2017	220	< 1.0	21	150	< 1.0	75	< 0.060	30	0.0051	0.97	19	---	180	< 1.0	---	660	310	---	440	6.7	---
	23-Jun-2018	230	< 1.0	20	140	< 1.0	76	< 0.060	28	0.0070	1.1	18	---	180	< 1.0	---	640	300	---	380	4.7	1.4
(Duplicate)	23-Jun-2018	230	< 1.0	19	140	< 1.0	71	< 0.060	26	0.0066	1.0	17	---	190	< 1.0	---	640	280	---	390	4.7	1.1
	12-Aug-2018	220	< 1.0	14	140	< 1.0	73	< 0.060	29	0.0055	0.99	15	---	180	< 1.0	---	610	300	---	400	3.3	---
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	16-Oct-2018	230	< 1.0	17	160	< 1.0	79	< 0.060	31	< 0.0040	1.0	17	---	180	< 1.0	---	660	330	---	420	16	1.3
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	190	< 1.0	17	120	< 1.0	65	< 0.060	24	0.0041	0.86	14	---	160	< 1.0	16	560	260	8.22	360	6.0	4.2

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
	25-Aug-2019	210	< 1.0	13	140	< 1.0	69	< 0.060	28	0.0049	0.91	13	---	180	< 1.0	9.8	600	290	8.26	360	3.3	2.9
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Oct-2019	230	< 1.0	18	150	< 1.0	78	< 0.060	30	< 0.0040	1.0	17	---	180	< 1.0	7.9	690	320	8.31	440	1.3	0.51
	10-Jun-2020	210	< 1.0	15	130	< 1.0	70	< 0.060	25	< 0.0040	0.92	12	---	170	< 1.0	14	590	280	8.23	400	9.5	1.4
(Duplicate)	10-Jun-2020	210	< 1.0	16	130	< 1.0	71	< 0.060	24	< 0.0040	0.99	13	---	170	< 1.0	13	590	280	8.24	380	9.1	2.3
	24-Jul-2020	100	< 1.0	8.1	38	< 1.0	30	< 0.060	9.1	0.0043	0.81	8.1	---	85	< 1.0	23	270	110	7.95	160	140	51
	18-Sep-2020	220	< 1.0	20	170	< 1.0	80	< 0.060	28	< 0.0040	0.76	17	---	180	< 1.0	5.5	670	320	8.20	490	< 1.0	0.41
	06-Jun-2021	250	< 1.0	17	120	< 1.0	72	< 0.060	26	< 0.0040	1.0	15	0.19	200	< 1.0	23	610	290	---	440	4.9	4.5
	18-Aug-2021	210	< 1.0	30	160	< 1.0	92	< 0.060	36	< 0.0040	1.3	30	0.23	180	< 1.0	6.6	720	380	---	480	< 1.0	0.42
	19-Sep-2021	240	< 1.0	35	190	< 1.0	84	< 0.060	32	< 0.0040	1.2	30	0.26	200	< 1.0	2.7	780	340	8.26	480	< 1.0	0.31
	11-Jun-2022	200	< 1.0	19	120	< 1.0	71	< 0.060	27	< 0.0040	1.1	16	0.18	160	< 1.0	11	580	290	8.21	370	1.6	1.2
(Duplicate)	11-Jun-2022	200	< 1.0	18	120	< 1.0	71	< 0.060	27	< 0.0040	1.1	16	0.18	170	< 1.0	13	580	290	8.22	360	< 0.97	1.2
	06-Aug-2022	220	< 1.0	27	150	< 1.0	75	< 0.060	27	0.0065	1.1	24	0.20	180	< 1.0	6.6	690	300	8.23	430	< 1.0	0.54
	24-Sep-2022	240	< 1.0	31	150	< 1.0	79	< 0.060	31	0.0046	1.1	23	0.22	200	< 1.0	5.6	710	330	7.95	460	< 1.0	0.56
AEMP-05	19-Aug-2017	210	< 0.50	4.5	19	< 0.50	52	0.073	14	0.0071	1.5	5.6	---	170	< 0.50	---	360	190	---	210	2.7	---
	16-Sep-2017	200	< 0.50	4.7	18	< 0.50	53	< 0.060	13	< 0.0040	1.7	5.1	---	160	< 0.50	---	350	190	---	180	1.3	---
	15-Oct-2017	200	< 0.50	5.6	18	< 0.50	48	< 0.060	14	0.0052	2.3	5.2	---	170	< 0.50	---	350	180	---	180	2.0	---
	23-Jun-2018	110	< 1.0	6.6	47	< 1.0	34	< 0.060	10	0.013	0.84	6.3	---	88	< 1.0	---	280	130	---	150	71	61
	13-Aug-2018	190	< 1.0	3.7	5.0	< 1.0	42	**0.34** [#17]	14	0.028	1.4	3.9	---	160	< 1.0	---	310	160	---	200	3.3	---
	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Oct-2018	230	< 1.0	5.1	14	< 1.0	52	0.18	15	0.18	3.6	4.6	---	190	< 1.0	---	380	190	---	220	2.0	2.4
	02-Jun-2019	190	< 1.0	3.6	9.8	< 1.0	43	0.25	14	0.040	2.4	3.8	---	150	< 1.0	20	320	160	7.98	210	4.0	4.9
	27-Aug-2019	190	< 1.0	3.3	7.3	< 1.0	43	< 0.060	13	< 0.0040	2.0	3.3	---	160	< 1.0	15	310	160	8.21	190	1.3	0.90
	01-Oct-2019	190	< 1.0	4.0	5.3	< 1.0	42	0.11	16	< 0.0040	1.7	3.1	---	160	< 1.0	18	310	170	8.16	200	6.7	1.1
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	11-Jun-2020	170	< 1.0	4.6	25	< 1.0	41	0.25	10	0.024	1.7	4.6	---	140	< 1.0	35	300	140	7.06	180	1.9	1.5
	26-Jul-2020	160	< 1.0	3.7	10	< 1.0	39	**0.40** [#17]	12	0.022	1.1	4.2	---	130	< 1.0	41	300	150	8.13	120	13	2.6
	16-Sep-2020	180	< 1.0	4.0	9.6	< 1.0	45	0.11	13	0.0061	1.3	4.0	---	140	< 1.0	21	310	170	7.91	230 [#6]	9.7	2.4
	07-Jun-2021	140	< 1.0	3.4	30	< 1.0	43	0.081	9.1	0.019	1.3	3.4	---	110	< 1.0	26	290	140	---	280	3.3	8.0
	19-Aug-2021	120	< 1.0	3.2	20	< 1.0	24	< 0.060	11	< 0.0040	0.72	3.6	0.10	95	< 1.0	22	220	110	---	170	< 1.0	0.56
	18-Sep-2021	140	< 1.0	2.6	18	< 1.0	27	< 0.060	12	< 0.0040	0.99	4.0	0.19	110	< 1.0	13	240	110	8.08	100	8.1	3.4
	14-Jun-2022	170	< 1.0	3.4	19	< 1.0	44	< 0.060	12	0.0098	1.5	3.8	0.10	140	< 1.0	31	310	160	7.87	190	4.2	1.5
	05-Aug-2022	180	< 1.0	3.5	17	< 1.0	38	0.065	12	< 0.0040	1.0	4.1	0.11	150	< 1.0	20	300	150	8.13	200	4.3	1.3
	25-Sep-2022	200	< 1.0	3.7	17	< 1.0	42	< 0.060	14	< 0.0040	1.5	4.7	0.13	160	< 1.0	18	310	160	7.71	190	1.4	2.4
AEMP-06	21-Aug-2017	110	< 0.50	9.0	41	< 0.50	31	< 0.060	9.7	< 0.0040	0.84	8.2	---	87	< 0.50	---	270	120	---	170	39	---
	16-Sep-2017	100	< 0.50	9.8	36	< 0.50	30	< 0.060	9.9	< 0.0040	0.91	8.6	---	85	< 0.50	---	260	120	---	140	19	---

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
	16-Oct-2017	110	< 0.50	10	38	< 0.50	32	< 0.060	10	0.0068	0.90	9.2	---	90	< 0.50	---	280	120	---	190	13	---
	23-Jun-2018	92	< 1.0	7.5	34	< 1.0	28	< 0.060	8.5	< 0.0040	0.78	6.7	---	76	< 1.0	---	230	100	---	120	33	33
	13-Aug-2018	110	< 1.0	11	43	< 1.0	30	< 0.060	9.6	< 0.0040	0.77	8.5	---	89	< 1.0	---	280	110	---	180	19 [#3]	24
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	18-Oct-2018	98	< 1.0	11	34	< 1.0	28	< 0.060	9.3	0.018	0.92	9.4	---	80	< 1.0	---	260	110	---	140	170	52
	03-Jun-2019	93	< 1.0	8.2	32	< 1.0	26	< 0.060	8.4	< 0.0040	0.73	6.5	---	76	< 1.0	18	240	100	8.00	150	220	180
	25-Aug-2019	110	< 1.0	11	50	< 1.0	29	< 0.060	10	< 0.0040	0.80	8.3	---	88	< 1.0	6.9	270	110	8.15	160	22	25
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Oct-2019	100	< 1.0	10	36	< 1.0	29	< 0.060	9.7	< 0.0040	0.79	8.0	---	82	< 1.0	9.9	260	110	8.06	160	18	21
	03-Oct-2019	99	< 1.0	10	35	< 1.0	29	< 0.060	9.6	< 0.0040	0.81	8.0	---	81	< 1.0	13	260	110	8.07	160	19	21
	12-Jun-2020	100	< 1.0	7.1	32	< 1.0	26	< 0.060	7.5	< 0.0040	0.79	6.0	---	85	< 1.0	24	240	96	6.68	170	170 [#3]	110
	28-Jul-2020	100	< 1.0	7.3	35	< 1.0	28	< 0.060	8.4	< 0.0040	0.70	6.6	---	85	< 1.0	21	250	100	7.62	140	88	41
	22-Sep-2020	120	< 1.0	7.9	36	< 1.0	28	< 0.060	8.7	< 0.0040	0.81	6.7	---	95	< 1.0	14	260	110	7.66	160	29	16
	06-Jun-2021	110	< 1.0	5.9	30	< 1.0	29	0.085	8.4	< 0.0040	1.1	6.7	0.10	86	< 1.0	33	240	110	---	180	140	89
	18-Aug-2021	110	< 1.0	7.7	37	< 1.0	32	< 0.060	9.9	< 0.0040	0.91	7.5	0.098	86	< 1.0	16	260	120	---	190	250 [#3]	220
(Duplicate)	18-Aug-2021	100	< 1.0	7.4	37	< 1.0	30	< 0.060	9.1	< 0.0040	0.87	7.0	0.097	84	< 1.0	15	260	110	---	200	230 [#3]	240
	17-Sep-2021	100	< 1.0	8.1	36	< 1.0	30	< 0.060	9.0	< 0.0040	0.91	7.2	0.088	84	< 1.0	17	260	110	8.04	220	10	14
	12-Jun-2022	93	< 1.0	4.2	30	< 1.0	28	0.15	8.1	0.0088	1.1	5.0	0.084	76	< 1.0	37	220	100	7.45	170	440 [#3]	290 [#4]
	06-Aug-2022	110	< 1.0	8.3	38	< 1.0	33	< 0.060	10	0.0073	0.91	8.6	0.082	87	< 1.0	11	260	120	7.76	170	140	71
	24-Sep-2022	110	< 1.0	9.5	38	< 1.0	30	< 0.060	9.1	0.010	0.93	7.9	0.096	89	< 1.0	6.4	260	110	6.79	160	95	38
AEMP-07	21-Aug-2017	110	< 0.50	9.1	41	< 0.50	31	< 0.060	9.7	< 0.0040	0.79	8.1	---	88	< 0.50	---	270	120	---	170	35	---
(Duplicate)	21-Aug-2017	100	< 0.50	9.2	41	< 0.50	30	< 0.060	9.5	< 0.0040	0.82	8.0	---	86	< 0.50	---	270	110	---	180	37	---
	16-Sep-2017	100	< 0.50	9.7	35	< 0.50	30	< 0.060	9.8	< 0.0040	0.88	8.6	---	86	< 0.50	---	260	110	---	140	25	---
	16-Oct-2017	100	< 0.50	10	37	< 0.50	29	< 0.060	9.5	0.022	0.85	8.8	---	82	< 0.50	---	260	110	---	170	17	---
	23-Jun-2018	93	< 1.0	7.7	33	< 1.0	27	< 0.060	8.4	< 0.0040	0.78	6.9	---	76	< 1.0	---	230	100	---	120	43	44
	13-Aug-2018	110	< 1.0	11	43	< 1.0	31	< 0.060	10	< 0.0040	0.79	8.9	---	87	< 1.0	---	290	120	---	180	110	56
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Oct-2018	100	< 1.0	11	35	< 1.0	28	< 0.060	9.5	0.013	0.94	10	---	82	< 1.0	---	260	110	---	150	24	12
(Duplicate)	17-Oct-2018	100	< 1.0	12	36	< 1.0	28	< 0.060	9.6	0.018	0.94	10	---	83	< 1.0	---	260	110	---	150	27	22
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	100	< 1.0	8.8	35	< 1.0	28	< 0.060	8.6	0.0098	0.81	8.7	---	82	< 1.0	18	260	100	8.16	170	230	190
	25-Aug-2019	100	< 1.0	11	38	< 1.0	29	< 0.060	10	< 0.0040	0.81	8.2	---	85	< 1.0	5.9	270	110	8.12	160	18	22
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Oct-2019	100	< 1.0	9.7	35	< 1.0	29	< 0.060	9.6	0.029	0.78	7.9	---	85	< 1.0	8.9	260	110	8.03	140	920	120
	10-Jun-2020	97	< 1.0	7.3	31	< 1.0	26	< 0.060	7.3	< 0.0040	0.73	5.9	---	79	< 1.0	25	230	95	6.83	88	250 [#3]	93

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
	24-Jul-2020	97	< 1.0	7.3	37	< 1.0	29	< 0.060	8.8	< 0.0040	0.77	6.9	---	79	< 1.0	22	260	110	7.98	150	92	41
	24-Jul-2020	100	< 1.0	7.3	37	< 1.0	29	< 0.060	8.8	< 0.0040	0.78	6.8	---	82	< 1.0	22	260	110	7.92	150	88	40
	18-Sep-2020	100	< 1.0	7.4	34	< 1.0	33	< 0.060	9.1	< 0.0040	0.73	7.0	---	82	< 1.0	16	260	120	8.09	200	36	19
	18-Sep-2020	110	< 1.0	7.2	34	< 1.0	30	< 0.060	8.8	< 0.0040	0.84	7.1	---	88	< 1.0	15	260	110	8.07	120	36	17
	06-Jun-2021	130	< 1.0	6.2	27	< 1.0	30	0.17	8.5	0.0073	1.1	6.7	0.095	100	< 1.0	32	240	110	---	140	120	90
	18-Aug-2021	100	< 1.0	6.9	37	< 1.0	32	< 0.060	9.7	0.0044	1.0	7.4	0.097	85	< 1.0	16	260	120	---	200	230 [#3]	220
	17-Sep-2021	110	< 1.0	8.2	36	< 1.0	34	< 0.060	10	< 0.0040	0.95	7.7	0.11	94	< 1.0	15	260	130	8.07	190	21	22
	12-Jun-2022	110	< 1.0	5.0	36	< 1.0	32	0.076	9.4	0.0059	1.2	6.4	0.085	87	< 1.0	34	250	120	7.64	180	270 [#3]	97 [#4]
	06-Aug-2022	110	< 1.0	7.4	38	< 1.0	30	< 0.060	8.5	0.067	0.94	7.4	0.084	87	< 1.0	13	260	110	7.69	180	160	80 [#4]
(Duplicate)	06-Aug-2022	110	< 1.0	9.1	37	< 1.0	30	< 0.060	8.8	0.069	0.94	7.6	0.084	86	< 1.0	14	260	110	7.77	180	34	15
	24-Sep-2022	110	< 1.0	9.4	37	< 1.0	31	< 0.060	9.1	0.068	0.95	8.1	0.10	93	< 1.0	7.1	260	110	7.07	160	430	180
(Duplicate)	24-Sep-2022	110	< 1.0	9.4	36	< 1.0	31	< 0.060	9.4	0.073	0.96	8.3	0.10	88	< 1.0	8.5	260	120	6.90	160	440	160
AEMP-08	17-Aug-2017	120	< 0.50	7.1	54	< 0.50	40	< 0.060	12	< 0.0040	0.93	7.8	---	96	< 0.50	---	310	150	---	180	33	---
	21-Aug-2017	110	< 0.50	9.4	42	< 0.50	31	< 0.060	9.9	< 0.0040	0.83	8.4	---	88	< 0.50	---	280	120	---	160	31	---
	16-Sep-2017	110	< 0.50	10	38	< 0.50	33	< 0.060	10	0.0041	0.83	8.8	---	86	< 0.50	---	270	130	---	150	110	---
	16-Oct-2017	100	< 0.50	9.9	44	< 0.50	30	< 0.060	10	0.0049	0.89	8.8	---	82	< 0.50	---	270	120	---	130	29	---
	23-Jun-2018	97	< 1.0	8.9	36	< 1.0	26	0.20	8.1	0.011	0.72	6.3	---	79	< 1.0	---	250	99	---	140	51	33
	13-Aug-2018	110	< 1.0	11	45	< 1.0	33	< 0.060	11	< 0.0040	0.83	10	---	90	< 1.0	---	290	130	---	200	29	---
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Oct-2018	100	< 1.0	11	40	< 1.0	31	< 0.060	11	< 0.0040	0.92	9.4	---	85	< 1.0	---	270	120	---	160	5.3	2.2
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	110	< 1.0	8.7	39	< 1.0	31	< 0.060	10	0.0048	0.82	7.4	---	87	< 1.0	17	280	120	8.07	190	130	97
	28-Aug-2019	110	< 1.0	9.4	47	< 1.0	34	< 0.060	11	< 0.0040	0.84	8.5	---	94	< 1.0	14	300	130	8.17	180	22	17
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Oct-2019	110	< 1.0	10	43	< 1.0	32	< 0.060	11	< 0.0040	0.81	8.5	---	89	< 1.0	8.9	290	120	---	150	18	20
	10-Jun-2020	69	< 1.0	5.9	24	< 1.0	26	< 0.060	7.4	< 0.0040	0.73	5.9	---	57	< 1.0	15	180	96	6.76	130	220 [#3]	100
	24-Jul-2020	95	< 1.0	7.3	36	< 1.0	29	< 0.060	8.9	< 0.0040	0.77	6.9	---	78	< 1.0	19	260	110	8.03	150	74	39
	18-Sep-2020	100	< 1.0	7.7	36	< 1.0	32	< 0.060	8.8	< 0.0040	0.54	6.9	---	82	< 1.0	15	260	120	7.91	160	25	17
	06-Jun-2021	120	< 1.0	6.1	30	< 1.0	29	0.066	8.4	< 0.0040	1.0	6.7	0.094	100	< 1.0	29	240	110	---	210	110	83
	18-Aug-2021	110	< 1.0	7.9	41	< 1.0	33	< 0.060	10	< 0.0040	0.93	7.8	0.11	90	< 1.0	18	270	120	---	210	230 [#3]	200
	17-Sep-2021	110	< 1.0	8.7	41	< 1.0	35	< 0.060	11	< 0.0040	0.95	8.2	0.090	92	< 1.0	14	270	130	8.07	180	19	18
	31-Mar-2022	---	---	---	---	---	25	< 0.060	9.1	< 0.0040	0.93	8.3	---	---	---	4.5	---	---	7.94	120	< 1.0	2
	12-Jun-2022	96	< 1.0	3.9	32	< 1.0	29	0.064	8.0	< 0.0040	1.1	5.1	0.085	79	< 1.0	37	220	110	7.52	150	270 [#3]	97 [#4]
	06-Aug-2022	110	< 1.0	8.9	40	< 1.0	32	0.34	9.5	0.030	0.95	7.9	0.085	87	< 1.0	11	270	120	7.76	180	160	80 [#4]
	25-Sep-2022	120	< 1.0	10	36	< 1.0	30	< 0.060	9.3	< 0.0040	0.88	7.9	0.10	96	< 1.0	6.0	260	110	6.90	170	34	15

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

		Anions					Cations							General								
Sampling Location	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
AEMP-09	21-Aug-2017	110	< 0.50	9.5	43	< 0.50	31	< 0.060	10	0.013	0.82	8.5	---	89	< 0.50	---	280	120	---	180	130	---
	16-Sep-2017	110	< 0.50	11	44	< 0.50	38	< 0.060	11	0.019	0.86	9.7	---	90	< 0.50	---	300	140	---	170	16 [#3]	---
	16-Oct-2017	160	< 0.50	16	45	< 0.50	36	< 0.060	12	0.092	1.0	26	---	130	< 0.50	---	380	140	---	200	290 [#3]	---
	23-Jun-2018	96	< 1.0	8.2	34	< 1.0	28	< 0.060	8.6	< 0.0040	0.81	7.3	---	78	< 1.0	---	240	110	---	140	200	64
	12-Aug-2018	110	< 1.0	12	44	< 1.0	35	0.20	11	0.020	0.93	11	---	94	< 1.0	---	300	130	---	190	45	---
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Oct-2018	120	< 1.0	13	42	< 1.0	31	< 0.060	11	0.019	0.91	12	---	100	< 1.0	---	310	120	---	170	74	5.3
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	02-Jun-2019	100	< 1.0	7.3	34	< 1.0	32	< 0.060	9.4	0.021	0.84	8.5	---	86	< 1.0	19	270	120	8.05	190	240 [#14]	180
	28-Aug-2019	120	< 1.0	9.5	40	< 1.0	33	< 0.060	11	0.0078	0.83	10	---	94	< 1.0	15	290	130	8.07	180	18	19
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Oct-2019	110	< 1.0	9.9	41	< 1.0	31	< 0.060	10	0.0071	0.83	9.6	---	88	< 1.0	9.9	280	120	---	160	38	35
	10-Jun-2020	110	< 1.0	15	34	< 1.0	27	< 0.060	7.6	0.0041	0.77	7.3	---	91	< 1.0	37	240	98	7.08	170	180 [#3]	90
	24-Jul-2020	210	6.2	25	160	< 1.0	80	< 0.060	29	0.0054	1.1	23	---	180	5.2	11	710	320	8.44	470	< 1.0	0.23
	18-Sep-2020	120	< 1.0	7.8	36	< 1.0	32	< 0.060	8.9	0.0093	0.63	8.4	---	96	< 1.0	15	270	120	7.53	160	180	7.8
	06-Jun-2021	120	< 1.0	5.4	25	< 1.0	30	< 0.060	8.4	< 0.0040	1.1	7.0	0.096	100	< 1.0	27	240	110	---	200	89	74
	18-Aug-2021	110	< 1.0	7.7	37	< 1.0	32	< 0.060	10	< 0.0040	0.90	7.6	0.094	91	< 1.0	20	260	120	---	200	320 [#3]	250
	17-Sep-2021	110	< 1.0	8.8	37	< 1.0	33	< 0.060	9.7	0.0094	0.94	9.2	0.094	93	< 1.0	15	290	120	7.99	210	14	15
	11-Jun-2022	96	< 1.0	4.3	30	< 1.0	28	< 0.060	8.0	0.0050	1.0	5.2	0.083	79	< 1.0	34	220	100	7.67	160	660 [#3]	300 [#4]
	05-Aug-2022	120	< 1.0	9.5	41	< 1.0	34	< 0.060	9.9	0.027	1.0	10	0.091	97	< 1.0	9.6	280	130	7.70	180	140	100
	24-Sep-2022	110	< 1.0	10	36	< 1.0	32	< 0.060	9.9	0.041	0.97	9.9	0.10	91	< 1.0	6.9	280	120	7.09	170	470	140
AEMP-10	23-Jun-2018	99	< 1.0	7.3	38	< 1.0	31	< 0.060	8.7	< 0.0040	0.79	6.1	---	81	< 1.0	---	250	110	---	140	39	40
	14-Aug-2018	120	< 1.0	8.6	49	< 1.0	36	< 0.060	11	< 0.0040	0.83	7.7	---	97	< 1.0	---	310	130	---	180	59	51
(Duplicate)	14-Aug-2018	120	< 1.0	8.6	49	< 1.0	37	0.28	11	0.018	0.93	7.7	---	96	< 1.0	---	310	140	---	170	66	51
	18-Oct-2018	100	< 1.0	11	33	< 1.0	28	< 0.060	9.5	0.0099	0.91	9.7	---	85	< 1.0	---	260	110	---	150	39	12
	10-Jun-2019	96	< 1.0	6.2	35	< 1.0	30	< 0.060	7.6	< 0.0040	0.78	5.7	---	79	< 1.0	20	240	110	8.06	170	150	120
	26-Aug-2019	120	< 1.0	11	50	< 1.0	35	< 0.060	11	< 0.0040	0.86	8.1	---	98	< 1.0	11	310	130	8.12	180	46	43
	01-Oct-2019	120	< 1.0	9.9	60	< 1.0	39	< 0.060	11	< 0.0040	0.90	8.9	---	100	< 1.0	21	320	140	8.04	230	32	75
	12-Jun-2020	110	< 1.0	5.1	35	< 1.0	30	< 0.060	7.9	< 0.0040	0.78	5.4	---	87	< 1.0	31	240	110	6.84	180	280 [#3]	92
	28-Jul-2020	110	< 1.0	6.2	52	< 1.0	32	< 0.060	8.8	< 0.0040	0.72	6.1	---	90	< 1.0	21	280	120	7.75	170	110	51
	22-Sep-2020	110	< 1.0	7.1	40	< 1.0	35	0.17	9.7	0.0077	0.90	6.8	---	93	< 1.0	20	290	130	8.14	200 [#6]	48	21
	07-Jun-2021	140	< 1.0	6.3	34	< 1.0	30	< 0.060	7.6	< 0.0040	1.0	6.1	0.092	110	< 1.0	31	250	110	7.19	130 [#6]	110	79
	19-Aug-2021	110	< 1.0	7.1	40	< 1.0	37	< 0.060	11	< 0.0040	1.0	7.6	0.091	91	< 1.0	27	280	140	---	190	170 [#3]	160
	18-Sep-2021	140	< 1.0	7.5	42	< 1.0	33	< 0.060	9.0	< 0.0040	0.91	7.5	0.10	120	< 1.0	19	290	120	---	200	53	40
	10-Aug-2022	110	< 1.0	7.9	38	< 1.0	34	< 0.060	9.9	< 0.0040	0.97	7.7	0.089	90	< 1.0	9.3	270	120	7.68	160	52	40

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	120	---	---	---	0.3	---	0.2	---	---		---	---	---	---	---	(6.5 - 9)	---	---	---
AEMP-11	23-Jun-2018	96	< 1.0	6.8	35	< 1.0	29	< 0.060	8.4	< 0.0040	0.82	6.4	---	79	< 1.0	---	240	110	---	140	78	37
	14-Aug-2018	110	< 1.0	9.3	44	< 1.0	37	< 0.060	10	0.0043	0.79	7.6	---	91	< 1.0	---	290	130	---	180	61	45
	18-Oct-2018	110	< 1.0	12	36	< 1.0	29	< 0.060	9.3	< 0.0040	0.96	9.3	---	88	< 1.0	---	280	110	---	150	81	23
	10-Jun-2019	92	< 1.0	7.7	31	< 1.0	28	< 0.060	7.6	< 0.0040	0.75	5.8	---	76	< 1.0	20	230	100	7.99	160	200	120
	26-Aug-2019	120	< 1.0	9.8	60	< 1.0	35	< 0.060	11	< 0.0040	0.85	8.1	---	98	< 1.0	9.8	310	130	8.18	180	47	43
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	01-Oct-2019	110	< 1.0	10	56	< 1.0	37	0.91 [#17]	11	0.054	0.92	9.6	---	94	< 1.0	18	320	140	8.27	200	130	120
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	12-Jun-2020	120	< 1.0	5.4	33	< 1.0	29	< 0.060	7.7	< 0.0040	0.82	5.7	---	97	< 1.0	29 [#16]	230	100	6.69	180	700 [#3]	650
	28-Jul-2020	110	< 1.0	5.8	39	< 1.0	33	< 0.060	8.9	< 0.0040	0.79	6.4	---	92	< 1.0	20	270	120	7.71	160	110	27
	22-Sep-2020	130	< 1.0	7.1	38 [#11]	< 1.0	32	< 0.060	9.1	< 0.0040	0.86	6.7	---	110	< 1.0	18	280	120	7.63	88	43	20
	07-Jun-2021	110	< 1.0	6.3	31	< 1.0	29	< 0.060	7.4	< 0.0040	1.1	6.1	0.10	91	< 1.0	38	250	100	7.75	100 [#6]	110	71
	19-Aug-2021	110	< 1.0	6.7	40	< 1.0	31	< 0.060	8.6	< 0.0040	0.90	6.8	0.090	89	< 1.0	28	270	110	---	180	190 [#3]	160
(Duplicate)	19-Aug-2021	110	< 1.0	6.6	39	< 1.0	32	< 0.060	8.6	< 0.0040	0.90	6.8	0.094	90	< 1.0	25	270	110	---	170	250 [#3]	160
	18-Sep-2021	130	< 1.0	7.8	37	< 1.0	34	< 0.060	9.7	< 0.0040	0.95	7.8	0.10	110	< 1.0	21	280	130	---	200	60	43
	10-Aug-2022	110	< 1.0	8.2	38	< 1.0	32	< 0.060	9.3	< 0.0040	0.94	7.4	0.093	88	< 1.0	9.1	260	120	7.65	160	91	49
AEMP-12	23-Jun-2018	99	< 1.0	8.2	40	< 1.0	31	< 0.060	9.4	< 0.0040	0.79	7.3	---	81	< 1.0	---	260	120	---	130	23	23
	14-Aug-2018	130	< 1.0	11	59	< 1.0	42	< 0.060	14	0.012	0.91	11	---	110	< 1.0	---	350	160	---	190	86	33
	15-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Oct-2018	180	< 1.0	15	120	< 1.0	62	< 0.060	25	0.0054	0.99	15	---	150	< 1.0	---	530	260	---	340	21	2.9
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Jun-2019	130	< 1.0	10	57	< 1.0	38	< 0.060	13	0.0071	0.81	9.1	---	100	< 1.0	18	350	150	8.10	230	93	74
	28-Aug-2019	120	< 1.0	10	46	< 1.0	34	< 0.060	12	< 0.0040	0.84	9.1	---	95	< 1.0	12	310	130	8.18	190	16	16
(Duplicate)	28-Aug-2019	110	< 1.0	10	48	< 1.0	34	< 0.060	12	0.0072	0.84	9.1	---	94	< 1.0	62	300	140	8.19	180	13	17
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	03-Oct-2019	110	< 1.0	11	45	< 1.0	32	< 0.060	11	0.0042	0.80	8.7	---	92	< 1.0	9.9	290	130	8.19	140	13	16
	10-Jun-2020	210	< 1.0	16	130	< 1.0	69	< 0.060	24	0.012	0.95	13	---	170	< 1.0	15	590	270	8.18	310	64	20
	24-Jul-2020	130	< 1.0	11	60	< 1.0	40	< 0.060	13	0.0083	0.86	11	---	100	< 1.0	19	360	160	8.14	200	49	33
	18-Sep-2020	220	< 1.0	22	160	< 1.0	78	< 0.060	29	0.019	1.1	21	---	180	< 1.0	7.6	690	320	8.27	450	4.2	1.5
	07-Jun-2021	180	< 1.0	12	65	< 1.0	46	< 0.060	15	0.0071	0.91	10	0.16	140	< 1.0	29	420	180	7.69	340	23	22
	18-Aug-2021	180	< 1.0	24	130	< 1.0	70	< 0.060	26	0.0094	1.3	23	0.18	150	< 1.0	13	590	280	---	410	25	37
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	110	< 1.0	11	49	< 1.0	33	< 0.060	11	< 0.0040	0.92	8.9	0.097	91	< 1.0	16	310	130	7.97	240	12	22
	31-Mar-2022	---	---	---	---	---	24	< 0.060	8.5	< 0.0040	0.9	8.1	---	---	---	4.4	---	---	7.94	110	3.8	2.8
	12-Jun-2022	160	< 1.0	13	88	< 1.0	54	< 0.060	19	0.034	1.0	12	0.13	130	< 1.0	17	440	210	7.98	280	400 [#3]	220 [#4]
	05-Aug-2022	150	< 1.0	16	78	< 1.0	48	< 0.060	16	0.0063	0.98	14	0.14	120	< 1.0	9.0	430	190	8.16	260	7.5	14
	26-Sep-2022	120	< 1.0	12	48	< 1.0	33	< 0.060	11	0.0096	0.90	9.2	0.11	95	< 1.0	6.6	300	130	7.04	180	55	24

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
(Duplicate)	26-Sep-2022	130	< 1.0	11	46	< 1.0	33	< 0.060	11	0.0079	0.90	9.4	0.11	100	< 1.0	5.9	300	130	7.06	180	33	19
AEMP-13	14-Aug-2018	120	< 1.0	10	60	< 1.0	41	**0.32** [#17]	12	0.042	0.92	8.5	---	100	< 1.0	---	350	150	---	200	220	83
	18-Oct-2018	150	< 1.0	14	51	< 1.0	43	< 0.060	12	0.040	1.1	11	---	120	< 1.0	---	370	160	---	210	23	19
	02-Jun-2019	100	< 1.0	6.5	41	< 1.0	35	< 0.060	9.4	0.0065	0.91	6.6	---	84	< 1.0	20	270	130	8.09	180	330 [#14]	230
	27-Aug-2019	150	< 1.0	9.6	62	< 1.0	43	< 0.060	13	0.022	0.96	8.8	---	130	< 1.0	14	380	160	8.15	240	10	35
	02-Oct-2019	250	< 1.0	9.7	72	< 1.0	79	< 0.060	22	**0.68** [#17]	1.6	8.7	---	210	< 1.0	18	520	290	8.03	350	16	61
	11-Jun-2020	160	< 1.0	4.9	34	< 1.0	38	0.13	9.4	0.035	1.3	4.4	---	130	< 1.0	30	300	130	7.09	200	87	50
(Duplicate)	11-Jun-2020	160	< 1.0	4.8	33	< 1.0	38	0.13	9.5	0.035	1.3	4.6	---	130	< 1.0	28	300	140	7.06	170	74	33
	26-Jul-2020	140	< 1.0	5.4	50	< 1.0	47	0.25	13	0.12	1.0	5.5	---	120	< 1.0	23	350	170	8.21	170	61	48
(Duplicate)	26-Jul-2020	170	< 1.0	5.0	40	< 1.0	46	0.16	13	0.10	1.0	5.6	---	140	< 1.0	26	370	170	8.20	140	78	34
	16-Sep-2020	130	< 1.0	6.9	64	< 1.0	44	< 0.060	12	0.025	0.87	7.1	---	110	< 1.0	30	320	160	7.97	210	150	57
(Duplicate)	16-Sep-2020	140	< 1.0	6.9	59	< 1.0	44	< 0.060	12	0.021	0.89	7.0	---	110	< 1.0	95 [#11]	330	160	7.86	210	100	46
	07-Jun-2021	140	< 1.0	3.2	31	< 1.0	43	0.16	9.5	0.032	1.3	3.6	---	120	< 1.0	28	300	150	---	260	11	14
	19-Aug-2021	110	< 1.0	5.9	46	< 1.0	40	< 0.060	12	0.010	0.97	7.1	0.094	93	< 1.0	26	300	150	---	160	1000 [#3]	190
	18-Sep-2021	140	< 1.0	8.0	48	< 1.0	38	< 0.060	11	< 0.0040	0.98	8.2	0.11	120	< 1.0	22	310	140	---	220	72	60
	31-Mar-2022	---	---	---	---	---	48	< 0.060	13	< 0.0040	1.4	13	---	---	---	12	---	---	7.83	140	12	15
(Duplicate)	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13	---	---	8.02	190	6.2	12
	14-Jun-2022	130	< 1.0	3.2	32	< 1.0	33	< 0.060	8.7	0.0080	0.96	4.0	0.087	100	< 1.0	37	260	120	7.61	180	150 [#3]	170 [#4]
(Duplicate)	14-Jun-2022	130	< 1.0	2.9	32	< 1.0	33	0.061	8.6	0.0078	0.97	3.9	0.091	110	< 1.0	37	270	120	7.76	190	170 [#3]	220 [#4]
	05-Aug-2022	120	< 1.0	7.3	48	< 1.0	39	< 0.060	12	0.0096	1.1	10	0.099	99	< 1.0	12	300	150	7.73	200	15	26
	25-Sep-2022	210	< 1.0	9.6	51	< 1.0	57	< 0.060	16	0.33	1.2	8.4	0.090	170	< 1.0	11	440	210	7.33	270	12	14
AEMP-01	07-Jun-2021	110	< 1.0	5.8	35	< 1.0	32	< 0.060	8.5	< 0.0040	1.1	6.4	---	91	< 1.0	33	260	120	---	240	140	72
(Duplicate)	07-Jun-2021	110	< 1.0	5.8	34	< 1.0	33	0.070	8.6	< 0.0040	1.1	6.4	---	87	< 1.0	32	260	120	---	210	120	78
RPD(%)		**0.0%**	---	**0.0%**	**2.9%**	---	**3.1%**	---	**1.2%**	---	**0.0%**	**0.0%**	---	**4.5%**	---	**3.1%**	**0.0%**	**0.0%**	---	**13.3%**	**15.4%**	**8.0%**
AEMP-01	06-Aug-2022	110	< 1.0	7.1	47	< 1.0	38	< 0.060	11	< 0.0040	1.1	8.0	0.090	94	< 1.0	14	290	140	7.75	200	63	45
(Duplicate)	06-Aug-2022	130	< 1.0	6.8	49	< 1.0	36	< 0.060	9.6	< 0.0040	1.0	7.4	0.090	110	< 1.0	14	300	130	7.76	190	92	49
RPD(%)		**16.7%**	---	**4.3%**	**4.2%**	---	**5.4%**	---	**13.6%**	---	**9.5%**	**7.8%**	**0%**	**15.7%**	---	**0.0%**	**3.4%**	**7.4%**	**0.1%**	**5.1%**	**37.4%**	**8.5%**
AEMP-02	16-Sep-2017	220	< 0.50	19	130	< 0.50	80	< 0.060	29	0.0081	1.0	18	---	180	< 0.50	---	630	320	---	390	2.7	---
(Duplicate)	16-Sep-2017	220	< 0.50	19	130	< 0.50	79	< 0.060	29	0.0078	0.96	18	---	180	< 0.50	---	630	320	---	380	1.3	---
RPD(%)		**0.0%**	---	**0.0%**	**0.0%**	---	**1.3%**	---	**0.0%**	**3.8%**	**4.1%**	**0.0%**	---	**0.0%**	---	---	**0.0%**	**0.0%**	---	**2.6%**	**70.0%**	---
AEMP-02	03-Jun-2019	190	< 1.0	17	120	< 1.0	65	< 0.060	24	0.0050	0.85	14	---	160	< 1.0	16	560	260	8.21	350	4.7	3.7
(Duplicate)	03-Jun-2019	190	< 1.0	17	120	< 1.0	65	< 0.060	24	0.0049	0.84	14	---	160	< 1.0	18	560	260	8.18	360	4.0	4.1
RPD(%)		**0.0%**	---	**0.0%**	**0.0%**	---	**0.0%**	---	**0.0%**	**2.0%**	**1.2%**	**0.0%**	---	**0.0%**	---	**11.8%**	**0.0%**	**0.0%**	**0.4%**	**2.8%**	**16.1%**	**10.3%**

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	**120**	---	---	---	**0.3**	---	**0.2**	---	---		---	---	---	---	---	**(6.5 - 9)**	---	---	---
AEMP-04	16-Oct-2017	210	< 1.0	21	150	< 1.0	75	< 0.060	30	0.0050	0.98	19	---	170	< 1.0	---	660	310	---	420	6.0	---
(Duplicate)	16-Oct-2017	220	< 1.0	21	150	< 1.0	75	< 0.060	30	0.0051	0.97	19	---	180	< 1.0	---	660	310	---	440	6.7	---
RPD(%)		**4.7%**	---	**0.0%**	**0.0%**	---	**0.0%**	---	**0.0%**	**2.0%**	**1.0%**	**0.0%**	---	**5.7%**	---	---	**0.0%**	**0.0%**	---	**4.7%**	**11.0%**	---
AEMP-04	23-Jun-2018	230	< 1.0	20	140	< 1.0	76	< 0.060	28	0.0070	1.1	18	---	180	< 1.0	---	640	300	---	380	4.7	1.4
(Duplicate)	23-Jun-2018	230	< 1.0	19	140	< 1.0	71	< 0.060	26	0.0066	1.0	17	---	190	< 1.0	---	640	280	---	390	4.7	1.1
RPD(%)		**0.0%**	---	**5.1%**	**0.0%**	---	**6.8%**	---	**7.4%**	**5.9%**	**9.5%**	**5.7%**	---	**5.4%**	---	---	**0.0%**	**6.9%**	---	**2.6%**	**0.0%**	**24.0%**
AEMP-04	10-Jun-2020	210	< 1.0	15	130	< 1.0	70	< 0.060	25	< 0.0040	0.92	12	---	170	< 1.0	14	590	280	8.23	400	9.5	1.4
(Duplicate)	10-Jun-2020	210	< 1.0	16	130	< 1.0	71	< 0.060	24	< 0.0040	0.99	13	---	170	< 1.0	13	590	280	8.24	380	9.1	2.3
RPD(%)		**0.0%**	---	**6.5%**	**0.0%**	---	**1.4%**	---	**4.1%**	---	**7.3%**	**8.0%**	---	**0.0%**	---	**7.4%**	**0.0%**	**0.0%**	**0.1%**	**5.1%**	**4.3%**	**48.6%**
AEMP-04	11-Jun-2022	200	< 1.0	19	120	< 1.0	71	< 0.060	27	< 0.0040	1.1	16	0.18	160	< 1.0	11	580	290	8.21	370	1.6	1.2
(Duplicate)	11-Jun-2022	200	< 1.0	18	120	< 1.0	71	< 0.060	27	< 0.0040	1.1	16	0.18	170	< 1.0	13	580	290	8.22	360	< 0.97	1.2
RPD(%)		**0.0%**	---	**5.4%**	**0.0%**	---	**0.0%**	---	**0.0%**	---	**0.0%**	**0.0%**	**0**	**6.1%**	---	**16.7%**	**0.0%**	**0.0%**	**0.1%**	**2.7%**	---	**0.0%**
AEMP-06	18-Aug-2021	110	< 1.0	7.7	37	< 1.0	32	< 0.060	9.9	< 0.0040	0.91	7.5	0.098	86	< 1.0	16	260	120	---	190	250 [#3]	220
(Duplicate)	18-Aug-2021	100	< 1.0	7.4	37	< 1.0	30	< 0.060	9.1	< 0.0040	0.87	7.0	0.097	84	< 1.0	15	260	110	---	200	230 [#3]	240
RPD(%)		**9.5%**	---	**4.0%**	**0.0%**	---	**6.5%**	---	**8.4%**	---	**4.5%**	**6.9%**	**1.0%**	**2.4%**	---	**6.5%**	**0.0%**	**8.7%**	---	**5.1%**	**8.3%**	**8.7%**
AEMP-07	21-Aug-2017	110	< 0.50	9.1	41	< 0.50	31	< 0.060	9.7	< 0.0040	0.79	8.1	---	88	< 0.50	---	270	120	---	170	35	---
(Duplicate)	21-Aug-2017	100	< 0.50	9.2	41	< 0.50	30	< 0.060	9.5	< 0.0040	0.82	8.0	---	86	< 0.50	---	270	110	---	180	37	---
RPD(%)		**9.5%**	---	**1.1%**	**0.0%**	---	**3.3%**	---	**2.1%**	---	**3.7%**	**1.2%**	---	**2.3%**	---	---	**0.0%**	**8.7%**	---	**5.7%**	**5.6%**	---
AEMP-07	17-Oct-2018	100	< 1.0	11	35	< 1.0	28	< 0.060	9.5	0.013	0.94	10	---	82	< 1.0	---	260	110	---	150	24	12
(Duplicate)	17-Oct-2018	100	< 1.0	12	36	< 1.0	28	< 0.060	9.6	0.018	0.94	10	---	83	< 1.0	---	260	110	---	150	27	22
RPD(%)		**0.0%**	---	**8.7%**	**2.8%**	---	**0.0%**	---	**1.0%**	**32.3%**	**0.0%**	**0.0%**	---	**1.2%**	---	---	**0.0%**	**0.0%**	---	**0.0%**	**11.8%**	**58.8%**
AEMP-07	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
(Duplicate)	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
RPD(%)		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
AEMP-07	06-Aug-2022	110	< 1.0	7.4	38	< 1.0	30	< 0.060	8.5	0.067	0.94	7.4	0.084	87	< 1.0	13	260	110	7.69	180	160	80 [#4]
(Duplicate)	06-Aug-2022	110	< 1.0	9.1	37	< 1.0	30	< 0.060	8.8	0.069	0.94	7.6	0.084	86	< 1.0	14	260	110	7.77	180	34	15
RPD(%)		**0.0%**	---	**20.6%**	**2.7%**	---	**0.0%**	---	**3.5%**	**2.9%**	**0.0%**	**2.7%**	**0**	**1.2%**	---	**7.4%**	**0.0%**	**0.0%**	**1.0%**	**0.0%**	**129.9%**	**137%**
AEMP-07	24-Sep-2022	110	< 1.0	9.4	37	< 1.0	31	< 0.060	9.1	0.068	0.95	8.1	0.10	93	< 1.0	7.1	260	110	7.07	160	430	180
(Duplicate)	24-Sep-2022	110	< 1.0	9.4	36	< 1.0	31	< 0.060	9.4	0.073	0.96	8.3	0.10	88	< 1.0	8.5	260	120	6.90	160	440	160
RPD(%)		**0.0%**	---	**0.0%**	**2.7%**	---	**0.0%**	---	**3.2%**	**7.1%**	**1.0%**	**2.4%**	**0.0%**	**5.5%**	---	**17.9%**	**0.0%**	**8.7%**	**2.4%**	**0.0%**	**2.3%**	**12%**
AEMP-10	14-Aug-2018	120	< 1.0	8.6	49	< 1.0	36	< 0.060	11	< 0.0040	0.83	7.7	---	97	< 1.0	---	310	130	---	180	59	51
(Duplicate)	14-Aug-2018	120	< 1.0	8.6	49	< 1.0	37	0.28	11	0.018	0.93	7.7	---	96	< 1.0	---	310	140	---	170	66	51
RPD(%)		**0.0%**	---	**0.0%**	**0.0%**	---	**2.7%**	---	**0.0%**	---	**11.4%**	**0.0%**	---	**1.0%**	---	---	**0.0%**	**7.4%**	---	**5.7%**	**11.2%**	**0.0%**

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Anions					Cations							General								
		Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	120	---	---	---	0.3	---	0.2	---	---		---	---	---	---	---	(6.5 - 9)	---	---	---
AEMP-11	19-Aug-2021	110	< 1.0	6.7	40	< 1.0	31	< 0.060	8.6	< 0.0040	0.90	6.8	0.090	89	< 1.0	28	270	110	---	180	190 [#3]	160
(Duplicate)	19-Aug-2021	110	< 1.0	6.6	39	< 1.0	32	< 0.060	8.6	< 0.0040	0.90	6.8	0.094	90	< 1.0	25	270	110	---	170	250 [#3]	160
RPD(%)		**0.0%**	---	**1.5%**	**2.5%**	---	**3.2%**	---	**0.0%**	---	**0.0%**	**0.0%**	**4.3%**	**1.1%**	---	**11.3%**	**0.0%**	**0.0%**	---	**5.7%**	**27.3%**	**0.0%**
AEMP-12	28-Aug-2019	120	< 1.0	10	46	< 1.0	34	< 0.060	12	< 0.0040	0.84	9.1	---	95	< 1.0	12	310	130	8.18	190	16	16
(Duplicate)	28-Aug-2019	110	< 1.0	10	48	< 1.0	34	< 0.060	12	0.0072	0.84	9.1	---	94	< 1.0	62	300	140	8.19	180	13	17
RPD(%)		**8.7%**	---	**0.0%**	**4.3%**	---	**0.0%**	---	**0.0%**	---	**0.0%**	**0.0%**	---	**1.1%**	---	**135.1%**	**3.3%**	**7.4%**	**0.1%**	**5.4%**	**20.7%**	**6.1%**
AEMP-12	26-Sep-2022	120	< 1.0	12	48	< 1.0	33	< 0.060	11	0.0096	0.90	9.2	0.11	95	< 1.0	6.6	300	130	7.04	180	55	24
(Duplicate)	26-Sep-2022	130	< 1.0	11	46	< 1.0	33	< 0.060	11	0.0079	0.90	9.4	0.11	100	< 1.0	5.9	300	130	7.06	180	33	19
RPD(%)		**8.0%**	---	**8.7%**	**4.3%**	---	**0.0%**	---	**0.0%**	**19.4%**	**0.0%**	**2.2%**	**0.0%**	**5.1%**	---	**11.2%**	**0.0%**	**0.0%**	**0.3%**	**0.0%**	**50.0%**	**23.3%**
AEMP-13	11-Jun-2020	160	< 1.0	4.9	34	< 1.0	38	0.13	9.4	0.035	1.3	4.4	---	130	< 1.0	30	300	130	7.09	200	87	50
(Duplicate)	11-Jun-2020	160	< 1.0	4.8	33	< 1.0	38	0.13	9.5	0.035	1.3	4.6	---	130	< 1.0	28	300	140	7.06	170	74	33
RPD(%)		**0.0%**	---	**2.1%**	**3.0%**	---	**0.0%**	**0.0%**	**1.1%**	**0.0%**	**0.0%**	**4.4%**	---	**0.0%**	---	**6.9%**	**0.0%**	**7.4%**	**0.4%**	**16.2%**	**16.1%**	**41.0%**
AEMP-13	26-Jul-2020	140	< 1.0	5.4	50	< 1.0	47	0.25	13	0.12	1.0	5.5	---	120	< 1.0	23	350	170	8.21	170	61	48
(Duplicate)	26-Jul-2020	170	< 1.0	5.0	40	< 1.0	46	0.16	13	0.10	1.0	5.6	---	140	< 1.0	26	370	170	8.20	140	78	34
RPD(%)		**19.4%**	---	**7.7%**	**22.2%**	---	**2.2%**	**43.9%**	**0.0%**	**18.2%**	**0.0%**	**1.8%**	---	**15.4%**	---	**12.2%**	**5.6%**	**0.0%**	**0.1%**	**19.4%**	**24.5%**	**34.1%**
AEMP-13	16-Sep-2020	130	< 1.0	6.9	64	< 1.0	44	< 0.060	12	0.025	0.87	7.1	---	110	< 1.0	30	320	160	7.97	210	150	57
(Duplicate)	16-Sep-2020	140	< 1.0	6.9	59	< 1.0	44	< 0.060	12	0.021	0.89	7.0	---	110	< 1.0	95 [#11]	330	160	7.86	210	100	46
RPD(%)		**7.4%**	---	**0.0%**	**8.1%**	---	**0.0%**	---	**0.0%**	**17.4%**	**2.3%**	**1.4%**	---	**0.0%**	---	**104.0%**	**3.1%**	**0.0%**	**1.4%**	**0.0%**	**40.0%**	**21.4%**
AEMP-13	31-Mar-2022	---	---	---	---	---	48	< 0.060	13	< 0.0040	1.4	13	---	---	---	12	---	---	7.83	140	12	15
(Duplicate)	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	13	---	---	8.02	190	6.2	12
RPD(%)		---	---	---	---	---	---	---	---	---	---	---	---	---	---	**8.0%**	---	---	**2.4%**	**30.3%**	**63.7%**	**22.2%**
AEMP-13	14-Jun-2022	130	< 1.0	3.2	32	< 1.0	33	< 0.060	8.7	0.0080	0.96	4.0	0.087	100	< 1.0	37	260	120	7.61	180	150 [#3]	170 [#4]
(Duplicate)	14-Jun-2022	130	< 1.0	2.9	32	< 1.0	33	0.061	8.6	0.0078	0.97	3.9	0.091	110	< 1.0	37	270	120	7.76	190	170 [#3]	220 [#4]
RPD(%)		**0.0%**	---	**9.8%**	**0.0%**	---	**0.0%**	---	**1.2%**	**2.5%**	**1.0%**	**2.5%**	**4.5%**	**9.5%**	---	**0.0%**	**3.8%**	**0.0%**	**2.0%**	**5.4%**	**12.5%**	**25.6%**

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected.
7. Superscript [#2] - Sample incubation time was outside method specifications. This may increase the uncertainty associated with these results.
8. Superscript [#3] - Detection limit raised based on sample volume used for analysis.
9. Superscript [#4] - Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200		Anions					Cations							General									
Sampling Location	Date (dd-mmm-yyyy)	Bicarbonate (mg/L)	Carbonate (mg/L)	Chloride (mg/L)	Sulphate (mg/L)	Hydroxide (mg/L)	Calcium (mg/L)	Iron (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Potassium (mg/L)	Sodium (mg/L)	Fluoride (mg/L)	Alkalinity (Total; as $CaCO_3$) (mg/L)	Alkalinity (PP; as $CaCO_3$) (mg/L)	Colour (color unit)	Electrical Conductivity (uS/cm)	Hardness (Total; as $CaCO_3$) (mg/L)	pH (pH Units)	Total Dissolved Solids (mg/L)	Total Suspended Solids (mg/L)	Turbidity (NTU)
CCME CEQG Freshwater Aquatic Life [#1]		---	---	120	---	---	---	0.3	---	0.2	---	---		---	---	---	---	---	(6.5 - 9)	---	---	---

10. Superscript [#5] - Detection limits raised due to sample matrix.
11. Superscript [#6] - Sample was originally processed within hold time. Data quality required investigation. Re-analysis was completed past recommended hold time.
12. Superscript [#7] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected.Sample analyzed past hold time. Sample analysis is recommended w
13. Superscript [#8] - Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling. Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality
14. Superscript [#9] - Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.
15. Superscript [#10] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected
16. Superscript [#11] - Detection limits raised due to dilution to bring analyte within the calibrated range.
17. Superscript [#12] - Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily
18. Superscript [#13] - Sample was past hold time when received.
19. Superscript [#14] - Detection limit raised based on sample volume used and sample matrix
20. Superscript [#15] - Detection limits raised due to matrix interference.
21. Superscript [#16] - Matrix spike exceeds acceptance limits due to matrix interference.
22. Superscript [#17] - Denotes values exceeding

(CCME. 2014. Canadian Environmental Quality Guidelines Summary Table. Water Quality Guidelines for the Protection of Freshwater Aquatic Life. http://st-ts.ccme.ca/?chems=all&chapters=1 accessed Aug 22, 2014.)

Chloride:
Guideline based on chronic exposure

Ammonia (Total; as N):
Guideline for total ammonia is dependent on pH and temperature of surface water. Guideline based on Temperature of 10oC and pH of 7

Nitrate (as N):
Guideline based on long term exposure

Nitrite (as N):
Standard is for NO_2 as N, equivalent standard for NO_2 is 0.197 mg/L.

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP														
AEMP-01	16-Sep-2017	---	0.17	0.038	< 0.033	< 0.010	0.038	---	< 0.0020	2.5	< 2.0 [#1]	---	4.3	3.5
	16-Oct-2017	---	0.20	0.046	< 0.033	< 0.010	0.046	---	0.0020	0.42	< 2.0	---	3.6	4.2
	23-Jun-2018	0.024	0.16	0.035	< 0.033	< 0.010	0.035	0.28	< 0.0020	0.77	---	32	5.7	5.0
	14-Aug-2018	0.033	0.095	0.021	< 0.033	< 0.010	0.021	0.64	0.016	2.9	< 2.0	41	4.9	5.2
	18-Oct-2018	< 0.015	0.35	0.079	< 0.033	< 0.010	0.079	0.21	0.0050	1.4	2.1	22	2.8	3.1
	10-Jun-2019	< 0.015	0.23	0.052	< 0.033	< 0.010	0.052	0.44	0.0090	1.6	< 2.0 [#2]	45	6.8	5.8
	26-Aug-2019	0.027	0.17	0.038	< 0.033	< 0.010	0.038	0.30	0.0050	2.3	< 2.0	21	5.2	4.7
	01-Oct-2019	0.020	0.15	0.033	< 0.033	< 0.010	0.033	0.37	0.011	3.2	2.2	45	6.7	5.9
	12-Jun-2020	0.023	0.26	0.058	< 0.033	< 0.010	0.058	0.69 [#4]	< 0.0020	7.4	< 2.0	84	5.8	5.8 [#5]
	28-Jul-2020	< 0.015	0.088	0.020	< 0.033	< 0.010	0.020	0.50 [#4]	< 0.019	2.7	< 2.0	24	6.6	6.0
	22-Sep-2020	< 0.015	0.22	0.049	< 0.033	< 0.010	0.049	0.32	0.012	8.5	< 2.0	20	6.0	5.9
	07-Jun-2021	0.019	0.29	0.066	< 0.033	< 0.010	0.066	0.56	0.017	1.5	< 2.0 [#1]	24	8.4	6.2 [#5]
(Duplicate)	07-Jun-2021	< 0.015	0.30	0.068	< 0.033	< 0.010	0.068	0.52	0.029	1.1	< 2.0 [#1]	23	8.7	7.0
	19-Aug-2021	< 0.015	0.17	0.038	< 0.033	< 0.010	0.038	0.44	0.027	3.0	< 2.0 [#7]	29	5.9	6.3
	18-Sep-2021	< 0.015	0.18	0.041	< 0.033	< 0.010	0.041	0.29	0.0098	9.3	< 2.0 [#8]	33	8.2	6.6
	31-Mar-2022	< 0.015	0.78	0.18	< 0.033	< 0.010	0.18	0.23	0.006	---	< 2.0 [#9]	14	6.4	5.6
	14-Jun-2022	< 0.015	0.23	0.051	< 0.033	< 0.010	0.051	0.48	0.026	2.4	< 2.0	71	6.4	7.1
	06-Aug-2022	< 0.015	0.15	0.033	< 0.033	< 0.010	0.033	0.31	< 0.0020	0.96	< 2.0	22	6.4	5.3
(Duplicate)	06-Aug-2022	< 0.015	0.15	0.033	< 0.033	< 0.010	0.033	0.31	< 0.0020	6.6	< 2.0	24	6.1	4.9
	25-Sep-2022	< 0.015	0.11	0.025	< 0.033	< 0.010	0.025	0.21	< 0.0020	7.9	< 2.0	24	4.9	4.5
AEMP-02	18-Aug-2017	---	0.054	0.012	< 0.033	< 0.010	< 0.014	---	---	1.5	< 2.0 [#9]	---	3.3	4.0
	16-Sep-2017	---	0.15	0.033	< 0.033	< 0.010	0.033	---	0.0030	2.7	< 2.0 [#1]	---	5.1	4.2
(Duplicate)	16-Sep-2017	---	0.15	0.033	< 0.033	< 0.010	0.033	---	0.0020	2.9	< 2.0 [#1]	---	4.3	3.7
	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	0.47	< 2.0	---	3.8	4.0
	23-Jun-2018	0.019	0.17	0.038	< 0.033	< 0.010	0.038	0.21	< 0.0020	0.36	---	13	4.8	4.3
	12-Aug-2018	0.018	0.068	0.015	< 0.033	< 0.010	0.015	0.23	0.0030	1.0	---	19	3.8	4.2
	15-Aug-2018	---	0.086	0.019	< 0.033	< 0.010	0.019	---	---	---	< 2.0	---	---	---
	16-Oct-2018	< 0.015	0.17	0.038	< 0.033	< 0.010	0.038	0.17	< 0.0020	2.2	---	13	2.7	2.9
	17-Oct-2018	---	---	---	---	---	---	---	---	---	2.5 [#1]	---	---	---
	03-Jun-2019	< 0.015	0.18	0.041	< 0.033	< 0.010	0.041	0.21	< 0.0020	2.9	< 2.0	15	5.2	4.7
(Duplicate)	03-Jun-2019	< 0.015	0.19	0.042	< 0.033	< 0.010	0.042	0.21	< 0.0020	2.4	< 2.0	20	5.0	4.9
	28-Aug-2019	0.028	0.18	0.040	< 0.033	< 0.010	0.040	0.24	< 0.0020	2.9	< 2.0	< 10	5.6	4.5
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	03-Oct-2019	0.022	0.27	0.060	< 0.033	< 0.010	0.060	0.19	0.0020	0.53	---	20	3.1	2.9
	10-Jun-2020	0.021	0.22	0.049	< 0.033	< 0.010	0.049	0.25	0.0099	4.4	< 2.0	< 10	5.2	4.4
	24-Jul-2020	< 0.015	0.14	0.032	< 0.033	< 0.010	0.032	0.20	0.0034	0.83	< 2.0	10	3.3	3.0

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
	18-Sep-2020	< 0.015	0.10	0.022	< 0.033	< 0.010	0.022	0.15	0.0072	1.4	< 2.0	< 10	2.8	2.5
	06-Jun-2021	< 0.015	0.14	0.031	< 0.033	< 0.010	0.031	0.45	0.0043	3.3	< 2.0 [#1]	16	5.2	6.4
	18-Aug-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.23	< 0.0020	2.0	< 2.0	13	3.0	2.7
	19-Sep-2021	0.022	0.24	0.055	< 0.033	< 0.010	0.055	0.12	< 0.0020	5.0	< 2.0	13	2.1	2.0
	11-Jun-2022	< 0.015	0.11	0.026	< 0.033	< 0.010	0.026	0.29	< 0.0020	0.87	< 2.0	16	4.5	3.9
	06-Aug-2022	< 0.015	0.21	0.048	< 0.033	< 0.010	0.048	0.19	< 0.0020	0.083	< 2.0 [#10]	24	3.4	2.7
	26-Sep-2022	< 0.015	0.23	0.053	< 0.033	< 0.010	0.053	0.16	< 0.0020	1.7	< 2.0 [#9]	16	3.0	2.6
AEMP-03	18-Aug-2017	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	---	---	1.5	< 2.0 [#9]	---	3.3	3.7
	16-Sep-2017	---	0.14	0.032	< 0.033	< 0.010	0.032	---	< 0.0020	2.9	< 2.0 [#1]	---	4.4	4.0
	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	1.1	< 2.0	---	3.6	4.1
	23-Jun-2018	0.019	0.17	0.038	< 0.033	< 0.010	0.038	0.20	< 0.0020	1.2	---	24	5.1	4.3
	12-Aug-2018	< 0.015	0.057	0.013	< 0.033	< 0.010	< 0.014	0.23	0.0020	0.84	---	21	3.8	4.2
	15-Aug-2018	---	0.089	0.020	< 0.033	< 0.010	0.020	---	---	---	< 2.0	---	---	---
	16-Oct-2018	< 0.015	0.17	0.038	< 0.033	< 0.010	0.038	0.24	< 0.0020	1.8	---	15	3.1	3.0
	17-Oct-2018	---	---	---	---	---	---	---	---	---	< 2.0 [#1]	---	---	---
	03-Jun-2019	< 0.015	0.19	0.043	< 0.033	< 0.010	0.043	0.20	< 0.0020	0.72	< 2.0	21	5.5	4.8
	28-Aug-2019	0.015	0.18	0.041	< 0.033	< 0.010	0.041	0.23	< 0.0020	2.1	< 2.0	< 10	5.4	4.7
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	02-Oct-2019	0.024	0.26	0.060	< 0.033	< 0.010	0.060	0.23	< 0.0020	1.4	---	13	3.6	3.7
	10-Jun-2020	< 0.015	0.20	0.046	< 0.033	< 0.010	0.046	0.28	< 0.0020	6.3	< 2.0	< 10	4.4	4.4
	24-Jul-2020	< 0.015	0.19	0.043	< 0.033	< 0.010	0.043	0.26	< 0.0020	0.13	< 2.0	< 10	3.6	3.2
	20-Sep-2020	< 0.015	0.080	0.018	< 0.033	< 0.010	0.018	0.19	0.0048	6.7	< 2.0	< 10	2.5	2.9
	06-Jun-2021	< 0.015	0.095	0.022	< 0.033	< 0.010	0.022	0.39	0.0059	3.4	< 2.0 [#1]	18	6.8	6.6
	18-Aug-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.22	< 0.0020	2.3	< 2.0	12	2.7	2.4
	19-Sep-2021	< 0.015	0.20	0.046	< 0.033	< 0.010	0.046	0.11	< 0.0020	8.9	< 2.0	14	2.5	1.8
	11-Jun-2022	< 0.015	0.15	0.033	< 0.033	< 0.010	0.033	0.16	< 0.0020	1.7	< 2.0	11	4.4	3.8
	06-Aug-2022	< 0.015	0.22	0.050	< 0.033	< 0.010	0.050	0.18	< 0.0020	0.68	< 2.0 [#10]	15	3.6	2.5
	26-Sep-2022	< 0.015	0.33	0.074	< 0.033	< 0.010	0.074	0.17	< 0.0020	2.5	< 2.0 [#9]	25	3.5	2.4
AEMP-04	18-Aug-2017	---	0.058	0.013	< 0.033	< 0.010	< 0.014	---	---	1.7	< 2.0	---	4.6	4.3
	16-Sep-2017	---	0.14	0.031	< 0.033	< 0.010	0.031	---	< 0.0020	0.21	< 2.0 [#1]	---	4.0	4.3
	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	1.2	< 2.0	---	3.0	3.5
(Duplicate)	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	1.4	< 2.0	---	2.9	3.4
	23-Jun-2018	0.039	0.18	0.041	< 0.033	< 0.010	0.041	0.20	< 0.0020	1.5	---	15	4.9	3.9
(Duplicate)	23-Jun-2018	0.037	0.18	0.040	< 0.033	< 0.010	0.040	0.21	< 0.0020	5.1	---	22	4.7	4.1
	12-Aug-2018	< 0.015	0.054	0.012	< 0.033	< 0.010	< 0.014	0.19	< 0.0020	0.90	---	16	4.0	3.8
	15-Aug-2018	---	0.083	0.019	< 0.033	< 0.010	0.019	---	---	---	< 2.0	---	---	---
	16-Oct-2018	< 0.015	0.17	0.037	< 0.033	< 0.010	0.037	0.15	0.0030	2.0	---	14	2.5	2.7
	17-Oct-2018	---	---	---	---	---	---	---	---	---	< 2.0 [#1]	---	---	---
	03-Jun-2019	< 0.015	0.18	0.041	< 0.033	< 0.010	0.041	0.31	< 0.0020	2.3	< 2.0	15	5.3	4.3

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

		Inorganic Nitrogen Compounds							Inorganic Sulphur Compounds	Ion Balance	Miscellaneous			
Sampling Location	Date (dd-mmm-yyyy)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Sulphide (as H2S) (mg/L)	Ion Balance % Difference (%)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
	25-Aug-2019	0.030 [#11]	0.16	0.036	< 0.033	< 0.010	0.036	0.22	---	3.0	---	13	4.5	4.7
	27-Aug-2019	---	---	---	---	---	---	---	< 0.0020	---	< 2.0 [#9]	---	---	---
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	02-Oct-2019	< 0.015	0.28	0.063	< 0.033	< 0.010	0.063	0.14	< 0.0020	1.4	---	15	3.7	3.2
	10-Jun-2020	< 0.015	0.21	0.047	< 0.033	< 0.010	0.047	0.27	< 0.0020	3.7	< 2.0 [#9]	16	5.2	4.3
(Duplicate)	10-Jun-2020	0.020	0.21	0.048	< 0.033	< 0.010	0.048	0.25	< 0.0020	3.5	< 2.0 [#9]	13	4.5	4.0
	24-Jul-2020	0.032	0.25	0.056	< 0.033	< 0.010	0.056	0.35	< 0.010	1.9	< 2.0	13	4.9	4.6
	18-Sep-2020	< 0.015	0.14	0.031	< 0.033	< 0.010	0.031	0.18	0.0038	3.6	< 2.0	< 10	2.8	2.5
	06-Jun-2021	< 0.015	0.077	0.017	< 0.033	< 0.010	0.017	0.45	< 0.0020	3.9	< 2.0 [#1]	17	6.5	6.5
	18-Aug-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.20	< 0.0020	7.3	< 2.0	10	3.0	2.6
	19-Sep-2021	< 0.015	0.19	0.042	< 0.033	< 0.010	0.042	0.11	< 0.0020	3.6	< 2.0	< 10	1.7	1.9
	11-Jun-2022	< 0.015	0.14	0.031	< 0.033	< 0.010	0.031	0.24	< 0.0020	1.6	< 2.0	22	4.2	4.0
(Duplicate)	11-Jun-2022	< 0.015	0.17	0.038	< 0.033	< 0.010	0.038	0.24	< 0.0020	1.5	< 2.0	21	4.3	4.1
	06-Aug-2022	< 0.015	0.28	0.064	< 0.033	< 0.010	0.064	0.18	< 0.0020	2.8	< 2.0 [#10]	16	3.1	2.7
	24-Sep-2022	< 0.015	0.24	0.054	< 0.033	< 0.010	0.054	0.16	< 0.0020	2.6	< 2.0 [#9]	20	3.3	2.6
AEMP-05	19-Aug-2017	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	---	---	0.31	< 2.0	---	10	9.0
	16-Sep-2017	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	---	< 0.0020	3.9	2.0 [#1]	---	9.1	7.8
	15-Oct-2017	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	---	< 0.0020	0.35	< 2.0	---	10	10
	23-Jun-2018	0.030	0.14	0.031	< 0.033	< 0.010	0.031	0.35	0.0030	1.3	---	35	5.6	5.4
	13-Aug-2018	0.028	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.55	0.0040	1.2	---	42	12	12
	14-Aug-2018	---	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	---	---	---	< 2.0	---	---	---
	18-Oct-2018	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.52	0.0040	0.87	2.9	32	12	12
	02-Jun-2019	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.47	0.0030	2.3	< 2.0	35	12	12
	27-Aug-2019	0.034	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.51	< 0.0020	0.98	< 2.0 [#9]	26	13	11
	01-Oct-2019	0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.51	0.0030	3.6	---	38	14	13
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	11-Jun-2020	0.021	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.43	< 0.0020	4.6	< 2.0	32	9.7	9.2
	26-Jul-2020	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.47	< 0.0020	2.3	< 2.0 [#12]	28	12	11
	16-Sep-2020	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.014	0.39	0.0053	4.8	< 2.0 [#9]	26	9.5	9.1
	07-Jun-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.48	0.0032	2.1	< 2.0 [#1]	27	8.5	7.2
	19-Aug-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.43	< 0.0020	2.5	< 2.0 [#7]	28	9.4	7.9
	18-Sep-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.45	< 0.0020	4.9	< 2.0	27	9.4	6.6
	14-Jun-2022	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.60	< 0.0020	0.43	< 2.0	37	13	13
	05-Aug-2022	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.65	< 0.0020	4.4	< 2.0	42	12	13
	25-Sep-2022	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.55	< 0.0020	3.3	< 2.0	39	13	13
AEMP-06	21-Aug-2017	---	0.25	0.057	< 0.033	< 0.010	0.057	---	---	2.8	< 2.0 [#13]	---	4.4	4.5
	16-Sep-2017	---	0.31	0.070	< 0.033	< 0.010	0.070	---	< 0.0020	0.49	< 2.0 [#1]	---	4.6	4.3

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

		Inorganic Nitrogen Compounds							Inorganic Sulphur Compounds	Ion Balance	Miscellaneous			
Sampling Location	Date (dd-mmm-yyyy)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Sulphide (as H2S) (mg/L)	Ion Balance % Difference (%)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
	16-Oct-2017	---	0.36	0.082	< 0.033	< 0.010	0.082	---	< 0.0020	0.51	< 2.0	---	3.8	4.3
	23-Jun-2018	0.023	0.23	0.051	< 0.033	< 0.010	0.051	0.25	< 0.0020	1.0	---	21	5.1	4.5
	13-Aug-2018	0.015	0.16	0.035	< 0.033	< 0.010	0.035	0.23	0.0050	5.2	---	23	4.4	4.8
	15-Aug-2018	---	0.16	0.035	< 0.033	< 0.010	0.035	---	---	---	< 2.0	---	---	---
	18-Oct-2018	0.016	0.41	0.093	< 0.033	< 0.010	0.093	0.36	0.0030	1.0	2.8	29	3.1	2.7
	03-Jun-2019	< 0.015	0.35	0.079	< 0.033	< 0.010	0.080	0.45	0.012	2.4	< 2.0	53	5.3	5.0
	25-Aug-2019	0.031 [#11]	0.34	0.076	< 0.033	< 0.010	0.076	0.23	---	8.2	---	17	4.0	4.1
	27-Aug-2019	---	---	---	---	---	---	---	< 0.0020	---	< 2.0 [#9]	---	---	---
	02-Oct-2019	< 0.015	0.35	0.078	< 0.033	< 0.010	0.078	0.20	0.0030	1.7	< 2.0	24	4.2	4.2
	03-Oct-2019	0.038	0.36	0.081	< 0.033	< 0.010	0.081	0.20	< 0.0020	0.88	---	20	4.3	3.8
	12-Jun-2020	< 0.015	0.32	0.072	< 0.033	< 0.010	0.072	0.34 [#4]	0.013	8.0	< 2.0	34	5.5	5.1 [#5]
	28-Jul-2020	< 0.015	0.12	0.027	< 0.033	< 0.010	0.027	0.44 [#4]	0.016	4.7	< 2.0	19	6.4	4.9
	22-Sep-2020	< 0.015	0.32	0.072	< 0.033	< 0.010	0.072	0.25	0.010	8.5	< 2.0	21	4.9	4.6
	06-Jun-2021	< 0.015	0.44	0.099	< 0.033	< 0.010	0.099	0.59	0.024	1.1	< 2.0 [#1]	18	7.8	7.1
	18-Aug-2021	0.031	0.23	0.051	< 0.033	< 0.010	0.051	0.30	0.041	1.1	< 2.0	48	5.4	5.3
(Duplicate)	18-Aug-2021	0.018	0.21	0.048	< 0.033	< 0.010	0.048	0.27	0.021	1.8	< 2.0	51	6.1	4.9
	17-Sep-2021	< 0.015	0.32	0.071	< 0.033	< 0.010 [#]	0.071 [#6]	0.23	0.0024	1.8	< 2.0 [#9]	15	5.9	5.2
	12-Jun-2022	< 0.015	0.26	0.059	< 0.033	< 0.010	0.059	0.42	0.015	1.1	< 2.0	89	7.3	6.3
	06-Aug-2022	< 0.015	0.25	0.055	< 0.033	< 0.010	0.055	0.27	0.0050	2.0	< 2.0	27	5.1	4.8
	24-Sep-2022	0.067	0.27	0.060	< 0.033	< 0.010	0.060	0.24	< 0.0020	4.0	< 2.0 [#9]	22	4.2	3.3
AEMP-07	21-Aug-2017	---	0.25	0.056	< 0.033	< 0.010	0.056	---	---	3.1	< 2.0 [#9]	---	4.5	3.6
(Duplicate)	21-Aug-2017	---	0.25	0.056	< 0.033	< 0.010	0.056	---	---	2.9	< 2.0 [#9]	---	4.0	3.1
	16-Sep-2017	---	0.31	0.070	< 0.033	< 0.010	0.070	---	< 0.0020	0.77	< 2.0 [#1]	---	5.2	4.2
	16-Oct-2017	---	0.37	0.083	< 0.033	< 0.010	0.083	---	< 0.0020	1.3	< 2.0 [#13]	---	3.8	3.3
	23-Jun-2018	0.022	0.23	0.053	< 0.033	< 0.010	0.053	0.31	0.0050	1.0	---	32	5.0	5.0
	13-Aug-2018	0.028	0.15	0.034	< 0.033	< 0.010	0.034	0.43	0.0040	2.9	---	41	4.6	5.0
	15-Aug-2018	---	0.14	0.032	< 0.033	< 0.010	0.032	---	---	---	< 2.0	---	---	---
	17-Oct-2018	< 0.015	0.40	0.091	< 0.033	< 0.010	0.091	0.18	< 0.0020	0.70	---	9.2	3.0	2.5
(Duplicate)	17-Oct-2018	< 0.015	0.40	0.090	< 0.033	< 0.010	0.090	0.13	0.0020	1.3	---	6.1	3.0	2.6
	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.9 [#9]	---	---	---
(Duplicate)	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.6 [#9]	---	---	---
	03-Jun-2019	< 0.015	0.35	0.078	< 0.033	< 0.010	0.078	0.52	0.017	2.8	2.5	62	6.0	5.4
	25-Aug-2019	0.044 [#11]	0.34	0.077	< 0.033	< 0.010	0.077	0.22	---	2.6	---	15	4.5	3.8
	27-Aug-2019	---	---	---	---	---	---	---	0.0020	---	< 2.0 [#9]	---	---	---
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	03-Oct-2019	0.027	0.34	0.078	< 0.033	< 0.010	0.078	0.78	0.0070	1.8	---	81	3.7	3.8
	10-Jun-2020	< 0.015	0.32	0.073	< 0.033	< 0.010	0.073	0.77 [#4]	< 0.010	5.7	< 2.0 [#9]	31	6.0	7.1 [#5]

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

		Inorganic Nitrogen Compounds							Inorganic Sulphur Compounds	Ion Balance	Miscellaneous			
Sampling Location	Date (dd-mmm-yyyy)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Sulphide (as H2S) (mg/L)	Ion Balance % Difference (%)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
	24-Jul-2020	0.017	0.23	0.052	< 0.033	< 0.010	0.052	0.38	0.014	1.1	< 2.0	30	5.3	4.4
	24-Jul-2020	< 0.015	0.23	0.053	< 0.033	< 0.010	0.053	0.44	< 0.010	2.2	< 2.0	25	5.0	4.9
	18-Sep-2020	< 0.015	0.27	0.061	< 0.033	< 0.010	0.061	0.34	0.011	2.7	< 2.0	17	5.4	4.7
	18-Sep-2020	< 0.015	0.28	0.063	< 0.033	< 0.010	0.063	0.27	0.0086	2.3	< 2.0	20	6.0	4.8
	06-Jun-2021	< 0.015	0.37	0.083	< 0.033	< 0.010	0.083	0.68	0.023	6.0	< 2.0 [#1]	26	6.6	7.2
	18-Aug-2021	0.020	0.23	0.051	< 0.033	< 0.010	0.051	0.25	0.016	1.3	< 2.0	20	6.0	5.3
	17-Sep-2021	< 0.015	0.31	0.069	< 0.033	< 0.010	0.069	0.24	< 0.0020	0.18	< 2.0 [#9]	13	5.4	4.9
	12-Jun-2022	< 0.015	0.26	0.058	< 0.033	< 0.010	0.058	0.35	0.012	0.16	< 2.0	57	6.7	5.9
	06-Aug-2022	< 0.015	0.23	0.052	< 0.033	< 0.010	0.052	0.31	0.026	1.4	< 2.0	21	4.9	4.7
(Duplicate)	06-Aug-2022	< 0.015	0.26	0.059	< 0.033	< 0.010	0.059	0.19	< 0.0020	6.2	< 2.0	19	3.6	3.5
	24-Sep-2022	0.042	0.25	0.057	< 0.033	< 0.010	0.057	0.49	0.0040	4.5	< 2.0 [#9]	41	4.1	4.1
(Duplicate)	24-Sep-2022	0.045	0.24	0.055	< 0.033	< 0.010	0.055	< 0.40	0.0030	1.6	< 2.0 [#9]	45	4.7	3.8
AEMP-08	17-Aug-2017	---	0.18	0.040	< 0.033	< 0.010	0.040	---	< 0.0020	0.87	< 2.0	---	4.8	4.1
	21-Aug-2017	---	0.25	0.057	< 0.033	< 0.010	0.057	---	---	2.8	< 2.0	---	3.7	3.6
	16-Sep-2017	---	0.30	0.068	< 0.033	< 0.010	0.068	---	0.0080	2.2	< 2.0 [#1]	---	4.7	4.0
	16-Oct-2017	---	0.38	0.086	< 0.033	< 0.010	0.086	---	< 0.0020	1.7	< 2.0	---	3.0	3.6
	23-Jun-2018	0.037	0.23	0.052	< 0.033	< 0.010	0.052	0.27	< 0.0020	6.6	---	33	5.5	4.9
	13-Aug-2018	0.018	0.17	0.037	< 0.033	< 0.010	0.037	0.28	0.0030	0.80	---	25	4.8	4.8
	15-Aug-2018	---	0.17	0.038	< 0.033	< 0.010	0.038	---	---	---	< 2.0	---	---	---
	17-Oct-2018	< 0.015	0.41	0.093	< 0.033	< 0.010	0.093	0.12	< 0.0020	0.39	---	7.2	3.0	2.8
	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.4 [#13]	---	---	---
	03-Jun-2019	< 0.015	0.54	0.12	< 0.033	< 0.010	0.12	0.38	0.0070	1.9	< 2.0	52	6.7	5.1
	28-Aug-2019	0.026	0.31	0.069	< 0.033	< 0.010	0.069	0.23	0.0020	1.7	< 2.0	< 10	4.7	3.6
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	03-Oct-2019	0.015	0.34	0.077	< 0.033	< 0.010	0.077	0.19	0.0030	1.8	---	26	3.6	3.5
	10-Jun-2020	< 0.015	0.25	0.057	< 0.033	< 0.010	0.057	0.62	< 0.0020	9.5	< 2.0	52	6.1	6.2 [#5]
	24-Jul-2020	< 0.015	0.22	0.051	< 0.033	< 0.010	0.051	0.40	< 0.010	0.25	< 2.0	14	5.1	4.4
	18-Sep-2020	< 0.015	0.24	0.055	< 0.033	< 0.010	0.055	0.26	0.013	0.44	< 2.0	12	4.9	4.8
	06-Jun-2021	< 0.015	0.36	0.082	< 0.033	< 0.010	0.082	0.52	0.026	6.3	< 2.0 [#1]	19	7.5	7.3
	18-Aug-2021	0.018	0.23	0.051	< 0.033	< 0.010	0.051	0.29	0.027	0.61	< 2.0	57	6.3	5.2
	17-Sep-2021	< 0.015	0.32	0.073	< 0.033	< 0.010	0.073	0.20	< 0.0020	1.0	< 2.0 [#9]	16	5.4	5.4
	31-Mar-2022	< 0.015	0.83	0.19	< 0.033	< 0.010	0.19	0.19	< 0.0020	---	< 2.0 [#9]	< 10	3.6	3.2
	12-Jun-2022	< 0.015	0.26	0.058	< 0.033	< 0.010	0.058	0.35	0.012	0.16	< 2.0	57	6.7	5.9
	06-Aug-2022	< 0.015	0.23	0.052	< 0.033	< 0.010	0.052	0.31	0.026	1.4	< 2.0	21	4.9	4.7
	25-Sep-2022	< 0.015	0.26	0.059	< 0.033	< 0.010	0.059	0.19	< 0.0020	6.2	< 2.0	19	3.6	3.5

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

		Inorganic Nitrogen Compounds							Inorganic Sulphur Compounds	Ion Balance	Miscellaneous			
Sampling Location	Date (dd-mmm-yyyy)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Sulphide (as H2S) (mg/L)	Ion Balance % Difference (%)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-09	21-Aug-2017	---	0.17	0.038	< 0.033	< 0.010	0.038	---	---	2.9	< 2.0	---	3.8	4.0
	16-Sep-2017	---	0.18	0.040	< 0.033	< 0.010	0.040	---	0.0070	3.9	< 2.0 [#1]	---	4.9	4.7
	16-Oct-2017	---	0.31	0.071	< 0.033	< 0.010	0.071	---	0.0030	1.2	< 2.0	---	6.2	7.5
	23-Jun-2018	0.032	0.22	0.050	< 0.033	< 0.010	0.050	0.40	< 0.0020	1.3	---	34	5.0	4.7
	12-Aug-2018	0.024	0.093	0.021	< 0.033	< 0.010	0.021	0.30	0.0060	0.73	---	29	5.6	4.9
	15-Aug-2018	---	0.080	0.018	< 0.033	< 0.010	0.018	---	---	---	< 2.0	---	---	---
	17-Oct-2018	0.029	0.38	0.085	< 0.033	< 0.010	0.085	0.25	0.0060	4.3	---	12	3.5	2.9
	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.4 [#13]	---	---	---
	02-Jun-2019	0.018	0.33	0.074	< 0.033	< 0.010	0.074	0.57	0.013	2.8	< 2.0	64	6.6	6.9
	28-Aug-2019	0.031	0.30	0.067	< 0.033	< 0.010	0.067	0.28	0.0030	0.75	< 2.0	16	6.6	5.4
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	03-Oct-2019	0.022	0.33	0.074	< 0.033	< 0.010	0.074	0.24	0.0050	1.4	---	25	3.6	3.1
	10-Jun-2020	< 0.015	0.34	0.077	< 0.033	< 0.010	0.077	0.56	0.015	13	< 2.0	33	6.9	6.1 [#5]
	24-Jul-2020	< 0.015	0.17	0.039	< 0.033	< 0.010	0.039	0.20	< 0.0020	1.6	< 2.0	< 10	4.6	3.4
	18-Sep-2020	< 0.015	0.27	0.061	< 0.033	< 0.010	0.061	0.95	0.010	3.2	< 2.0	21	4.8	5.1
	06-Jun-2021	< 0.015	0.36	0.081	< 0.033	< 0.010	0.081	0.52	0.028	3.8	< 2.0 [#1]	17	5.8	7.2
	18-Aug-2021	0.020	0.26	0.059	< 0.033	< 0.010	0.059	0.22	0.029	0.42	< 2.0	59	6.3	5.1
	17-Sep-2021	< 0.015	0.21	0.047	< 0.033	< 0.010	0.047	0.28	< 0.0020	0.26	< 2.0 [#9]	24	5.4	5.5
	11-Jun-2022	< 0.015	0.28	0.064	< 0.033	< 0.010	0.064	0.53	0.015	0.53	< 2.0	82	7.3	6.8
	05-Aug-2022	< 0.015	0.21	0.048	< 0.033	< 0.010	0.048	0.30	0.0024	1.4	< 2.0	29	5.4	5.9
	24-Sep-2022	0.038	0.23	0.051	< 0.033	< 0.010	0.051	< 0.40	< 0.0020	0.25	< 2.0 [#9]	17	4.2	3.7
AEMP-10	23-Jun-2018	0.025	0.099	0.022	< 0.033	< 0.010	0.022	0.27	0.0040	1.3	---	33	5.8	5.1
	14-Aug-2018	0.016	0.093	0.021	< 0.033	< 0.010	0.021	0.30	0.0040	3.0	< 2.0	25	4.5	4.8
(Duplicate)	14-Aug-2018	0.023	0.085	0.019	< 0.033	< 0.010	0.019	0.32	0.0030	0.69	< 2.0	26	5.3	4.9
	18-Oct-2018	0.020	0.41	0.093	< 0.033	< 0.010	0.093	0.19	0.0030	1.3	< 2.0	9.2	2.9	3.0
	10-Jun-2019	< 0.015	0.23	0.052	< 0.033	< 0.010	0.052	0.45	0.010	1.9	2.0 [#2]	44	7.3	6.0
	26-Aug-2019	0.018	0.17	0.039	< 0.033	< 0.010	0.039	0.26	0.0050	3.7	< 2.0	26	5.7	4.6
	01-Oct-2019	0.029	0.16	0.036	< 0.033	< 0.010	0.036	0.32	0.014	4.0	2.1	39	6.5	5.9
	12-Jun-2020	< 0.015	0.22	0.049	< 0.033	< 0.010	0.049	0.67 [#4]	< 0.0020	4.3	< 2.0	38	6.9	1.4
	28-Jul-2020	< 0.015	0.087	0.020	< 0.033	< 0.010	0.020	1.1 [#4]	0.094	8.2	< 2.0	63	7.1	5.6
	22-Sep-2020	< 0.015	0.19	0.044	< 0.033	< 0.010	0.044	0.36	0.010	0.72	< 2.0	17	6.4	6.1
	07-Jun-2021	< 0.015	0.29	0.065	< 0.033	< 0.010	0.065	0.53	0.024	13	< 2.0 [#1]	34	8.7	7.9 [#5]
	19-Aug-2021	< 0.015	0.15	0.034	< 0.033	< 0.010	0.034	0.37	0.024	4.0	< 2.0 [#7]	51	5.8	6.3
	18-Sep-2021	< 0.015	0.18	0.040	< 0.033	< 0.010	0.040	0.25	0.0039	11	< 2.0 [#8]	28	7.5	6.0
	10-Aug-2022	< 0.015	0.21	0.048	< 0.033	< 0.010	0.048	< 0.20	< 0.0020	0.50	< 2.0	15	4.6	3.9

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-11	23-Jun-2018	0.024	0.18	0.039	< 0.033	< 0.010	0.039	0.29	< 0.0020	0.76	---	31	5.2	5.0
	14-Aug-2018	0.015	0.13	0.029	< 0.033	< 0.010	0.029	0.27	0.0040	0.35	< 2.0	28	4.3	4.8
	18-Oct-2018	< 0.015	0.40	0.090	< 0.033	< 0.010	0.090	0.24	0.0020	3.9	< 2.0	16	3.1	2.7
	10-Jun-2019	< 0.015	0.27	0.061	< 0.033	< 0.010	0.061	0.39	0.0060	1.8	< 2.0 [#2]	41	6.4	5.6
	26-Aug-2019	0.026	0.18	0.040	< 0.033	< 0.010	0.040	0.28	---	6.4	< 2.0	20	4.9	4.4
	27-Aug-2019	---	---	---	---	---	---	---	0.0040	---	---	---	---	---
	01-Oct-2019	0.051 [#15]	0.25	0.056	< 0.033	< 0.010	0.056	0.44	0.0060	1.5	---	47	5.5	5.3
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	12-Jun-2020	0.024	0.27	0.062	< 0.033	< 0.010	0.062	1.0	< 0.010	8.4	< 2.0	95	5.9	4.4 [#5]
	28-Jul-2020	< 0.015	0.090	0.020	< 0.033	< 0.010	0.020	0.73 [#4]	0.0038	3.0	< 2.0	29	6.3	5.4
	22-Sep-2020	< 0.015	0.24	0.055	< 0.033	< 0.010	0.055	0.29	0.012	7.5	< 2.0	23	6.0	5.9
	07-Jun-2021	0.016	0.30	0.068	< 0.033	< 0.010	0.068	0.59	0.022	5.8	< 2.0 [#1]	43	8.5	6.6 [#5]
	19-Aug-2021	< 0.015	0.17	0.038	< 0.033	< 0.010 [#]	0.038 [#6]	0.38	0.033	4.0	< 2.0 [#7]	51	7.7	6.0
(Duplicate)	19-Aug-2021	< 0.015	0.18	0.040	< 0.033	< 0.010 [#]	0.040 [#6]	0.74	0.029	3.9	< 2.0 [#7]	55	6.0	6.4
	18-Sep-2021	< 0.015	0.21	0.047	< 0.033	< 0.010	0.047	0.27	0.012	4.1	< 2.0 [#8]	20	6.9	5.9
	10-Aug-2022	< 0.015	0.25	0.057	< 0.033	< 0.010	0.057	< 0.20	0.012	1.9	< 2.0	14	5.2	4.1
AEMP-12	23-Jun-2018	0.022	0.23	0.053	< 0.033	< 0.010	0.053	0.24	< 0.0020	1.1	---	24	5.6	4.7
	14-Aug-2018	0.023	0.13	0.030	< 0.033	< 0.010	0.030	0.29	0.0040	0.64	2.5	31	4.2	4.3
	15-Aug-2018	---	0.15	0.033	< 0.033	< 0.010	0.033	---	---	---	< 2.0	---	---	---
	17-Oct-2018	< 0.015	0.35	0.079	< 0.033	< 0.010	0.079	0.13	< 0.0020	1.0	---	< 5.0	2.7	2.4
	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.6 [#13]	---	---	---
	03-Jun-2019	< 0.015	0.28	0.064	< 0.033	< 0.010	0.064	0.32	0.0040	2.0	< 2.0	36	5.6	4.7
	28-Aug-2019	0.026	0.36	0.081	< 0.033	< 0.010	0.081	0.21	< 0.0020	0.45	< 2.0	< 10	3.9	4.1
(Duplicate)	28-Aug-2019	0.027	0.30	0.067	< 0.033	< 0.010	0.067	0.21	< 0.0020	1.1	< 2.0	< 10	5.5	3.7
	02-Oct-2019	---	---	---	---	---	---	---	---	---	< 2.0	---	---	---
	03-Oct-2019	0.017	0.33	0.074	< 0.033	< 0.010	0.074	0.21	0.0030	2.8	---	30	3.4	3.6
	10-Jun-2020	0.032	0.29	0.066	< 0.033	< 0.010	0.066	0.34	< 0.0020	5.1	< 2.0	25	5.1	4.4
	24-Jul-2020	< 0.015	0.21	0.047	< 0.033	< 0.010	0.047	0.32	0.015	0.45	< 2.0	20	4.4	4.5
	18-Sep-2020	< 0.015	< 0.22	< 0.050	< 0.033	< 0.010	< 0.050 [#15]	0.17	0.0053	1.8	< 2.0	11	2.7	2.9
	07-Jun-2021	< 0.015	0.52	0.12	< 0.033	< 0.010	0.12	0.40	0.014	6.8	< 2.0 [#1]	15	8.0	6.7
	18-Aug-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.26	0.0049	3.5	< 2.0	13	4.1	3.3
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	< 0.015	0.42	0.094	< 0.033	< 0.010	0.094	0.23	< 0.0020	3.2	< 2.0 [#9]	17	5.1	5.2
	31-Mar-2022	< 0.015	0.86	0.2	< 0.033	< 0.010	0.2	0.18	< 0.0020	---	< 2.0 [#9]	21	3	2.7
	12-Jun-2022	0.018	0.14	0.032	< 0.033	< 0.010	0.032	0.59	0.012	0.67	< 2.0	52	5.0	4.2
	05-Aug-2022	< 0.015	0.15	0.035	< 0.033	< 0.010	0.035	0.19	< 0.0020	2.1	< 2.0	14	4.3	4.3
	26-Sep-2022	< 0.015	0.31	0.070	< 0.033	< 0.010	0.070	0.22	< 0.0020	4.7	< 2.0 [#9]	15	4.8	4.0

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
(Duplicate)	26-Sep-2022	< 0.015	0.31	0.070	< 0.033	< 0.010	0.070	0.20	< 0.0020	6.2	< 2.0 [#9]	16	3.4	3.6
AEMP-13	14-Aug-2018	0.039	0.098	0.022	< 0.033	< 0.010	0.022	0.42	0.020	1.3	< 2.0	28	5.1	5.2
	18-Oct-2018	0.022	0.17	0.038	< 0.033	< 0.010	0.038	0.20	0.0020	2.0	< 2.0	11	4.4	4.5
	02-Jun-2019	0.021	0.26	0.058	< 0.033	< 0.010	0.058	0.62	0.0070	2.2	< 2.0	73	5.9	6.2
	27-Aug-2019	0.064	0.14	0.031	< 0.033	< 0.010	0.031	0.31	0.0050	6.3	< 2.0 [#9]	14	6.2	5.4
	02-Oct-2019	0.32 [#15]	0.099	0.022	< 0.033	< 0.010	0.022	0.68	0.0070	2.2	< 2.0	32	8.1	7.6
	11-Jun-2020	0.026	0.23	0.052	< 0.033	< 0.010	0.052	0.43	0.0070	7.9	< 2.0	40	7.6	8.8 [#5]
(Duplicate)	11-Jun-2020	0.023	0.10	0.023	< 0.033	< 0.010	0.023	0.40	0.029	6.9	< 2.0	29	7.9	7.6
	26-Jul-2020	< 0.015	0.20	0.046	< 0.033	< 0.010	0.046	0.45	< 0.010	2.2	< 2.0 [#12]	30	6.5	7.6
(Duplicate)	26-Jul-2020	< 0.015	0.14	0.032	< 0.033	< 0.010	0.032	0.48	< 0.010	2.2	< 2.0 [#12]	31	7.4	7.7
	16-Sep-2020	0.017	0.17	0.039	< 0.033	< 0.010	0.039	0.39	0.014	2.6	< 2.0 [#9]	27	6.7	6.4
(Duplicate)	16-Sep-2020	0.016	0.17	0.039	< 0.033	< 0.010	0.039	0.38	0.012	2.0	< 2.0 [#9]	27	7.0	6.4
	07-Jun-2021	< 0.015	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.57	0.010	1.3	< 2.0 [#1]	25	8.5	14 [#5]
	19-Aug-2021	< 0.015	0.18	0.040	< 0.033	< 0.010	0.040 [#16]	0.43	0.016	4.9	< 2.0 [#7]	58	6.4	5.8
	18-Sep-2021	< 0.015	0.19	0.043	< 0.033	< 0.010	0.043	0.26	0.016	6.6	< 2.0 [#8]	34	8.4	6.5
	31-Mar-2022	< 0.015	0.69	0.16	< 0.033	< 0.010	0.16	0.25	0.0026	---	< 2.0 [#9]	14	6.8	5.7
(Duplicate)	31-Mar-2022	< 0.015	0.88	0.2	< 0.033	< 0.010	0.2	0.21	0.0026	---	< 2.0 [#9]	13	5.1	5.2
	14-Jun-2022	< 0.015	0.11	0.025	< 0.033	< 0.010	0.025	0.54	0.014	5.4	< 2.0	59	6.4	8.2
(Duplicate)	14-Jun-2022	< 0.015	0.10	0.023	< 0.033	< 0.010	0.023	0.49	0.018	6.5	< 2.0	69	7.0	6.8
	05-Aug-2022	< 0.015	0.10	0.024	< 0.033	< 0.010	0.024	0.24	< 0.0020	3.2	< 2.0	19	5.7	5.7
	25-Sep-2022	0.34	< 0.044	< 0.010	< 0.033	< 0.010	< 0.010	0.54	< 0.0020	1.5	< 2.0	25	7.0	6.7
AEMP-01	07-Jun-2021	0.019	0.29	0.066	< 0.033	< 0.010	0.066	0.56	0.017	1.5	< 2.0 [#1]	24	8.4	6.2 [#5]
(Duplicate)	07-Jun-2021	< 0.015	0.30	0.068	< 0.033	< 0.010	0.068	0.52	0.029	1.1	< 2.0 [#1]	23	8.7	7.0
RPD(%)		**---**	**3.4%**	**3.0%**	**---**	**---**	**3.0%**	**7.4%**	**52.2%**	**30.8%**	**---**	**4.3%**	**3.5%**	**12.1%**
AEMP-01	06-Aug-2022	< 0.015	0.15	0.033	< 0.033	< 0.010	0.033	0.31	< 0.0020	0.96	< 2.0	22	6.4	5.3
(Duplicate)	06-Aug-2022	< 0.015	0.15	0.033	< 0.033	< 0.010	0.033	0.31	< 0.0020	6.6	< 2.0	24	6.1	4.9
RPD(%)		**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**0.0%**	**---**	**149.2%**	**---**	**8.7%**	**4.8%**	**7.8%**
AEMP-02	16-Sep-2017	---	0.15	0.033	< 0.033	< 0.010	0.033	---	0.0030	2.7	< 2.0 [#1]	---	5.1	4.2
(Duplicate)	16-Sep-2017	---	0.15	0.033	< 0.033	< 0.010	0.033	---	0.0020	2.9	< 2.0 [#1]	---	4.3	3.7
RPD(%)		**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**---**	**40.0%**	**7.1%**	**---**	**---**	**17.0%**	**12.7%**
AEMP-02	03-Jun-2019	< 0.015	0.18	0.041	< 0.033	< 0.010	0.041	0.21	< 0.0020	2.9	< 2.0	15	5.2	4.7
(Duplicate)	03-Jun-2019	< 0.015	0.19	0.042	< 0.033	< 0.010	0.042	0.21	< 0.0020	2.4	< 2.0	20	5.0	4.9
RPD(%)		**---**	**5.4%**	**2.4%**	**---**	**---**	**2.4%**	**0.0%**	**---**	**18.9%**	**---**	**28.6%**	**3.9%**	**4.2%**

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-04	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	1.2	< 2.0	---	3.0	3.5
(Duplicate)	16-Oct-2017	---	0.26	0.059	< 0.033	< 0.010	0.059	---	< 0.0020	1.4	< 2.0	---	2.9	3.4
RPD(%)		**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**---**	**---**	**15.4%**	**---**	**---**	**3.4%**	**2.9%**
AEMP-04	23-Jun-2018	0.039	0.18	0.041	< 0.033	< 0.010	0.041	0.20	< 0.0020	1.5	---	15	4.9	3.9
(Duplicate)	23-Jun-2018	0.037	0.18	0.040	< 0.033	< 0.010	0.040	0.21	< 0.0020	5.1	---	22	4.7	4.1
RPD(%)		**5.3%**	**0.0%**	**2.5%**	**---**	**---**	**2.5%**	**4.9%**	**---**	**109.1%**	**---**	**37.8%**	**4.2%**	**5.0%**
AEMP-04	10-Jun-2020	< 0.015	0.21	0.047	< 0.033	< 0.010	0.047	0.27	< 0.0020	3.7	< 2.0 [#9]	16	5.2	4.3
(Duplicate)	10-Jun-2020	0.020	0.21	0.048	< 0.033	< 0.010	0.048	0.25	< 0.0020	3.5	< 2.0 [#9]	13	4.5	4.0
RPD(%)		**---**	**0.0%**	**2.1%**	**---**	**---**	**2.1%**	**7.7%**	**---**	**5.6%**	**---**	**20.7%**	**14.4%**	**7.2%**
AEMP-04	11-Jun-2022	< 0.015	0.14	0.031	< 0.033	< 0.010	0.031	0.24	< 0.0020	1.6	< 2.0	22	4.2	4.0
(Duplicate)	11-Jun-2022	< 0.015	0.17	0.038	< 0.033	< 0.010	0.038	0.24	< 0.0020	1.5	< 2.0	21	4.3	4.1
RPD(%)		**---**	**19.4%**	**20.3%**	**---**	**---**	**20.3%**	**0.0%**	**---**	**6.5%**	**---**	**4.7%**	**2.4%**	**2.5%**
AEMP-06	18-Aug-2021	0.031	0.23	0.051	< 0.033	< 0.010	0.051	0.30	0.041	1.1	< 2.0	48	5.4	5.3
(Duplicate)	18-Aug-2021	0.018	0.21	0.048	< 0.033	< 0.010	0.048	0.27	0.021	1.8	< 2.0	51	6.1	4.9
RPD(%)		**53.1%**	**9.1%**	**6.1%**	**---**	**---**	**6.1%**	**10.5%**	**64.5%**	**48.3%**	**---**	**6.1%**	**12.2%**	**7.8%**
AEMP-07	21-Aug-2017	---	0.25	0.056	< 0.033	< 0.010	0.056	---	---	3.1	< 2.0 [#9]	---	4.5	3.6
(Duplicate)	21-Aug-2017	---	0.25	0.056	< 0.033	< 0.010	0.056	---	---	2.9	< 2.0 [#9]	---	4.0	3.1
RPD(%)		**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**---**	**---**	**6.7%**	**---**	**---**	**11.8%**	**14.9%**
AEMP-07	17-Oct-2018	< 0.015	0.40	0.091	< 0.033	< 0.010	0.091	0.18	< 0.0020	0.70	---	9.2	3.0	2.5
(Duplicate)	17-Oct-2018	< 0.015	0.40	0.090	< 0.033	< 0.010	0.090	0.13	0.0020	1.3	---	6.1	3.0	2.6
RPD(%)		**---**	**0.0%**	**1.1%**	**---**	**---**	**1.1%**	**32.3%**	**---**	**60.0%**	**---**	**40.5%**	**0.0%**	**3.9%**
AEMP-07	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.9 [#9]	---	---	---
(Duplicate)	18-Oct-2018	---	---	---	---	---	---	---	---	---	2.6 [#9]	---	---	---
RPD(%)		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**10.9%**	**---**	**---**	**---**
AEMP-07	06-Aug-2022	< 0.015	0.23	0.052	< 0.033	< 0.010	0.052	0.31	0.026	1.4	< 2.0	21	4.9	4.7
(Duplicate)	06-Aug-2022	< 0.015	0.26	0.059	< 0.033	< 0.010	0.059	0.19	< 0.0020	6.2	< 2.0	19	3.6	3.5
RPD(%)		**---**	**12.2%**	**12.6%**	**---**	**---**	**12.6%**	**48.0%**	**---**	**126.3%**	**---**	**10.0%**	**30.6%**	**29.3%**
AEMP-07	24-Sep-2022	0.042	0.25	0.057	< 0.033	< 0.010	0.057	0.49	0.0040	4.5	< 2.0 [#9]	41	4.1	4.1
(Duplicate)	24-Sep-2022	0.045	0.24	0.055	< 0.033	< 0.010	0.055	< 0.40	0.0030	1.6	< 2.0 [#9]	45	4.7	3.8
RPD(%)		**6.9%**	**4.1%**	**3.6%**	**---**	**---**	**3.6%**	**48.0%**	**28.6%**	**95.1%**	**---**	**9.3%**	**13.6%**	**7.6%**
AEMP-10	14-Aug-2018	0.016	0.093	0.021	< 0.033	< 0.010	0.021	0.30	0.0040	3.0	< 2.0	25	4.5	4.8
(Duplicate)	14-Aug-2018	0.023	0.085	0.019	< 0.033	< 0.010	0.019	0.32	0.0030	0.69	< 2.0	26	5.3	4.9
RPD(%)		**35.9%**	**9.0%**	**10.0%**	**---**	**---**	**10.0%**	**6.5%**	**28.6%**	**125.2%**	**---**	**3.9%**	**16.3%**	**2.1%**

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Inorganic Nitrogen Compounds: Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Inorganic Sulphur Compounds: Sulphide (as H2S) (mg/L)	Ion Balance: Ion Balance % Difference (%)	Miscellaneous: Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**8.5**	**---**	**2.9**	**---**	**0.06**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-11	19-Aug-2021	< 0.015	0.17	0.038	< 0.033	< 0.010 [#]	0.038 [#6]	0.38	0.033	4.0	< 2.0 [#7]	51	7.7	6.0
(Duplicate)	19-Aug-2021	< 0.015	0.18	0.040	< 0.033	< 0.010 [#]	0.040 [#6]	0.74	0.029	3.9	< 2.0 [#7]	55	6.0	6.4
RPD(%)		**---**	**5.7%**	**5.1%**	**---**	**---**	**5.1%**	**64.3%**	**12.9%**	**2.5%**	**---**	**7.5%**	**24.8%**	**6.5%**
AEMP-12	28-Aug-2019	0.026	0.36	0.081	< 0.033	< 0.010	0.081	0.21	< 0.0020	0.45	< 2.0	< 10	3.9	4.1
(Duplicate)	28-Aug-2019	0.027	0.30	0.067	< 0.033	< 0.010	0.067	0.21	< 0.0020	1.1	< 2.0	< 10	5.5	3.7
RPD(%)		**3.8%**	**18.2%**	**18.9%**	**---**	**---**	**18.9%**	**0.0%**	**---**	**83.9%**	**---**	**---**	**34.0%**	**10.3%**
AEMP-12	26-Sep-2022	< 0.015	0.31	0.070	< 0.033	< 0.010	0.070	0.22	< 0.0020	4.7	< 2.0 [#9]	15	4.8	4.0
(Duplicate)	26-Sep-2022	< 0.015	0.31	0.070	< 0.033	< 0.010	0.070	0.20	< 0.0020	6.2	< 2.0 [#9]	16	3.4	3.6
RPD(%)		**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**9.5%**	**---**	**27.5%**	**---**	**6.5%**	**34.1%**	**10.5%**
AEMP-13	11-Jun-2020	0.026	0.23	0.052	< 0.033	< 0.010	0.052	0.43	0.0070	7.9	< 2.0	40	7.6	8.8 [#5]
(Duplicate)	11-Jun-2020	0.023	0.10	0.023	< 0.033	< 0.010	0.023	0.40	0.029	6.9	< 2.0	29	7.9	7.6
RPD(%)		**12.2%**	**78.8%**	**77.3%**	**---**	**---**	**77.3%**	**7.2%**	**122.2%**	**13.5%**	**---**	**31.9%**	**3.9%**	**14.6%**
AEMP-13	26-Jul-2020	< 0.015	0.20	0.046	< 0.033	< 0.010	0.046	0.45	< 0.010	2.2	< 2.0 [#12]	30	6.5	7.6
(Duplicate)	26-Jul-2020	< 0.015	0.14	0.032	< 0.033	< 0.010	0.032	0.48	< 0.010	2.2	< 2.0 [#12]	31	7.4	7.7
RPD(%)		**---**	**35.3%**	**35.9%**	**---**	**---**	**35.9%**	**6.5%**	**---**	**0.0%**	**---**	**3.3%**	**12.9%**	**1.3%**
AEMP-13	16-Sep-2020	0.017	0.17	0.039	< 0.033	< 0.010	0.039	0.39	0.014	2.6	< 2.0 [#9]	27	6.7	6.4
(Duplicate)	16-Sep-2020	0.016	0.17	0.039	< 0.033	< 0.010	0.039	0.38	0.012	2.0	< 2.0 [#9]	27	7.0	6.4
RPD(%)		**6.1%**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**2.6%**	**15.4%**	**26.1%**	**---**	**0.0%**	**4.4%**	**0.0%**
AEMP-13	31-Mar-2022	< 0.015	0.69	0.16	< 0.033	< 0.010	0.16	0.25	0.0026	---	< 2.0 [#9]	14	6.8	5.7
(Duplicate)	31-Mar-2022	< 0.015	0.88	0.2	< 0.033	< 0.010	0.2	0.21	0.0026	---	< 2.0 [#9]	13	5.1	5.2
RPD(%)		**---**	**24.2%**	**22.2%**	**---**	**---**	**22.2%**	**17.4%**	**0.0%**	**---**	**---**	**7.4%**	**28.6%**	**9.2%**
AEMP-13	14-Jun-2022	< 0.015	0.11	0.025	< 0.033	< 0.010	0.025	0.54	0.014	5.4	< 2.0	59	6.4	8.2
(Duplicate)	14-Jun-2022	< 0.015	0.10	0.023	< 0.033	< 0.010	0.023	0.49	0.018	6.5	< 2.0	69	7.0	6.8
RPD(%)		**---**	**9.5%**	**8.3%**	**---**	**---**	**8.3%**	**9.7%**	**25.0%**	**18.5%**	**---**	**15.6%**	**9.0%**	**18.7%**

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected.
7. Superscript [#2] - Sample incubation time was outside method specifications. This may increase the uncertainty associated with these results.
8. Superscript [#3] - Detection limit raised based on sample volume used for analysis.
9. Superscript [#4] - Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Table 2

Surface Water Analytical Results: General, Indicator and Nutrient Analysis Parameters

PROJECT No.: 417085-42051-22200		Inorganic Nitrogen Compounds							Inorganic Sulphur Compounds	Ion Balance	Miscellaneous			
Sampling Location	Date (dd-mmm-yyyy)	Ammonia (Total; as N) (mg/L)	Nitrate (mg/L)	Nitrate (as N) (mg/L)	Nitrite (mg/L)	Nitrite (as N) (mg/L)	Nitrite-plus-Nitrate (as N) (mg/L)	Total Kjeldahl Nitrogen (mg/L)	Sulphide (as H2S) (mg/L)	Ion Balance % Difference (%)	Biochemical Oxygen Demand (mg/L)	Chemical Oxygen Demand (mg/L)	Dissolved Organic Carbon (mg/L)	Total Organic Carbon (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		8.5	---	2.9	---	0.06	---	---	---	---	---	---	---	---

10. Superscript [#5] - Detection limits raised due to sample matrix.
11. Superscript [#6] - Sample was originally processed within hold time. Data quality required investigation. Re-analysis was completed past recommended hold time.
12. Superscript [#7] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected.Sample analyzed past hold time. S
13. Superscript [#8] - Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling. Method blank exceeds 0.2 mg/L stipulated in Re
14. Superscript [#9] - Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.
15. Superscript [#10] - Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected
16. Superscript [#11] - Detection limits raised due to dilution to bring analyte within the calibrated range.
17. Superscript [#12] - Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of
18. Superscript [#13] - Sample was past hold time when received.
19. Superscript [#14] - Detection limit raised based on sample volume used and sample matrix
20. Superscript [#15] - Detection limits raised due to matrix interference.
21. Superscript [#16] - Matrix spike exceeds acceptance limits due to matrix interference.
22. Superscript [#17] - Denotes values exceeding

(CCME. 2014. Canadian Environmental Quality Guidelines Summary Table. Water Quality Guidelines for the Protection of Freshwater Aquatic Life. http://st-ts.ccme.ca/?chems=all&chapters=1 accessed Aug 22, 2014.)

Chloride:
Guideline based on chronic exposure

Ammonia (Total; as N):
Guideline for total ammonia is dependent on pH and temperature of surface water. Guideline based on Temperature of 10oC and pH of 7

Nitrate (as N):
Guideline based on long term exposure

Nitrite (as N):
Standard is for NO_2 as N, equivalent standard for NO_2 is 0.197 mg/L.

Table 3

Surface Water Analytical Results: Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

PROJECT No.:		Polycyclic aromatic hydrocarbons (PAHs)|Carcinogenic								Polycyclic aromatic hydrocarbons (PAHs)|Non-Carcinogenic															PHC								
Sampling Location	Date (dd-mmm-yyyy)	Benzo(a)Anthracene (mg/L)	Benzo(b,j)Fluoranthene (mg/L)	Benzo(k)Fluoranthene (mg/L)	Benzo(g,h,i)Perylene (mg/L)	Benzo(a)Pyrene (mg/L)	Chrysene (mg/L)	Dibenzo(a,h)Anthracene (mg/L)	Indeno(1,2,3-c,d)Pyrene (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Acridine (mg/L)	Anthracene (mg/L)	Benzo(c)Phenanthrene (mg/L)	Benzo(e)Pyrene (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)	Perylene (mg/L)	Phenanthrene (mg/L)	Pyrene (mg/L)	Quinoline (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
CCME Water Quality Guidelines, 201		**0.000018**	**---**	**---**	**---**	**0.000015**	**---**	**---**	**---**	**0.0058**	**---**	**0.0044**	**0.000012**	**---**	**---**	**0.00004**	**0.003**	**---**	**0.0011**	**---**	**0.0004**	**0.000025**	**0.0034**	**0.37**	**0.002**	**0.0024**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP																																
AEMP-01	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	01-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	22-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-02	18-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
(Duplicate)	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	16-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-03	18-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	16-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	20-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-04	18-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10

Table 3

Surface Water Analytical Results: Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

PROJECT No.:		Polycyclic aromatic hydrocarbons (PAHs)|Carcinogenic								Polycyclic aromatic hydrocarbons (PAHs)|Non-Carcinogenic													PHC								
Sampling Location	Date (dd-mmm-yyyy)	Benzo(a)Anthracene (mg/L)	Benzo(b,j)Fluoranthene (mg/L)	Benzo(k)Fluoranthene (mg/L)	Benzo(g,h,i)Perylene (mg/L)	Benzo(a)Pyrene (mg/L)	Chrysene (mg/L)	Dibenzo(a,h)Anthracene (mg/L)	Indeno(1,2,3-c,d)Pyrene (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Acridine (mg/L)	Anthracene (mg/L)	Benzo(c)Phenanthrene (mg/L)	Benzo(e)Pyrene (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)	Perylene (mg/L)	Phenanthrene (mg/L)	Pyrene (mg/L)	Quinoline (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
CCME Water Quality Guidelines, 201		**0.000018**	**---**	**---**	**---**	**0.000015**	**---**	**---**	**---**	**0.0058**	**---**	**0.0044**	**0.000012**	**---**	**---**	**0.00004**	**0.003**	**---**	**0.0011**	**---**	**0.0004**	**0.000025**	**0.0034**	**0.37**	**0.002**	**0.0024**	**---**	**---**	**---**	**---**	**---**	**---**
(Duplicate)	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	16-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	11-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-05	19-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	15-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	13-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	01-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	16-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	19-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	05-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-06	21-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	13-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	22-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-07	21-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
(Duplicate)	21-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10

Table 3

Surface Water Analytical Results: Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

PROJECT No.:		Polycyclic aromatic hydrocarbons (PAHs)|Carcinogenic								Polycyclic aromatic hydrocarbons (PAHs)|Non-Carcinogenic													PHC								
Sampling Location	Date (dd-mmm-yyyy)	Benzo(a)Anthracene (mg/L)	Benzo(b,j)Fluoranthene (mg/L)	Benzo(k)Fluoranthene (mg/L)	Benzo(g,h,i)Perylene (mg/L)	Benzo(a)Pyrene (mg/L)	Chrysene (mg/L)	Dibenzo(a,h)Anthracene (mg/L)	Indeno(1,2,3-c,d)Pyrene (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Acridine (mg/L)	Anthracene (mg/L)	Benzo(c)Phenanthrene (mg/L)	Benzo(e)Pyrene (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)	Perylene (mg/L)	Phenanthrene (mg/L)	Pyrene (mg/L)	Quinoline (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
CCME Water Quality Guidelines, 201		**0.000018**	**---**	**---**	**---**	**0.000015**	**---**	**---**	**---**	**0.0058**	**---**	**0.0044**	**0.000012**	**---**	**---**	**0.00004**	**0.003**	**---**	**0.0011**	**---**	**0.0004**	**0.000025**	**0.0034**	**0.37**	**0.002**	**0.0024**	**---**	**---**	**---**	**---**	**---**	**---**
	13-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	0.0000089	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	0.000048	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	0.000069	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	0.00011	< 0.00010	< 0.000050	0.000068	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	24-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	0.000065	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-08	17-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	21-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	13-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-09	21-Aug-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Sep-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	16-Oct-2017	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00080	< 0.10	< 0.10	< 0.10
	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.00043	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	06-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	0.000052	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	05-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-10	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10

Table 3

Surface Water Analytical Results: Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

PROJECT No.:		Polycyclic aromatic hydrocarbons (PAHs)|Carcinogenic								Polycyclic aromatic hydrocarbons (PAHs)|Non-Carcinogenic														PHC								
Sampling Location	Date (dd-mmm-yyyy)	Benzo(a)Anthracene (mg/L)	Benzo(b,j)Fluoranthene (mg/L)	Benzo(k)Fluoranthene (mg/L)	Benzo(g,h,i)Perylene (mg/L)	Benzo(a)Pyrene (mg/L)	Chrysene (mg/L)	Dibenzo(a,h)Anthracene (mg/L)	Indeno(1,2,3-c,d)Pyrene (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Acridine (mg/L)	Anthracene (mg/L)	Benzo(c)Phenanthrene (mg/L)	Benzo(e)Pyrene (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)	Perylene (mg/L)	Phenanthrene (mg/L)	Pyrene (mg/L)	Quinoline (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
CCME Water Quality Guidelines, 201		**0.000018**	**---**	**---**	**---**	**0.000015**	**---**	**---**	**---**	**0.0058**	**---**	**0.0044**	**0.000012**	**---**	**---**	**0.00004**	**0.003**	**---**	**0.0011**	**---**	**0.0004**	**0.000025**	**0.0034**	**0.37**	**0.002**	**0.0024**	**---**	**---**	**---**	**---**	**---**	**---**
	01-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	22-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Aug-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-11	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	01-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	22-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Aug-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-12	23-Jun-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	28-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	03-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	10-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	0.000055	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	24-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	17-Sep-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	12-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	0.000012	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	0.000058	0.00028	< 0.00010	< 0.000050	0.00021	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	05-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	0.000023	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	0.000091	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	0.00011	**0.000031** [#1]	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	26-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
AEMP-13	14-Aug-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Oct-2018	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Jun-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	27-Aug-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	02-Oct-2019	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	11-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	11-Jun-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	26-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	26-Jul-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	16-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	16-Sep-2020	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	07-Jun-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	19-Aug-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	18-Sep-2021	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	31-Mar-2022	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	14-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
(Duplicate)	14-Jun-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	05-Aug-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10
	25-Sep-2022	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000085	< 0.0000075	< 0.0000085	< 0.0000075	< 0.0000085	< 0.00010	< 0.00010	< 0.000040	< 0.000010	< 0.000050	< 0.000050	< 0.000010	< 0.000050	< 0.00010	< 0.00010	< 0.000050	< 0.000050	< 0.000020	< 0.00020	< 0.00040	< 0.00040	< 0.00040	< 0.00080	< 0.00040	< 0.00089	< 0.10	< 0.10	< 0.10

Table 3

Surface Water Analytical Results: Petroleum Hydrocarbons and Polycyclic Aromatic Hydrocarbons

PROJECT No.:		Polycyclic aromatic hydrocarbons (PAHs)|Carcinogenic								Polycyclic aromatic hydrocarbons (PAHs)|Non-Carcinogenic															PHC								
Sampling Location	Date (dd-mmm-yyyy)	Benzo(a)Anthracene (mg/L)	Benzo(b,j)Fluoranthene (mg/L)	Benzo(k)Fluoranthene (mg/L)	Benzo(g,h,i)Perylene (mg/L)	Benzo(a)Pyrene (mg/L)	Chrysene (mg/L)	Dibenzo(a,h)Anthracene (mg/L)	Indeno(1,2,3-c,d)Pyrene (mg/L)	Acenaphthene (mg/L)	Acenaphthylene (mg/L)	Acridine (mg/L)	Anthracene (mg/L)	Benzo(c)Phenanthrene (mg/L)	Benzo(e)Pyrene (mg/L)	Fluoranthene (mg/L)	Fluorene (mg/L)	2-Methylnaphthalene (mg/L)	Naphthalene (mg/L)	Perylene (mg/L)	Phenanthrene (mg/L)	Pyrene (mg/L)	Quinoline (mg/L)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	m&p-Xylene (mg/L)	o-Xylene (mg/L)	Xylenes (Total) (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10}) - BTEX (mg/L)	PHC F2 (C_{10}-C_{16}) (mg/L)
CCME Water Quality Guidelines, 201		0.000018	---	---	---	0.000015	---	---	---	0.0058	---	0.0044	0.000012	---	---	0.00004	0.003	---	0.0011	---	0.0004	0.000025	0.0034	0.37	0.002	0.0024	---	---	---	---	---	---

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1]denotes values exceeding
   (CCME Water Quality Guidelines, last updated 2011)

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	---	**0.005**	---	---	**1.5**	**0.00009**	**0.0089**	---	**0.002**	**0.3**	**0.001**	---	**0.2**	**0.000026**	**0.073**	**0.025**	---	**0.001**	---	**0.00025**	---	**0.0008**	---	---	**0.015**	---	**0.03**
AEMP																													
AEMP-01	16-Sep-2017	**0.051** [#1]	< 0.00060	0.00025	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00092	0.0014	< 0.10	0.00035	1.8	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00072	< 0.0010	< 0.0030
	16-Oct-2017	**0.024** [#1]	< 0.00060	0.00028	0.047	< 0.0010	< 0.020	0.000022	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0010	0.0017	< 0.10	0.00034	1.7	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	< 0.0030
	23-Jun-2018	**0.047** [#1]	< 0.00060	0.00036	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00097	0.0011	< 0.10	0.00029	1.6	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
	14-Aug-2018	**0.090** [#1]	< 0.00060	0.00028	0.048	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000031	0.00090	0.0015	< 0.10	0.00034	1.6	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00083	< 0.0010	< 0.0030
	18-Oct-2018	**0.0060** [#1]	< 0.00060	0.00031	0.047	< 0.0010	0.020	< 0.000020	< 0.0010	< 0.00030	0.00088	< 0.060	< 0.00020	< 0.020	0.0093	< 0.0000020	0.00075	0.00092	< 0.10	< 0.00020	1.4	< 0.00010	0.27	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
	10-Jun-2019	**0.020** [#1]	< 0.00060	0.00021	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00085	0.0014	< 0.10	0.00026	1.7	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00066	< 0.0010	< 0.0030
	26-Aug-2019	**0.047** [#1]	< 0.00060	0.00020	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00094	0.0014	< 0.10	0.00036	1.8	< 0.00010	0.27	< 0.00020	< 0.0010	< 0.0010	0.00084	< 0.0010	< 0.0030
	01-Oct-2019	**0.032** [#1]	< 0.00060	0.00033	0.051	< 0.0010	< 0.020	0.000021	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0011	0.0017	< 0.10	0.00057	1.8	< 0.00010	0.24	< 0.00020	< 0.0010	0.0011	0.00078	< 0.0010	0.0057
	12-Jun-2020	**0.023** [#1]	< 0.00060	0.00030	0.042	< 0.0010	< 0.020	0.000022	< 0.0010	< 0.00030	0.0019	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000038	0.00090	0.0017	< 0.10	0.00034	1.9	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	28-Jul-2020	**0.0084** [#1]	< 0.00060	0.00032	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.00020	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0013	0.0014	< 0.10	0.00047	1.8	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00083	0.0020	0.0084
	22-Sep-2020	**0.026** [#1]	< 0.00060	0.00039	0.044	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	**0.0023** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0010	0.0015	< 0.10	0.00032	1.9	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00074	< 0.0010	< 0.0030
	07-Jun-2021	**0.034** [#1]	< 0.00060	0.00025	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00078	0.0015	< 0.10	0.00024	2.0	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
(Duplicate)	07-Jun-2021	**0.026** [#1]	< 0.00060	0.00026	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	0.070	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00074	0.0018	< 0.10	0.00031	2.1	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00046	< 0.0010	< 0.0030
	19-Aug-2021	**0.036** [#1]	< 0.00060	0.00032	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0045** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00094	0.0018	< 0.10	0.00044	1.8	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00075	< 0.0010	0.0050
	18-Sep-2021	**0.044** [#1]	< 0.00060	0.00049	0.047	< 0.0010	< 0.020	0.000021	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000020	0.00096	0.0017	< 0.10	0.00035	1.8	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00081	< 0.0010	< 0.0030
	31-Mar-2022	**0.0054** [#1]	< 0.00060	0.0004	0.061	< 0.0010	< 0.020	< 0.000020	0.0017	< 0.00030	**0.0027** [#1]	< 0.060	**0.019** [#1]	< 0.020	< 0.0040	0.0000051	0.0012	0.0017	< 0.10	0.00035	2.5	< 0.00010	0.29	< 0.00020	< 0.0010	< 0.0010	0.00082	< 0.0010	0.013
	14-Jun-2022	**0.022** [#1]	< 0.00060	0.00030	0.039	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000022	0.00082	0.0015	< 0.10	0.00026	1.6	< 0.00010	0.16	< 0.00020	0.0033	< 0.0010	0.00062	< 0.0010	< 0.0030
	06-Aug-2022	**0.039** [#1]	< 0.00060	0.00038	0.053	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000024	0.0010	0.0015	< 0.10	0.00035	1.9	< 0.00010	0.23	< 0.00020	< 0.0010	0.0011	0.00070	< 0.0010	0.0037
(Duplicate)	06-Aug-2022	**0.038** [#1]	< 0.00060	0.00031	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0023** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0011	0.0016	< 0.10	0.00039	2.0	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00068	< 0.0010	0.0079
	25-Sep-2022	**0.029** [#1]	< 0.00060	0.00032	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0031** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0011	0.0016	< 0.10	0.00035	1.6	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00071	< 0.0010	0.0068
AEMP-02	18-Aug-2017	< 0.0030	< 0.00060	< 0.00020	0.087	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.00086	< 0.060	< 0.00020	< 0.020	0.0077	< 0.0000020	0.0019	0.00088	< 0.10	< 0.00020	2.1	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.00099	< 0.0010	< 0.0030
	16-Sep-2017	**0.0054** [#1]	< 0.00060	0.00020	0.077	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00042	< 0.060	< 0.00020	< 0.020	0.0081	0.0000023	0.0017	0.00069	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2017	**0.0051** [#1]	< 0.00060	< 0.00020	0.076	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00037	< 0.060	< 0.00020	< 0.020	0.0078	0.0000021	0.0017	0.00074	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	16-Oct-2017	0.0033	< 0.00060	0.00021	0.072	< 0.0010	0.024	< 0.000020	< 0.0010	< 0.00030	0.00042	< 0.060	< 0.00020	< 0.020	0.0091	< 0.0000020	0.0018	0.00077	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	23-Jun-2018	< 0.0030	< 0.00060	0.00023	0.085	< 0.0010	0.028	< 0.000020	< 0.0010	< 0.00030	0.00045	< 0.060	< 0.00020	< 0.020	0.0058	< 0.0000020	0.0019	0.00074	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	12-Aug-2018	< 0.0030	< 0.00060	< 0.00020	0.078	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.00062	< 0.060	< 0.00020	< 0.020	0.0079	0.0000020	0.0017	0.00078	< 0.10	0.00024	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	16-Oct-2018	**0.0060** [#1]	< 0.00060	< 0.00020	0.068	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.00092	< 0.060	< 0.00020	< 0.020	0.0046	< 0.0000020	0.0019	< 0.00050	< 0.10	< 0.00020	2.0	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	03-Jun-2019	0.0033	< 0.00060	0.00023	0.072	< 0.0010	0.021	< 0.000020	< 0.0010	< 0.00030	0.00086	< 0.060	< 0.00020	< 0.020	0.0050	< 0.0000020	0.0017	0.00060	< 0.10	< 0.00020	1.6	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.00098	< 0.0010	< 0.0030
(Duplicate)	03-Jun-2019	0.0035	< 0.00060	0.00020	0.071	< 0.0010	0.021	< 0.000020	< 0.0010	< 0.00030	0.00047	< 0.060	< 0.00020	< 0.020	0.0049	< 0.0000020	0.0016	0.00058	< 0.10	< 0.00020	1.6	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	28-Aug-2019	< 0.0030	< 0.00060	< 0.00020	0.076	< 0.0010	0.024	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.0069	< 0.0000020	0.0016	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.3	< 0.00020	0.0047	< 0.0010	0.0011	< 0.0010	< 0.0030
	03-Oct-2019	< 0.0030	< 0.00060	< 0.00020	0.076	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.00059	< 0.060	< 0.00020	< 0.020	0.0069	< 0.0000020	0.0018	0.00062	< 0.10	0.00020	2.1	< 0.00010	1.4	< 0.00020	0.0020	< 0.0010	0.0012	< 0.0010	0.0055
	10-Jun-2020	0.0039	< 0.00060	0.00030	0.080	< 0.0010	0.032	< 0.000020	< 0.0010	< 0.00030	0.00061	< 0.060	< 0.00020	< 0.020	0.0043	< 0.0000019	0.0018	0.0026	< 0.10	0.00021	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	0.0012	< 0.0030
	24-Jul-2020	0.0037	< 0.00060	< 0.00020	0.082	< 0.0010	0.034	< 0.000020	< 0.0010	< 0.00030	0.00098	0.062	0.00041	< 0.020	0.0075	< 0.0000019	0.0019	0.00087	< 0.10	0.00026	1.9	< 0.00010	1.4	< 0.00020	0.0018	< 0.0010	0.0015	< 0.0010	< 0.0030
	18-Sep-2020	0.0042	< 0.00060	0.00021	0.075	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.00064	< 0.060	< 0.00020	< 0.020	0.0062	< 0.0000019	0.0018	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	06-Jun-2021	< 0.0030	< 0.00060	0.00045	0.074	< 0.0010	0.023	< 0.000020	0.0015	< 0.00030	0.00069	< 0.060	< 0.00020	< 0.020	0.0063	< 0.0000019	0.0014	0.0011	< 0.10	0.00021	1.9	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.00092	< 0.0010	< 0.0030
	18-Aug-2021	0.0041	< 0.00060	0.00022	0.079	< 0.0010	0.037	< 0.000020	< 0.0010	< 0.00030	**0.0032** [#1]	< 0.060	< 0.00020	< 0.020	0.0058	---	0.0018	0.00072	< 0.10	< 0.00020	2.0	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0057
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-Sep-2021	< 0.0030	< 0.00060	< 0.00020	0.079	< 0.0010	0.048	< 0.000020	< 0.0010	< 0.00030	**0.0028** [#1]	< 0.060	< 0.00020	< 0.020	0.0072	< 0.0000019	0.0017	< 0.00050	< 0.10	< 0.00020	2.0	< 0.00010	1.6	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0036
	11-Jun-2022	**0.018** [#1]	< 0.00060	0.00021	0.073	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0076	< 0.0000019	0.0015	0.0015	< 0.10	< 0.00020	1.7	< 0.00010	1.2	< 0.00020	0.0021	< 0.0010	0.00090	< 0.0010	< 0.0030
	06-Aug-2022	< 0.0030	< 0.00060	0.00035	0.082	< 0.0010	0.036	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0061	< 0.0000019	0.0018	0.00053	< 0.10	< 0.00020	2.2	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	26-Sep-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0055	< 0.0000019	0.0035	0.00052	< 0.10	< 0.00020	1.8	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
AEMP-03	18-Aug-2017	**0.0060** [#1]	< 0.00060	0.00022	0.088	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	0.0056	0.0000025	0.0018	0.00076	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	0.0046
	16-Sep-2017	**0.0054** [#1]	< 0.00060	< 0.00020	0.076	< 0.0010	0.025	< 0.000020	< 0.0010	< 0.00030	0.00051	< 0.060	< 0.00020	< 0.020	0.0057	0.0000033	0.0017	0.00073	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	16-Oct-2017	< 0.0030	< 0.00060	< 0.00020	0.070	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.00033	< 0.060	< 0.00020	< 0.020	0.0063	< 0.0000020	0.0018	0.00074	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	23-Jun-2018	**0.0097** [#1]	< 0.00060	0.00028	0.084	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.00085	< 0.060	< 0.00020	< 0.020	0.0060	< 0.0000020	0.0021	0.00068	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	12-Aug-2018	0.0039	< 0.00060	0.00021	0.081	< 0.0010	0.028	< 0.000020	< 0.0010	< 0.00030	0.00070	< 0.060	< 0.00020	< 0.020	0.0057	< 0.0000020	0.0018	0.0016	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	16-Oct-2018	< 0.0030	< 0.00060	< 0.00020	0.068	< 0.0010	0.024	< 0.000020	< 0.0010	< 0.00030	0.00058	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0018	< 0.00050	< 0.10	< 0.00020	2.0	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	03-Jun-2019	**0.025** [#1]	< 0.00060	< 0.00020	0.070	< 0.0010	0.020	< 0.000020	< 0.0010	< 0.00030	0.00041	< 0.060	< 0.00020	< 0.020	0.0052	0.0000020	0.0015	0.00085	< 0.10	< 0.00020	1.7	< 0.00010	1.1	< 0.00020	< 0.0010	0.0011	0.0010	< 0.0010	< 0.0030
	28-Aug-2019	< 0.0030	< 0.00060	< 0.00020	0.077	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.00032	< 0.060	< 0.00020	< 0.020	0.0055	< 0.0000020	0.0015	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	02-Oct-2019	< 0.0030	< 0.00060	< 0.00020	0.070	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.00030	< 0.060	< 0.00020	< 0.020	0.0044	< 0.0000020	0.0018	0.00057	< 0.10	0.00026	1.8	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	10-Jun-2020	< 0.0030	< 0.00060	< 0.00020	0.077	< 0.0010	0.021	< 0.000020	< 0.0010	< 0.00030	0.00047	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0018	0.0028	< 0.10	< 0.00020	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	24-Jul-2020	< 0.0030	< 0.00060	< 0.00020	0.082	< 0.0010	0.030	< 0.000020	< 0.0010	< 0.00030	0.00068	< 0.060	< 0.00020	< 0.020	0.0051	< 0.0000019	0.0017	0.00082	< 0.10	0.00022	1.9	< 0.00010	1.4	< 0.00020	0.0054	< 0.0010	0.0013	< 0.0010	0.0031

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**0.2**	**0.000026**	**0.073**	**0.025**	**---**	**0.001**	**---**	**0.00025**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.03**
	20-Sep-2020	< 0.0030	< 0.00060	< 0.00020	0.075	< 0.0010	0.028	< 0.000020	< 0.0010	< 0.00030	**0.0023 [#1]**	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0018	0.00096	< 0.10	< 0.00020	1.9	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	06-Jun-2021	< 0.0030	< 0.00060	0.00023	0.073	< 0.0010	0.020	< 0.000020	< 0.0010	< 0.00030	0.00046	< 0.060	< 0.00020	< 0.020	0.0042	< 0.0000019	0.0015	0.00079	< 0.10	< 0.00020	1.9	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.00093	< 0.0010	< 0.0030
	18-Aug-2021	0.0032	< 0.00060	0.00027	0.078	< 0.0010	0.075	< 0.000020	< 0.0010	< 0.00030	0.00077	< 0.060	< 0.00020	< 0.020	< 0.0040	---	0.0019	0.00099	< 0.10	< 0.00020	2.0	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-Sep-2021	< 0.0030	< 0.00060	< 0.00020	0.075	< 0.0010	0.039	< 0.000020	< 0.0010	< 0.00030	0.0031	< 0.060	< 0.00020	< 0.020	0.0043	< 0.0000019	0.0014	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	0.0041
	11-Jun-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0017	0.00071	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	06-Aug-2022	< 0.0030	< 0.00060	0.00029	0.084	< 0.0010	0.035	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0045	< 0.0000019	0.0018	0.00064	< 0.10	< 0.00020	2.2	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	26-Sep-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0042	< 0.0000019	0.0021	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
AEMP-04	18-Aug-2017	< 0.0030	< 0.00060	0.00042	0.087	< 0.0010	0.025	**0.00019 [#1]**	< 0.0010	< 0.00030	0.00082	< 0.060	< 0.00020	< 0.020	0.0047	< 0.0000020	0.0020	0.0010	< 0.10	0.00029	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	16-Sep-2017	0.0033	< 0.00060	0.00021	0.079	< 0.0010	0.025	0.000028	< 0.0010	< 0.00030	0.00071	< 0.060	< 0.00020	< 0.020	0.0049	< 0.0000020	0.0018	0.00076	< 0.10	< 0.00020	1.9	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.019
	16-Oct-2017	< 0.0030	< 0.00060	< 0.00020	0.070	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.00031	< 0.060	< 0.00020	< 0.020	0.0050	< 0.0000020	0.0018	0.00051	< 0.10	0.00022	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
(Duplicate)	16-Oct-2017	0.0041	< 0.00060	< 0.00020	0.070	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.00035	< 0.060	< 0.00020	< 0.020	0.0051	< 0.0000020	0.0017	0.00064	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	23-Jun-2018	0.0032	< 0.00060	0.00029	0.084	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.00055	< 0.060	< 0.00020	< 0.020	0.0070	< 0.0000020	0.0019	0.00059	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
(Duplicate)	23-Jun-2018	0.0034	< 0.00060	0.00029	0.083	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.0010	< 0.060	< 0.00020	< 0.020	0.0066	< 0.0000020	0.0018	0.00063	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.019
	12-Aug-2018	**0.0069 [#1]**	< 0.00060	< 0.00020	0.078	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00053	< 0.060	< 0.00020	< 0.020	0.0055	< 0.0000020	0.0018	0.0010	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	16-Oct-2018	< 0.0030	< 0.00060	< 0.00020	0.071	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00097	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0019	< 0.00050	< 0.10	0.00020	2.0	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	03-Jun-2019	< 0.0030	< 0.00060	< 0.00020	0.070	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00037	< 0.060	< 0.00020	< 0.020	0.0041	< 0.0000020	0.0016	0.00063	< 0.10	< 0.00020	1.6	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	25-Aug-2019	< 0.0030	< 0.00060	< 0.00020	0.075	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00031	< 0.060	< 0.00020	< 0.020	0.0049	< 0.0000020	0.0016	0.00058	< 0.10	< 0.00020	1.9	< 0.00010	1.3	< 0.00020	0.0019	< 0.0010	0.0011	< 0.0010	< 0.0030
	02-Oct-2019	< 0.0030	< 0.00060	0.00020	0.070	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	**0.0037 [#1]**	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0019	0.00064	< 0.10	0.00024	1.8	< 0.00010	1.4	< 0.00020	0.0015	< 0.0010	0.0012	< 0.0010	0.0095
	10-Jun-2020	< 0.0030	< 0.00060	< 0.00020	0.076	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00044	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0017	0.00064	< 0.10	< 0.00020	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
(Duplicate)	10-Jun-2020	< 0.0030	< 0.00060	0.00030	0.076	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00036	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0020	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	24-Jul-2020	**0.018 [#1]**	< 0.00060	0.00047	0.043	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	0.0043	< 0.0000019	0.00083	0.00099	< 0.10	0.00025	1.5	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
	18-Sep-2020	< 0.0030	< 0.00060	< 0.00020	0.069	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00041	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0018	0.00068	< 0.10	< 0.00020	1.9	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	06-Jun-2021	0.0083	< 0.00060	0.00022	0.074	< 0.0010	0.028	< 0.000020	0.0014	< 0.00030	**0.0032 [#1]**	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0016	0.0018	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.00090	< 0.0010	< 0.0030
	18-Aug-2021	**0.011 [#1]**	< 0.00060	< 0.00020	0.082	< 0.0010	0.049	< 0.000020	< 0.0010	< 0.00030	**0.0031 [#1]**	< 0.060	< 0.00020	< 0.020	< 0.0040	---	0.0018	0.00069	< 0.10	< 0.00020	2.1	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	0.0073
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---
	19-Sep-2021	< 0.0030	< 0.00060	< 0.00020	0.079	< 0.0010	0.040	< 0.000020	< 0.0010	< 0.00030	0.00032	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0016	< 0.00050	< 0.10	< 0.00020	2.0	< 0.00010	1.6	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	11-Jun-2022	**0.016 [#1]**	< 0.00060	< 0.00020	0.073	< 0.0010	0.023	< 0.000020	< 0.0010	< 0.00030	**0.0060 [#1]**	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0016	0.00062	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	0.0012	< 0.0010	0.00095	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	0.024	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0015	< 0.00050	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	0.0014	< 0.0010	0.00098	< 0.0010	< 0.0030
	06-Aug-2022	< 0.0030	< 0.00060	0.00035	0.082	< 0.0010	0.037	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0065	< 0.0000019	0.0019	0.00070	< 0.10	< 0.00020	2.0	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	24-Sep-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0046	< 0.0000019	0.0016	0.00059	< 0.10	< 0.00020	1.9	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
AEMP-05	19-Aug-2017	0.0030	< 0.00060	0.00089	0.15	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.00020	0.073	< 0.00020	< 0.020	0.0071	< 0.0000020	0.0015	0.00099	< 0.10	< 0.00020	0.21	< 0.00010	0.25	< 0.00020	< 0.0010	< 0.0010	0.00034	< 0.0010	< 0.0030
	16-Sep-2017	0.0043	< 0.00060	0.00049	0.14	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.00020	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0016	0.0010	< 0.10	< 0.00020	0.25	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00033	< 0.0010	< 0.0030
	15-Oct-2017	< 0.0030	< 0.00060	0.00064	0.13	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00042	< 0.060	< 0.00020	< 0.020	0.0052	< 0.0000020	0.0013	0.0012	< 0.10	< 0.00020	0.39	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00029	< 0.0010	< 0.0030
	23-Jun-2018	**0.040 [#1]**	< 0.00060	0.00030	0.052	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.013	0.0000025	0.0010	0.0011	< 0.10	0.00033	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00066	< 0.0010	< 0.0030
	13-Aug-2018	< 0.0030	< 0.00060	0.0011	0.15	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00055	**0.34 [#1]**	< 0.00020	< 0.020	0.028	< 0.0000020	0.0017	0.0013	< 0.10	< 0.00020	0.44	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00018	< 0.0010	< 0.0030
	18-Oct-2018	**0.015 [#1]**	< 0.00060	0.00081	0.17	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	0.18	< 0.00020	< 0.020	0.18	< 0.0000020	0.0015	0.0017	< 0.10	< 0.00020	0.34	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00032	< 0.0010	0.0032
	02-Jun-2019	**0.0051 [#1]**	< 0.00060	0.00090	0.13	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00024	0.25	< 0.00020	< 0.020	0.040	< 0.0000020	0.00093	0.0011	< 0.10	< 0.00020	1.1	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00022	< 0.0010	< 0.0030
	27-Aug-2019	< 0.0030	< 0.00060	0.00062	0.15	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.00020	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0014	0.00068	< 0.10	< 0.00020	0.17	< 0.00010	0.17	< 0.00020	0.0018	< 0.0010	0.00018	< 0.0010	< 0.0030
	01-Oct-2019	< 0.0030	< 0.00060	0.00047	0.15	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00031	0.11	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0011	0.00080	< 0.10	< 0.00020	0.25	< 0.00010	0.15	< 0.00020	< 0.0010	< 0.0010	0.00018	< 0.0010	< 0.0030
	11-Jun-2020	**0.0092 [#1]**	< 0.00060	0.00087	0.11	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	0.25	< 0.00020	< 0.020	0.024	0.0000054	0.0015	0.0018	< 0.10	< 0.00020	1.2	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00061	< 0.0010	< 0.0030
	26-Jul-2020	< 0.0030	< 0.00060	0.00087	0.13	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00036	**0.40 [#1]**	< 0.00020	< 0.020	0.022	< 0.0000019	0.0013	0.0011	< 0.10	< 0.00020	0.41	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00017	< 0.0010	< 0.0030
	16-Sep-2020	< 0.0030	< 0.00060	0.00057	0.13	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0039 [#1]**	0.11	< 0.00020	< 0.020	0.0061	< 0.0000019	0.0012	0.0011	< 0.10	< 0.00020	0.29	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00018	< 0.0010	< 0.0030
	07-Jun-2021	**0.0081 [#1]**	< 0.00060	0.00043	0.089	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	0.081	< 0.00020	< 0.020	0.019	< 0.0000019	0.0018	0.0020	< 0.10	< 0.00020	1.4	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00049	< 0.0010	< 0.0030
	19-Aug-2021	< 0.0030	< 0.00060	0.00067	0.090	< 0.0010	0.031	< 0.000020	< 0.0010	< 0.00030	0.00041	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0015	0.0013	< 0.10	< 0.00020	< 0.10	< 0.00010	0.15	< 0.00020	< 0.0010	< 0.0010	0.00034	< 0.0010	< 0.0030
	18-Sep-2021	< 0.0030	< 0.00060	0.00075	0.11	< 0.0010	0.031	< 0.000020	< 0.0010	< 0.00030	0.00058	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0018	0.00096	< 0.10	< 0.00020	0.22	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00048	< 0.0010	< 0.0030
	14-Jun-2022	< 0.0030	< 0.00060	0.00070	0.11	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0098	0.0000026	0.0011	0.0012	< 0.10	< 0.00020	0.86	< 0.00010	0.17	< 0.00020	0.0022	< 0.0010	0.00037	< 0.0010	< 0.0030
	05-Aug-2022	< 0.0030	< 0.00060	0.00084	0.12	< 0.0010	< 0.020	< 0.000020	< 0.0010	0.00038	**0.0023 [#1]**	0.065	0.00031	< 0.020	< 0.0040	< 0.0000019	0.0016	0.0012	< 0.10	< 0.00020	0.36	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00031	< 0.0010	0.0083
	25-Sep-2022	< 0.0030	< 0.00060	0.00091	0.15	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0026	0.0014	< 0.10	< 0.00020	< 0.50	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00035	< 0.0010	< 0.0030
AEMP-06	21-Aug-2017	**0.032 [#1]**	< 0.00060	0.00038	0.043	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00087	0.0010	< 0.10	0.00033	1.5	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
	16-Sep-2017	**0.027 [#1]**	< 0.00060	0.00024	0.040	< 0.0010	< 0.020	0.000021	< 0.0010	< 0.00030	0.00091	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00079	0.0011	< 0.10	< 0.00020	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	0.010
	16-Oct-2017	**0.013 [#1]**	< 0.00060	0.00030	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00083	< 0.060	< 0.00020	< 0.020	0.0068	< 0.0000020	0.0014	0.0013	< 0.10	0.00022	1.5	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00080	< 0.0010	< 0.0030
	23-Jun-2018	**0.027 [#1]**	< 0.00060	0.00032	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00086	0.00096	< 0.10	0.00021	1.4	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
	13-Aug-2018	**0.048 [#1]**	< 0.00060	0.00029	0.043	< 0.0010	< 0.020	0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00085	0.0017	< 0.10	0.00031	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00064	< 0.0010	0.0034

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	---	**0.005**	---	---	**1.5**	**0.00009**	**0.0089**	---	**0.002**	**0.3**	**0.001**	---	**0.2**	**0.000026**	**0.073**	**0.025**	---	**0.001**	---	**0.00025**	---	**0.0008**	---	---	**0.015**	---	**0.03**
	18-Oct-2018	**0.0069** [#1]	< 0.00060	0.00049	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00079	< 0.060	< 0.00020	< 0.020	0.018	< 0.0000020	0.00077	0.00092	< 0.10	0.00027	1.4	< 0.00010	0.22	< 0.00020	0.0023	< 0.0010	0.00048	< 0.0010	< 0.0030
	03-Jun-2019	**0.015** [#1]	< 0.00060	0.00029	0.035	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000021	0.00074	0.00096	< 0.10	< 0.00020	1.4	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00058	< 0.0010	< 0.0030
	25-Aug-2019	**0.024** [#1]	< 0.00060	0.00023	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00091	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00068	0.00068	< 0.10	0.00022	1.5	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	02-Oct-2019	**0.015** [#1]	< 0.00060	0.00024	0.036	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00078	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00077	0.00098	< 0.10	0.00021	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
	03-Oct-2019	**0.016** [#1]	< 0.00060	0.00028	0.036	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00081	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00077	0.00096	< 0.10	0.00023	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	12-Jun-2020	**0.024** [#1]	< 0.00060	0.00028	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0051** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00081	0.0014	< 0.10	0.00025	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00068	< 0.0010	0.0059
	28-Jul-2020	**0.023** [#1]	< 0.00060	0.00028	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0010	0.00062	< 0.10	0.00038	1.5	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00066	< 0.0010	< 0.0030
	22-Sep-2020	**0.017** [#1]	< 0.00060	0.00035	0.037	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00069	0.0011	< 0.10	< 0.00020	1.6	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00058	< 0.0010	< 0.0030
	06-Jun-2021	**0.048** [#1]	< 0.00060	0.00038	0.042	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	0.085	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00061	0.0014	< 0.10	0.00024	1.9	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00035	< 0.0010	< 0.0030
	18-Aug-2021	**0.031** [#1]	< 0.00060	0.00035	0.040	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	---	0.00088	0.0014	< 0.10	0.00026	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
(Duplicate)	18-Aug-2021	**0.035** [#1]	< 0.00060	0.00032	0.039	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	0.00072	< 0.020	< 0.0040	---	0.00084	0.0013	< 0.10	< 0.00020	1.5	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0000028	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	**0.014** [#1]	< 0.00060	0.00041	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00094	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00076	0.00074	< 0.10	< 0.00020	1.3	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
	12-Jun-2022	**0.060** [#1]	< 0.00060	0.00044	0.039	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	0.0019	0.15	< 0.00020	< 0.020	0.0088	0.0000023	0.00078	0.0017	< 0.10	0.00032	1.7	< 0.00010	0.15	< 0.00020	< 0.0010	0.0025	0.00060	< 0.0010	< 0.0030
	06-Aug-2022	**0.018** [#1]	< 0.00060	0.00032	0.052	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0021** [#1]	< 0.060	< 0.00020	< 0.020	0.0073	< 0.0000019	0.0010	0.0011	< 0.10	0.00022	1.7	< 0.00010	0.30	< 0.00020	< 0.0010	0.0011	0.00060	< 0.0010	< 0.0030
	24-Sep-2022	**0.0089** [#1]	< 0.00060	0.00033	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	0.010	< 0.0000019	0.0017	0.0010	< 0.10	0.00023	1.3	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	0.0041
AEMP-07	21-Aug-2017	**0.033** [#1]	< 0.00060	0.00034	0.043	< 0.0010	< 0.020	0.000028	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00084	0.0011	< 0.10	0.00032	1.5	< 0.00010	0.22	< 0.00020	0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
(Duplicate)	21-Aug-2017	**0.030** [#1]	< 0.00060	0.00036	0.042	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00083	0.00089	< 0.10	0.00032	1.5	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	< 0.0030
	16-Sep-2017	**0.026** [#1]	< 0.00060	0.00022	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00075	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00072	0.0011	< 0.10	0.00022	1.4	< 0.00010	0.22	< 0.00020	0.0019	< 0.0010	0.00054	< 0.0010	< 0.0030
	16-Oct-2017	**0.012** [#1]	< 0.00060	0.00036	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00070	< 0.060	< 0.00020	< 0.020	0.022	< 0.0000020	0.00082	0.0010	< 0.10	< 0.00020	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
	23-Jun-2018	**0.028** [#1]	< 0.00060	0.00025	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000031	0.00081	0.0010	< 0.10	< 0.00020	1.4	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
	13-Aug-2018	**0.048** [#1]	< 0.00060	0.00027	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000022	0.00076	0.0014	< 0.10	0.00026	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
	17-Oct-2018	**0.0077** [#1]	< 0.00060	0.00044	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00092	< 0.060	< 0.00020	< 0.020	0.013	< 0.0000020	0.00081	0.00086	< 0.10	0.00025	1.3	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00050	< 0.0010	< 0.0030
(Duplicate)	17-Oct-2018	**0.0088** [#1]	< 0.00060	0.00046	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00081	< 0.060	< 0.00020	< 0.020	0.018	< 0.0000020	0.00087	0.00091	< 0.10	0.00024	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00048	< 0.0010	< 0.0030
	03-Jun-2019	**0.016** [#1]	< 0.00060	0.00033	0.037	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	0.0098	0.0000020	0.00089	0.0012	< 0.10	0.00023	1.4	< 0.00010	0.19	< 0.00020	0.0018	< 0.0010	0.00060	< 0.0010	< 0.0030
	25-Aug-2019	**0.022** [#1]	< 0.00060	0.00030	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00084	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00085	0.00092	< 0.10	0.00024	1.5	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00069	< 0.0010	< 0.0030
	03-Oct-2019	**0.014** [#1]	< 0.00060	0.00043	0.062	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00070	< 0.060	< 0.00020	< 0.020	0.029	< 0.0000020	0.00081	0.0025	< 0.10	0.00022	1.4	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	< 0.0030
	10-Jun-2020	**0.012** [#1]	< 0.00060	0.00030	0.036	< 0.0010	< 0.020	0.000023	0.0042	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00084	0.0039	< 0.10	0.00030	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00058	0.0013	< 0.0030
	24-Jul-2020	**0.018** [#1]	< 0.00060	0.00026	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00097	0.0013	< 0.10	< 0.00020	1.5	< 0.00010	0.19	< 0.00020	0.0020	< 0.0010	0.00068	< 0.0010	< 0.0030
(Duplicate)	24-Jul-2020	**0.018** [#1]	< 0.00060	0.00025	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00062	0.0010	< 0.10	0.00021	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
	18-Sep-2020	**0.016** [#1]	< 0.00060	0.00029	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00072	0.0022	< 0.10	0.00022	1.8	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
(Duplicate)	18-Sep-2020	**0.017** [#1]	< 0.00060	0.00031	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00076	0.0012	< 0.10	0.00027	1.7	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	< 0.0030
	06-Jun-2021	**0.094** [#1]	< 0.00060	0.00055	0.044	< 0.0010	< 0.020	< 0.000020	0.0014	< 0.00030	0.0017	0.17	< 0.00020	< 0.020	0.0073	< 0.0000019	0.00060	0.0016	< 0.10	0.00025	2.0	< 0.00010	0.17	< 0.00020	< 0.0010	0.0020	0.00040	< 0.0010	< 0.0030
	18-Aug-2021	**0.026** [#1]	< 0.00060	0.00038	0.043	< 0.0010	0.054	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	0.0044	---	0.00083	0.0013	< 0.10	0.00030	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00064	< 0.0010	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	**0.014** [#1]	< 0.00060	0.00030	0.044	< 0.0010	0.042	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00068	0.00095	< 0.10	0.00022	1.5	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00052	< 0.0010	< 0.0030
	12-Jun-2022	**0.013** [#1]	< 0.00060	0.00033	0.043	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	**0.0030** [#1]	0.076	< 0.00020	< 0.020	0.0059	< 0.0000019	0.0034	0.0020	< 0.10	0.00034	1.6	< 0.00010	0.16	< 0.00020	0.0016	0.0013	0.0011	< 0.0010	< 0.0030
	06-Aug-2022	**0.011** [#1]	< 0.00060	0.00050	0.054	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.067	< 0.0000019	0.0011	0.0012	< 0.10	0.00028	1.6	< 0.00010	0.20	< 0.00020	< 0.0010	0.0011	0.00062	< 0.0010	< 0.0030
(Duplicate)	06-Aug-2022	**0.014** [#1]	< 0.00060	0.00066	0.055	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.069	< 0.0000019	0.0010	0.0011	< 0.10	0.00030	1.5	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	24-Sep-2022	**0.0060** [#1]	< 0.00060	0.00055	0.065	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.068	< 0.0000019	0.00089	0.0011	< 0.10	0.00026	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	24-Sep-2022	**0.0071** [#1]	< 0.00060	0.00058	0.065	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.073	< 0.0000019	0.00089	0.00092	< 0.10	0.00026	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00061	< 0.0010	< 0.0030
AEMP-08	17-Aug-2017	**0.067** [#1]	< 0.00060	0.00043	0.051	< 0.0010	< 0.020	0.000030	< 0.0010	< 0.00030	0.0019	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0012	0.0015	< 0.10	0.00044	1.9	< 0.00010	0.25	< 0.00020	< 0.0010	< 0.0010	0.00085	0.0011	0.0049
	21-Aug-2017	**0.035** [#1]	< 0.00060	0.00035	0.044	< 0.0010	< 0.020	0.000032	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00086	0.0011	< 0.10	0.00026	1.6	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
	16-Sep-2017	**0.033** [#1]	< 0.00060	0.00027	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.0041	< 0.0000020	0.00070	0.0010	< 0.10	< 0.00020	1.5	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
	16-Oct-2017	**0.015** [#1]	< 0.00060	0.00035	0.036	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0010	< 0.060	< 0.00020	< 0.020	0.0049	< 0.0000020	0.00070	0.0011	< 0.10	0.00025	1.4	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
	23-Jun-2018	**0.13** [#1]	< 0.00060	0.00031	0.047	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	**0.0030** [#1]	0.20	0.00026	< 0.020	0.011	0.0000026	0.00079	0.0012	< 0.10	0.00021	1.4	< 0.00010	0.18	< 0.00020	< 0.0010	0.0010	0.00050	< 0.0010	0.0078
	13-Aug-2018	**0.048** [#1]	< 0.00060	0.00036	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00086	0.0017	< 0.10	0.00022	1.5	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	17-Oct-2018	**0.0097** [#1]	< 0.00060	0.00023	0.039	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00077	0.00099	< 0.10	< 0.00020	1.4	< 0.00010	0.28	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	03-Jun-2019	**0.018** [#1]	< 0.00060	0.00029	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.0048	< 0.0000020	0.00081	0.00096	< 0.10	0.00028	1.4	< 0.00010	0.28	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
	28-Aug-2019	**0.022** [#1]	< 0.00060	0.00024	0.042	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00079	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00091	0.00088	< 0.10	0.00021	1.5	< 0.00010	0.31	< 0.00020	< 0.0010	< 0.0010	0.00066	< 0.0010	< 0.0030
	03-Oct-2019	**0.014** [#1]	< 0.00060	0.00039	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0021** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00091	0.00086	< 0.10	0.00026	1.4	< 0.00010	0.27	< 0.00020	< 0.0010	0.0012	0.00057	< 0.0010	0.0098

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	---	**0.005**	---	---	**1.5**	**0.00009**	**0.0089**	---	**0.002**	**0.3**	**0.001**	---	**0.2**	**0.000026**	**0.073**	**0.025**	---	**0.001**	---	**0.00025**	---	**0.0008**	---	---	**0.015**	---	**0.03**
	10-Jun-2020	**0.013** [#1]	< 0.00060	0.00044	0.041	< 0.0010	< 0.020	0.000021	0.0038	< 0.00030	**0.0062** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0015	0.0034	< 0.10	0.00039	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	24-Jul-2020	**0.018** [#1]	< 0.00060	0.00026	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00086	0.0012	< 0.10	< 0.00020	1.5	< 0.00010	0.19	< 0.00020	0.0028	< 0.0010	0.00062	< 0.0010	< 0.0030
	18-Sep-2020	**0.015** [#1]	< 0.00060	0.00023	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00075	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00066	0.0013	< 0.10	0.00027	1.7	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
	06-Jun-2021	**0.015** [#1]	< 0.00060	0.00041	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	0.066	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00066	0.0015	< 0.10	0.00027	1.8	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00035	< 0.0010	< 0.0030
	18-Aug-2021	**0.025** [#1]	< 0.00060	0.00034	0.042	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	0.000011	0.00086	0.0014	< 0.10	0.00022	1.5	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00061	< 0.0010	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	**0.014** [#1]	< 0.00060	0.00035	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0031** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00075	0.00093	< 0.10	0.00020	1.5	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	< 0.0030
	31-Mar-3022	**0.019** [#1]	< 0.00060	0.00026	0.032	< 0.0010	< 0.020	**0.00016** [#1]	< 0.0010	< 0.00030	0.0013	< 0.060	0.00021	< 0.020	< 0.0040	< 0.0000019	0.00055	0.00063	< 0.10	< 0.00020	1.5	< 0.00010	0.21	< 0.00020	< 0.0010	0.0018	0.00049	< 0.0010	0.0042
	12-Jun-2022	**0.016** [#1]	< 0.00060	0.00033	0.033	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	0.0017	0.064	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0020	0.0024	< 0.10	0.00051	1.6	< 0.00010	0.16	< 0.00020	< 0.0010	0.0011	0.00076	< 0.0010	< 0.0030
	06-Aug-2022	**0.12** [#1]	< 0.00060	0.00053	0.057	< 0.0010	< 0.020	0.000030	< 0.0010	0.00032	**0.0024** [#1]	**0.34** [#1]	0.00058	< 0.020	0.030	< 0.0000019	0.00080	0.0017	< 0.10	0.00024	2.0	< 0.00010	0.24	< 0.00020	< 0.0010	0.0027	0.00061	< 0.0010	0.0057
	25-Sep-2022	**0.011** [#1]	< 0.00060	0.00029	0.049	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0031** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0018	0.0013	< 0.10	0.00022	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	0.0031
AEMP-09	21-Aug-2017	**0.031** [#1]	< 0.00060	0.00039	0.045	< 0.0010	< 0.020	0.000027	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.013	< 0.0000020	0.00088	0.00098	< 0.10	0.00032	1.5	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00064	< 0.0010	< 0.0030
	16-Sep-2017	**0.029** [#1]	< 0.00060	0.00026	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	0.019	< 0.0000020	0.0010	0.0013	< 0.10	0.00028	1.4	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00080	< 0.0010	< 0.0030
	16-Oct-2017	**0.0076** [#1]	< 0.00060	0.00053	0.071	< 0.0010	0.050	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.092	< 0.0000020	0.00084	0.0012	< 0.10	0.00023	1.7	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
	23-Jun-2018	**0.026** [#1]	< 0.00060	0.00036	0.039	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000023	0.00091	0.00095	< 0.10	< 0.00020	1.4	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00051	< 0.0010	< 0.0030
	12-Aug-2018	**0.13** [#1]	< 0.00060	0.00038	0.053	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0014	0.20	0.00023	< 0.020	0.020	0.0000027	0.00083	0.0016	< 0.10	0.00023	1.6	< 0.00010	0.27	< 0.00020	< 0.0010	0.0011	0.00070	< 0.0010	< 0.0030
	17-Oct-2018	**0.0099** [#1]	< 0.00060	0.00050	0.067	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0020 [#1]	< 0.060	< 0.00020	< 0.020	0.019	< 0.0000020	0.0010	0.0010	< 0.10	0.00020	1.4	< 0.00010	0.27	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
	02-Jun-2019	**0.017** [#1]	< 0.00060	0.00039	0.049	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.021	0.0000021	0.0011	0.0012	< 0.10	0.00021	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	28-Aug-2019	**0.027** [#1]	< 0.00060	0.00035	0.052	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0023** [#1]	< 0.060	< 0.00020	< 0.020	0.0078	< 0.0000020	0.0010	0.00094	< 0.10	0.00025	1.6	< 0.00010	0.26	< 0.00020	0.0014	< 0.0010	0.00064	< 0.0010	< 0.0030
	03-Oct-2019	**0.020** [#1]	< 0.00060	0.00034	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.0071	< 0.0000020	0.00084	0.00094	< 0.10	0.00021	1.4	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	0.0039
	10-Jun-2020	**0.017** [#1]	< 0.00060	0.00027	0.036	< 0.0010	< 0.020	0.000028	0.0035	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	0.0041	< 0.0000019	0.00074	0.0032	< 0.10	0.00030	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
	24-Jul-2020	< 0.0030	< 0.00060	< 0.00020	0.086	< 0.0010	0.033	< 0.000020	< 0.0010	< 0.00030	0.00040	< 0.060	< 0.00020	< 0.020	0.0054	< 0.0000019	0.0020	< 0.00050	< 0.10	< 0.00020	1.8	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	18-Sep-2020	**0.013** [#1]	< 0.00060	< 0.00020	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.0093	< 0.0000019	0.00072	0.0014	< 0.10	0.00025	1.7	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	06-Jun-2021	**0.010** [#1]	< 0.00060	0.00031	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000056	0.00065	0.0014	< 0.10	0.00030	1.8	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00040	< 0.0010	< 0.0030
	18-Aug-2021	**0.031** [#1]	< 0.00060	0.00029	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	0.000011	0.00089	0.0013	< 0.10	0.00021	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00064	< 0.0010	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	0.0000023	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	**0.019** [#1]	< 0.00060	0.00027	0.048	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	**0.0031** [#1]	< 0.060	< 0.00020	< 0.020	0.0094	< 0.0000019	0.0014	0.0012	< 0.10	0.00022	1.3	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00069	< 0.0010	< 0.0030
	11-Jun-2022	**0.014** [#1]	< 0.00060	0.00037	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0036** [#1]	< 0.060	< 0.00020	< 0.020	0.0050	< 0.0000019	0.00083	0.0015	< 0.10	0.00041	1.6	< 0.00010	0.15	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
	05-Aug-2022	**0.034** [#1]	< 0.00060	0.00039	0.060	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	**0.0047** [#1]	< 0.060	0.00029	< 0.020	0.027	< 0.0000019	0.0011	0.0014	< 0.10	0.00033	1.9	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	0.0082
	24-Sep-2022	**0.014** [#1]	< 0.00060	0.00051	0.060	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.041	< 0.0000019	0.0010	0.00085	< 0.10	0.00026	1.4	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
AEMP-10	23-Jun-2018	**0.045** [#1]	< 0.00060	0.00025	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00094	0.0012	< 0.10	0.00029	1.5	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
	14-Aug-2018	**0.074** [#1]	< 0.00060	< 0.00020	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00097	0.0017	< 0.10	0.00036	1.6	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	< 0.0030
(Duplicate)	14-Aug-2018	**0.24** [#1]	< 0.00060	0.00050	0.054	< 0.0010	< 0.020	0.000065	< 0.0010	0.00050	0.0019	0.28	0.00034	< 0.020	0.018	0.0000021	0.00090	0.0024	< 0.10	0.00037	2.0	< 0.00010	0.22	< 0.00020	< 0.0010	0.0027	0.00077	< 0.0010	0.0079
	18-Oct-2018	**0.0061** [#1]	< 0.00060	0.00030	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00081	< 0.060	< 0.00020	< 0.020	0.0099	< 0.0000020	0.00077	0.00079	< 0.10	< 0.00020	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00050	< 0.0010	< 0.0030
	10-Jun-2019	**0.017** [#1]	< 0.00060	0.00021	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0022** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00090	0.0013	< 0.10	0.00026	1.6	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
	26-Aug-2019	**0.039** [#1]	< 0.00060	< 0.00020	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00077	0.0012	< 0.10	0.00038	1.8	< 0.00010	0.25	< 0.00020	0.0019	< 0.0010	0.00078	< 0.0010	< 0.0030
	01-Oct-2019	**0.026** [#1]	< 0.00060	0.00028	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0011	0.0018	< 0.10	0.00048	1.8	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00082	< 0.0010	< 0.0030
	12-Jun-2020	**0.017** [#1]	< 0.00060	0.00023	0.040	< 0.0010	< 0.020	0.000021	< 0.0010	< 0.00030	0.0019	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00089	0.0015	< 0.10	0.00042	1.7	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00069	< 0.0010	< 0.0030
	28-Jul-2020	**0.029** [#1]	< 0.00060	0.00031	0.042	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0012	0.0016	< 0.10	0.00054	1.7	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00086	< 0.0010	< 0.0030
	22-Sep-2020	**0.066** [#1]	< 0.00060	0.00044	0.048	< 0.0010	< 0.020	0.000020	< 0.0010	< 0.00030	0.0015	0.17	< 0.00020	< 0.020	0.0077	< 0.0000019	0.00089	0.0021	< 0.10	0.00039	2.4	< 0.00010	0.19	< 0.00020	< 0.0010	0.0015	0.00071	< 0.0010	< 0.0030
	07-Jun-2021	**0.024** [#1]	< 0.00060	0.00054	0.041	< 0.0010	< 0.020	< 0.000020	0.0012	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00081	0.0012	< 0.10	0.00035	1.8	< 0.00010	0.15	< 0.00020	< 0.0010	0.0027	0.00055	< 0.0010	< 0.0030
	19-Aug-2021	**0.029** [#1]	< 0.00060	0.00042	0.049	< 0.0010	< 0.020	0.000029	< 0.0010	< 0.00030	**0.0042** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00090	0.0018	< 0.10	< 0.00020	1.8	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00069	< 0.0010	0.0042
	18-Sep-2021	**0.026** [#1]	< 0.00060	0.00041	0.043	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0046** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00092	0.0017	< 0.10	0.00025	1.7	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00071	< 0.0010	< 0.0030
	10-Aug-2022	**0.022** [#1]	< 0.00060	0.00029	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0028** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00082	0.0011	< 0.10	0.00026	1.8	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00068	< 0.0010	0.0031
AEMP-11	23-Jun-2018	**0.037** [#1]	< 0.00060	0.00027	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.0011	0.0011	< 0.10	0.00027	1.5	< 0.00010	0.15	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	0.0031
	14-Aug-2018	**0.068** [#1]	< 0.00060	0.00037	0.044	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.0043	0.0000022	0.00084	0.0017	< 0.10	0.00024	1.5	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	18-Oct-2018	**0.0074** [#1]	< 0.00060	0.00021	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00099	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00076	0.00097	< 0.10	< 0.00020	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
	10-Jun-2019	**0.014** [#1]	< 0.00060	0.00025	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00076	0.0011	< 0.10	0.00024	1.5	< 0.00010	0.16	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	26-Aug-2019	**0.038** [#1]	< 0.00060	< 0.00020	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00079	0.0013	< 0.10	0.00033	1.8	< 0.00010	0.25	< 0.00020	< 0.0010	< 0.0010	0.00079	< 0.0010	< 0.0030
	01-Oct-2019	**0.023** [#1]	< 0.00060	0.00024	0.042	< 0.0010	0.020	0.000027	< 0.0010	0.00092	**0.0023** [#1]	**0.91** [#1]	< 0.00020	< 0.020	0.054	< 0.0000020	0.00085	0.0030	< 0.10	0.00032	1.7	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	0.011
	12-Jun-2020	**0.017** [#1]	< 0.00060	0.00029	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000043	0.00088	0.0014	< 0.10	0.00042	1.6	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**0.2**	**0.000026**	**0.073**	**0.025**	**---**	**0.001**	**---**	**0.00025**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.03**
	28-Jul-2020	**0.030** [#1]	< 0.00060	0.00041	0.044	< 0.0010	0.020	< 0.000020	0.0010	< 0.00030	**0.0033** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0013	0.00097	< 0.10	0.00044	1.7	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	0.0035
	22-Sep-2020	**0.020** [#1]	< 0.00060	0.00030	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00099	0.0014	< 0.10	0.00035	1.8	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00068	< 0.0010	< 0.0030
	07-Jun-2021	**0.018** [#1]	< 0.00060	0.00057	0.041	< 0.0010	< 0.020	0.000025	0.0014	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00090	0.0012	< 0.10	0.00039	1.7	< 0.00010	0.15	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
	19-Aug-2021	**0.034** [#1]	< 0.00060	0.00036	0.045	< 0.0010	0.051	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00084	0.0014	< 0.10	0.00034	1.6	< 0.00010	0.19	< 0.00020	< 0.0010	0.0013	0.00059	< 0.0010	< 0.0030
(Duplicate)	19-Aug-2021	**0.058** [#1]	< 0.00060	0.00035	0.046	< 0.0010	0.044	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00085	0.0015	< 0.10	0.00031	1.7	< 0.00010	0.19	< 0.00020	< 0.0010	0.0047	0.00056	< 0.0010	< 0.0030
	18-Sep-2021	**0.034** [#1]	< 0.00060	0.00045	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00090	0.0015	< 0.10	0.00035	1.7	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00077	< 0.0010	< 0.0030
	10-Aug-2022	**0.019** [#1]	< 0.00060	0.00030	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00083	0.0010	< 0.10	< 0.00020	1.5	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	< 0.0030
AEMP-12	23-Jun-2018	**0.027** [#1]	< 0.00060	0.00031	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00096	0.0011	< 0.10	0.00022	1.4	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
	14-Aug-2018	**0.044** [#1]	< 0.00060	0.00031	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00092	< 0.060	< 0.00020	< 0.020	0.012	0.0000027	0.0010	0.0012	< 0.10	0.00028	1.6	< 0.00010	0.44	< 0.00020	< 0.0010	< 0.0010	0.00074	< 0.0010	< 0.0030
	17-Oct-2018	0.0037	< 0.00060	0.00026	0.060	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00065	< 0.060	< 0.00020	< 0.020	0.0054	< 0.0000020	0.0015	0.00068	< 0.10	< 0.00020	1.9	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.00096	< 0.0010	< 0.0030
	03-Jun-2019	**0.026** [#1]	< 0.00060	0.00031	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00097	< 0.060	< 0.00020	< 0.020	0.0071	0.0000020	0.0010	0.0010	< 0.10	0.00022	1.5	< 0.00010	0.46	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
	28-Aug-2019	**0.021** [#1]	< 0.00060	0.00023	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00071	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00089	0.00087	< 0.10	0.00026	1.5	< 0.00010	0.36	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	28-Aug-2019	**0.021** [#1]	< 0.00060	0.00026	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00075	< 0.060	< 0.00020	< 0.020	0.0072	< 0.0000020	0.00084	0.00083	< 0.10	0.00022	1.5	< 0.00010	0.35	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
	03-Oct-2019	**0.019** [#1]	< 0.00060	0.00023	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00065	< 0.060	< 0.00020	< 0.020	0.0042	< 0.0000020	0.00081	0.00086	< 0.10	0.00023	1.4	< 0.00010	0.28	< 0.00020	< 0.0010	< 0.0010	0.00058	< 0.0010	0.0050
	10-Jun-2020	**0.0058** [#1]	< 0.00060	0.00029	0.077	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00064	< 0.060	< 0.00020	< 0.020	0.012	< 0.0000019	0.0018	0.0029	< 0.10	0.00024	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	0.0010	< 0.0030
	24-Jul-2020	**0.019** [#1]	< 0.00060	0.00027	0.053	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0026** [#1]	< 0.060	< 0.00020	< 0.020	0.0083	< 0.0000019	0.0014	0.00092	< 0.10	< 0.00020	1.5	< 0.00010	0.44	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	< 0.0030
	18-Sep-2020	**0.0054** [#1]	< 0.00060	< 0.00020	0.082	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.019	0.0000032	0.0021	0.00087	< 0.10	< 0.00020	1.3	< 0.00010	1.5	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	07-Jun-2021	**0.0080** [#1]	< 0.00060	0.00050	0.052	< 0.0010	< 0.020	0.000021	0.0013	< 0.00030	0.00094	< 0.060	< 0.00020	< 0.020	0.0071	< 0.0000019	0.0012	0.00097	< 0.10	0.00022	1.6	< 0.00010	0.62	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	< 0.0030
	18-Aug-2021	**0.033** [#1]	< 0.00060	0.00030	0.075	< 0.0010	0.067	< 0.000020	< 0.0010	< 0.00030	0.00098	< 0.060	< 0.00020	< 0.020	0.0094	< 0.0000019	0.0016	0.00094	< 0.10	< 0.00020	1.9	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.00096	0.0012	< 0.0030
	22-Aug-2021	---	---	---	---	---	---	---	---	---	---	---	---	---	---	< 0.0000019	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	17-Sep-2021	**0.013** [#1]	< 0.00060	0.00029	0.043	< 0.0010	0.027	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00091	0.00089	< 0.10	0.00024	1.4	< 0.00010	0.30	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	< 0.0030
	31-Mar-2022	**0.0061** [#1]	< 0.00060	0.00021	0.031	< 0.0010	< 0.020	< 0.000020	0.005	< 0.00030	**0.0033** [#1]	< 0.060	**0.058** [#1]	< 0.020	< 0.0040	< 0.0000019	0.00056	0.00052	< 0.10	< 0.00020	1.5	< 0.00010	0.18	< 0.00020	0.001	< 0.0010	0.00039	< 0.0010	0.03 [#1]
	12-Jun-2022	**0.0082** [#1]	< 0.00060	0.00032	0.080	< 0.0010	0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	0.034	< 0.0000019	0.0014	0.0017	< 0.10	0.00024	1.5	< 0.00010	0.77	< 0.00020	< 0.0010	< 0.0010	0.00093	< 0.0010	< 0.0030
	05-Aug-2022	**0.0081** [#1]	< 0.00060	0.00029	0.068	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	**0.0026** [#1]	< 0.060	< 0.00020	< 0.020	0.0063	< 0.0000019	0.0014	0.00091	< 0.10	0.00024	1.7	< 0.00010	0.67	< 0.00020	< 0.0010	< 0.0010	0.00075	< 0.0010	0.0047
	26-Sep-2022	**0.0057** [#1]	< 0.00060	0.00033	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0096	< 0.0000019	0.00091	0.00074	< 0.10	0.00021	1.3	< 0.00010	0.30	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
(Duplicate)	26-Sep-2022	**0.0077** [#1]	< 0.00060	0.00031	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0079	< 0.0000019	0.00085	0.00076	< 0.10	0.00021	1.3	< 0.00010	0.31	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
AEMP-13	14-Aug-2018	**0.21** [#1]	< 0.00060	0.00049	0.063	< 0.0010	< 0.020	0.000071	< 0.0010	0.00041	**0.0024** [#1]	**0.32** [#1]	0.00039	< 0.020	0.042	0.0000028	0.00093	0.0031	< 0.10	0.00036	2.0	< 0.00010	0.24	< 0.00020	< 0.0010	0.0030	0.00090	< 0.0010	0.0072
	18-Oct-2018	**0.0090** [#1]	< 0.00060	0.00032	0.056	< 0.0010	< 0.020	0.000021	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	0.040	< 0.0000020	0.0010	0.0017	< 0.10	0.00029	1.7	< 0.00010	0.28	< 0.00020	< 0.0010	< 0.0010	0.00081	< 0.0010	< 0.0030
	02-Jun-2019	**0.027** [#1]	< 0.00060	0.00033	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	0.0065	0.0000026	0.00090	0.0014	< 0.10	0.00036	1.6	< 0.00010	0.19	< 0.00020	0.0013	< 0.0010	0.00070	< 0.0010	< 0.0030
	27-Aug-2019	**0.042** [#1]	< 0.00060	0.00028	0.055	< 0.0010	< 0.020	0.000028	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.022	< 0.0000020	0.0011	0.0016	< 0.10	0.00038	1.8	< 0.00010	0.30	< 0.00020	< 0.0010	< 0.0010	0.00091	< 0.0010	< 0.0030
	02-Oct-2019	**0.0067** [#1]	< 0.00060	0.00027	0.097	< 0.0010	< 0.020	0.000043	< 0.0010	0.0014	0.0011	< 0.060	< 0.00020	< 0.020	**0.68** [#1]	< 0.0000020	0.0012	0.0035	< 0.10	0.00032	2.9	< 0.00010	0.49	< 0.00020	< 0.0010	< 0.0010	0.00088	< 0.0010	< 0.0030
	11-Jun-2020	**0.014** [#1]	< 0.00060	0.00064	0.082	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0014	0.13	< 0.00020	< 0.020	0.035	0.0000034	0.0013	0.0018	< 0.10	< 0.00020	1.4	< 0.00010	0.19	< 0.00020	< 0.0010	0.0010	0.00070	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2020	**0.012** [#1]	< 0.00060	0.00058	0.081	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	0.0013	0.13	< 0.00020	< 0.020	0.035	< 0.0000019	0.0013	0.0018	< 0.10	< 0.00020	1.4	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00093	< 0.0010	< 0.0030
	26-Jul-2020	**0.028** [#1]	< 0.00060	0.00032	0.094	< 0.0010	< 0.020	0.000038	< 0.0010	< 0.00030	0.0013	0.25	< 0.00020	< 0.020	0.12	< 0.0000019	0.0014	0.0025	< 0.10	0.00029	1.5	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00079	< 0.0010	< 0.0030
(Duplicate)	26-Jul-2020	**0.033** [#1]	< 0.00060	0.00068	0.096	< 0.0010	< 0.020	0.000030	< 0.0010	< 0.00030	**0.0022** [#1]	0.16	< 0.00020	< 0.020	0.10	< 0.0000019	0.0014	0.0029	< 0.10	0.00025	1.5	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00081	< 0.0010	< 0.0030
	16-Sep-2020	**0.021** [#1]	< 0.00060	0.00030	0.054	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	0.0018	< 0.060	< 0.00020	< 0.020	0.025	< 0.0000019	0.0010	0.0033	< 0.10	0.00036	2.1	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00084	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2020	**0.021** [#1]	< 0.00060	0.00030	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.021	< 0.0000019	0.00096	0.0023	< 0.10	0.00035	2.1	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	07-Jun-2021	**0.0061** [#1]	< 0.00060	0.00055	0.093	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	0.16	< 0.00020	< 0.020	0.032	< 0.0000019	0.0016	0.0023	< 0.10	< 0.00020	1.4	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00051	< 0.0010	< 0.0030
	19-Aug-2021	**0.057** [#1]	< 0.00060	0.00033	0.052	< 0.0010	< 0.020	0.000024	< 0.0010	< 0.00030	0.0020 [#1]	< 0.060	< 0.00020	< 0.020	0.010	< 0.0000019	0.00096	0.0017	< 0.10	0.00033	1.8	< 0.00010	0.24	< 0.00020	< 0.0010	0.0015	0.00095	< 0.0010	< 0.0030
	18-Sep-2021	**0.032** [#1]	< 0.00060	0.00040	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00094	0.0018	< 0.10	0.00031	1.7	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00084	< 0.0010	< 0.0030
	31-Mar-2022	**0.013** [#1]	< 0.00060	0.0003	0.062	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0020 [#1]	< 0.060	**0.0014** [#1]	< 0.020	< 0.0040	< 0.0000019	0.0012	0.0017	< 0.10	0.00044	2.5	< 0.00010	0.35	< 0.00020	< 0.0010	< 0.0010	0.00091	< 0.0010	0.0031
	14-Jun-2022	**0.025** [#1]	< 0.00060	0.00037	0.050	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.0080	0.0000019	0.00095	0.0016	< 0.10	< 0.00020	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
(Duplicate)	14-Jun-2022	**0.024** [#1]	< 0.00060	0.00031	0.050	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	0.0013	0.061	< 0.00020	< 0.020	0.0078	0.0000023	0.00098	0.0016	< 0.10	< 0.00020	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
	05-Aug-2022	**0.031** [#1]	< 0.00060	0.00048	0.055	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0044** [#1]	< 0.060	0.00029	< 0.020	0.0096	< 0.0000019	0.0012	0.0016	< 0.10	0.00038	1.8	< 0.00010	0.25	< 0.00020	< 0.0010	< 0.0010	0.00072	< 0.0010	0.0073
	25-Sep-2022	**0.011** [#1]	< 0.00060	0.00035	0.093	< 0.0010	< 0.020	0.000047	0.0010	0.00066	0.0012	< 0.060	< 0.00020	< 0.020	**0.33** [#1]	< 0.0000019	0.0011	0.0034	< 0.10	0.00029	2.1	< 0.00010	0.37	< 0.00020	< 0.0010	< 0.0010	0.00084	< 0.0010	< 0.0030

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**0.2**	**0.000026**	**0.073**	**0.025**	**---**	**0.001**	**---**	**0.00025**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.03**
Relative Percent Difference (RPD) Report																													
AEMP-01	07-Jun-2021	**0.034** [#1]	< 0.00060	0.00025	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00078	0.0015	< 0.10	0.00024	2.0	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
(Duplicate)	07-Jun-2021	**0.026** [#1]	< 0.00060	0.00026	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	0.070	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00074	0.0018	< 0.10	0.00031	2.1	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00046	< 0.0010	< 0.0030
RPD(%)		**---**	**---**	**3.9%**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**6.5%**	**---**	**---**	**---**	**---**	**---**	**5.3%**	**18.2%**	**---**	**25.5%**	**4.9%**	**---**	**0.0%**	**---**	**---**	**---**	**14.1%**	**---**	**---**
AEMP-01	06-Aug-2022	**0.039** [#1]	< 0.00060	0.00038	0.053	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	0.0000024	0.0010	0.0015	< 0.10	0.00035	1.9	< 0.00010	0.23	< 0.00020	< 0.0010	0.0011	0.00070	< 0.0010	0.0037
(Duplicate)	06-Aug-2022	**0.038** [#1]	< 0.00060	0.00031	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	**0.0023** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0011	0.0016	< 0.10	0.00039	2.0	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00068	< 0.0010	0.0079
RPD(%)		**2.6%**	**---**	**20.3%**	**3.8%**	**---**	**---**	**---**	**---**	**---**	**30.0%**	**---**	**---**	**---**	**---**	**---**	**9.5%**	**6.5%**	**---**	**10.8%**	**5.1%**	**---**	**9.1%**	**---**	**---**	**---**	**2.9%**	**---**	**72.4%**
AEMP-02	16-Sep-2017	**0.0054** [#1]	< 0.00060	0.00020	0.077	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00042	< 0.060	< 0.00020	< 0.020	0.0081	0.0000023	0.0017	0.00069	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2017	**0.0051** [#1]	< 0.00060	< 0.00020	0.076	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.00037	< 0.060	< 0.00020	< 0.020	0.0078	0.0000021	0.0017	0.00074	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
RPD(%)		**5.7%**	**---**	**---**	**1.3%**	**---**	**0.0%**	**---**	**---**	**---**	**12.7%**	**---**	**---**	**---**	**3.8%**	**9.1%**	**0.0%**	**7.0%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**9.5%**	**---**	**---**
AEMP-02	03-Jun-2019	0.0033	< 0.00060	0.00023	0.072	< 0.0010	0.021	< 0.000020	< 0.0010	< 0.00030	0.00086	< 0.060	< 0.00020	< 0.020	0.0050	< 0.0000020	0.0017	0.00060	< 0.10	< 0.00020	1.6	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.00098	< 0.0010	< 0.0030
(Duplicate)	03-Jun-2019	0.0035	< 0.00060	0.00020	0.071	< 0.0010	0.021	< 0.000020	< 0.0010	< 0.00030	0.00047	< 0.060	< 0.00020	< 0.020	0.0049	< 0.0000020	0.0016	0.00058	< 0.10	< 0.00020	1.6	< 0.00010	1.1	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
RPD(%)		**5.9%**	**---**	**14.0%**	**1.4%**	**---**	**0.0%**	**---**	**---**	**---**	**58.6%**	**---**	**---**	**---**	**2.0%**	**---**	**6.1%**	**3.4%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**11.5%**	**---**	**---**
AEMP-04	16-Oct-2017	< 0.0030	< 0.00060	< 0.00020	0.070	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.00031	< 0.060	< 0.00020	< 0.020	0.0050	< 0.0000020	0.0018	0.00051	< 0.10	0.00022	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
(Duplicate)	16-Oct-2017	0.0041	< 0.00060	< 0.00020	0.070	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.00035	< 0.060	< 0.00020	< 0.020	0.0051	< 0.0000020	0.0017	0.00064	< 0.10	< 0.00020	2.1	< 0.00010	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
RPD(%)		**---**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**12.1%**	**---**	**---**	**---**	**2.0%**	**---**	**5.7%**	**22.6%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**
AEMP-04	23-Jun-2018	0.0032	< 0.00060	0.00029	0.084	< 0.0010	0.029	< 0.000020	< 0.0010	< 0.00030	0.00055	< 0.060	< 0.00020	< 0.020	0.0070	< 0.0000020	0.0019	0.00059	< 0.10	< 0.00020	2.0	< 0.00010	1.3	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
(Duplicate)	23-Jun-2018	0.0034	< 0.00060	0.00029	0.083	< 0.0010	0.026	< 0.000020	< 0.0010	< 0.00030	0.0010	< 0.060	< 0.00020	< 0.020	0.0066	< 0.0000020	0.0018	0.00063	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.019
RPD(%)		**6.1%**	**---**	**0.0%**	**1.2%**	**---**	**10.9%**	**---**	**---**	**---**	**58.1%**	**---**	**---**	**---**	**5.9%**	**---**	**5.4%**	**6.6%**	**---**	**---**	**10.5%**	**---**	**8.0%**	**---**	**---**	**---**	**9.5%**	**---**	**---**
AEMP-04	10-Jun-2020	< 0.0030	< 0.00060	< 0.00020	0.076	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00044	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0017	0.00064	< 0.10	< 0.00020	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
(Duplicate)	10-Jun-2020	< 0.0030	< 0.00060	0.00030	0.076	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00036	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0020	< 0.00050	< 0.10	< 0.00020	1.9	< 0.00010	1.2	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
RPD(%)		**---**	**---**	**---**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**20.0%**	**---**	**---**	**---**	**---**	**---**	**16.2%**	**---**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**
AEMP-04	11-Jun-2022	**0.016** [#1]	< 0.00060	< 0.00020	0.073	< 0.0010	0.023	< 0.000020	< 0.0010	< 0.00030	**0.0060** [#1]	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0016	0.00062	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	0.0012	< 0.0010	0.00095	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2022	< 0.0030	< 0.00060	< 0.00020	0.073	< 0.0010	0.024	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.0015	< 0.00050	< 0.10	< 0.00020	1.8	< 0.00010	1.2	< 0.00020	0.0014	< 0.0010	0.00098	< 0.0010	< 0.0030
RPD(%)		**---**	**---**	**---**	**0.0%**	**---**	**4.3%**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**6.5%**	**---**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**15.4%**	**---**	**3.1%**	**---**	**---**
AEMP-06	25-Aug-2019	**0.024** [#1]	< 0.00060	0.00023	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00091	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00068	0.00068	< 0.10	0.00022	1.5	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	02-Oct-2019	**0.015** [#1]	< 0.00060	0.00024	0.036	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00078	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00077	0.00098	< 0.10	0.00021	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00054	< 0.0010	< 0.0030
RPD(%)		**46.2%**	**---**	**4.3%**	**5.4%**	**---**	**---**	**---**	**---**	**---**	**15.4%**	**---**	**---**	**---**	**---**	**---**	**12.4%**	**36.1%**	**---**	**4.7%**	**6.9%**	**---**	**9.1%**	**---**	**---**	**---**	**13.8%**	**---**	**---**
AEMP-06	18-Aug-2021	**0.031** [#1]	< 0.00060	0.00035	0.040	< 0.0010	0.022	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	---	0.00088	0.0014	< 0.10	0.00026	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
(Duplicate)	18-Aug-2021	**0.035** [#1]	< 0.00060	0.00032	0.039	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0016	< 0.060	0.00072	< 0.020	< 0.0040	---	0.00084	0.0013	< 0.10	< 0.00020	1.5	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
RPD(%)		**12.1%**	**---**	**9.0%**	**2.5%**	**---**	**---**	**---**	**---**	**---**	**6.5%**	**---**	**---**	**---**	**---**	**---**	**4.7%**	**7.4%**	**---**	**---**	**0.0%**	**---**	**5.4%**	**---**	**---**	**---**	**3.3%**	**---**	**---**
AEMP-07	21-Aug-2017	**0.033** [#1]	< 0.00060	0.00034	0.043	< 0.0010	< 0.020	0.000028	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00084	0.0011	< 0.10	0.00032	1.5	< 0.00010	0.22	< 0.00020	0.0010	< 0.0010	0.00065	< 0.0010	< 0.0030
(Duplicate)	21-Aug-2017	**0.030** [#1]	< 0.00060	0.00036	0.042	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00083	0.00089	< 0.10	0.00032	1.5	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00059	< 0.0010	< 0.0030
RPD(%)		**9.5%**	**---**	**5.7%**	**2.4%**	**---**	**---**	**---**	**---**	**---**	**15.4%**	**---**	**---**	**---**	**---**	**---**	**1.2%**	**21.1%**	**---**	**0.0%**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**9.7%**	**---**	**---**
AEMP-07	17-Oct-2018	**0.0077** [#1]	< 0.00060	0.00044	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00092	< 0.060	< 0.00020	< 0.020	0.013	< 0.0000020	0.00081	0.00086	< 0.10	0.00025	1.3	< 0.00010	0.23	< 0.00020	< 0.0010	< 0.0010	0.00050	< 0.0010	< 0.0030
(Duplicate)	17-Oct-2018	**0.0088** [#1]	< 0.00060	0.00046	0.048	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00081	< 0.060	< 0.00020	< 0.020	0.018	< 0.0000020	0.00087	0.00091	< 0.10	0.00024	1.4	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00048	< 0.0010	< 0.0030
RPD(%)		**13.3%**	**---**	**4.4%**	**4.3%**	**---**	**---**	**---**	**---**	**---**	**12.7%**	**---**	**---**	**---**	**32.3%**	**---**	**7.1%**	**5.6%**	**---**	**4.1%**	**7.4%**	**---**	**4.4%**	**---**	**---**	**---**	**4.1%**	**---**	**---**
AEMP-07	24-Jul-2020	**0.018** [#1]	< 0.00060	0.00026	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00097	0.0013	< 0.10	< 0.00020	1.5	< 0.00010	0.19	< 0.00020	0.0020	< 0.0010	0.00068	< 0.0010	< 0.0030
(Duplicate)	24-Jul-2020	**0.018** [#1]	< 0.00060	0.00025	0.041	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0012	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00062	0.0010	< 0.10	0.00021	1.5	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
RPD(%)		**0.0%**	**---**	**3.9%**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**34.5%**	**---**	**---**	**---**	**---**	**---**	**44.0%**	**26.1%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**7.6%**	**---**	**---**
AEMP-07	18-Sep-2020	**0.016** [#1]	< 0.00060	0.00029	0.040	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00072	0.0022	< 0.10	0.00022	1.8	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00053	< 0.0010	< 0.0030
(Duplicate)	18-Sep-2020	**0.017** [#1]	< 0.00060	0.00031	0.038	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00076	0.0012	< 0.10	0.00027	1.7	< 0.00010	0.18	< 0.00020	< 0.0010	< 0.0010	0.00057	< 0.0010	< 0.0030
RPD(%)		**6.1%**	**---**	**6.7%**	**5.1%**	**---**	**---**	**---**	**---**	**---**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**5.4%**	**58.8%**	**---**	**20.4%**	**5.7%**	**---**	**5.4%**	**---**	**---**	**---**	**7.3%**	**---**	**---**

Table 4

Surface Water Analytical Results: Dissolved Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Manganese (mg/L)	Mercury (mg/L)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**0.2**	**0.000026**	**0.073**	**0.025**	**---**	**0.001**	**---**	**0.00025**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.03**
AEMP-07	06-Aug-2022	**0.011** [#1]	< 0.00060	0.00050	0.054	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.067	< 0.0000019	0.0011	0.0012	< 0.10	0.00028	1.6	< 0.00010	0.20	< 0.00020	< 0.0010	0.0011	0.00062	< 0.0010	< 0.0030
(Duplicate)	06-Aug-2022	**0.014** [#1]	< 0.00060	0.00066	0.055	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0011	< 0.060	< 0.00020	< 0.020	0.069	< 0.0000019	0.0010	0.0011	< 0.10	0.00030	1.5	< 0.00010	0.20	< 0.00020	< 0.0010	< 0.0010	0.00067	< 0.0010	< 0.0030
RPD(%)		**24.0%**	**---**	**27.6%**	**1.8%**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**2.9%**	**---**	**9.5%**	**8.7%**	**---**	**6.9%**	**6.5%**	**---**	**0.0%**	**---**	**---**	**---**	**7.8%**	**---**	**---**
AEMP-07	24-Sep-2022	**0.0060** [#1]	< 0.00060	0.00055	0.065	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.068	< 0.0000019	0.00089	0.0011	< 0.10	0.00026	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	24-Sep-2022	**0.0071** [#1]	< 0.00060	0.00058	0.065	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.073	< 0.0000019	0.00089	0.00092	< 0.10	0.00026	1.4	< 0.00010	0.21	< 0.00020	< 0.0010	< 0.0010	0.00061	< 0.0010	< 0.0030
RPD(%)		**16.8%**	**---**	**5.3%**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**7.1%**	**---**	**0.0%**	**17.8%**	**---**	**0.0%**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**1.6%**	**---**	**---**
AEMP-10	14-Aug-2018	**0.074** [#1]	< 0.00060	< 0.00020	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00097	0.0017	< 0.10	0.00036	1.6	< 0.00010	0.22	< 0.00020	< 0.0010	< 0.0010	0.00076	< 0.0010	< 0.0030
(Duplicate)	14-Aug-2018	**0.24** [#1]	< 0.00060	0.00050	0.054	< 0.0010	< 0.020	0.000065	< 0.0010	0.00050	0.0019	0.28	0.00034	< 0.020	0.018	0.0000021	0.00090	0.0024	< 0.10	0.00037	2.0	< 0.00010	0.22	< 0.00020	< 0.0010	0.0027	0.00077	< 0.0010	0.0079
RPD(%)		**105.7%**	**---**	**---**	**13.9%**	**---**	**---**	**---**	**---**	**---**	**23.5%**	**---**	**---**	**---**	**---**	**---**	**7.5%**	**34.1%**	**---**	**2.7%**	**22.2%**	**---**	**0.0%**	**---**	**---**	**---**	**1.3%**	**---**	**---**
AEMP-11	19-Aug-2021	**0.034** [#1]	< 0.00060	0.00036	0.045	< 0.0010	0.051	< 0.000020	< 0.0010	< 0.00030	0.0017	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00084	0.0014	< 0.10	0.00034	1.6	< 0.00010	0.19	< 0.00020	< 0.0010	0.0013	0.00059	< 0.0010	< 0.0030
(Duplicate)	19-Aug-2021	**0.058** [#1]	< 0.00060	0.00035	0.046	< 0.0010	0.044	< 0.000020	< 0.0010	< 0.00030	0.0015	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000019	0.00085	0.0015	< 0.10	0.00031	1.7	< 0.00010	0.19	< 0.00020	< 0.0010	0.0047	0.00056	< 0.0010	< 0.0030
RPD(%)		**52.2%**	**---**	**2.8%**	**2.2%**	**---**	**14.7%**	**---**	**---**	**---**	**12.5%**	**---**	**---**	**---**	**---**	**---**	**1.2%**	**6.9%**	**---**	**9.2%**	**6.1%**	**---**	**0.0%**	**---**	**---**	**113.3%**	**5.2%**	**---**	**---**
AEMP-12	28-Aug-2019	**0.021** [#1]	< 0.00060	0.00023	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00071	< 0.060	< 0.00020	< 0.020	< 0.0040	< 0.0000020	0.00089	0.00087	< 0.10	0.00026	1.5	< 0.00010	0.36	< 0.00020	< 0.0010	< 0.0010	0.00062	< 0.0010	< 0.0030
(Duplicate)	28-Aug-2019	**0.021** [#1]	< 0.00060	0.00026	0.045	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.00075	< 0.060	< 0.00020	< 0.020	0.0072	< 0.0000020	0.00084	0.00083	< 0.10	0.00022	1.5	< 0.00010	0.35	< 0.00020	< 0.0010	< 0.0010	0.00063	< 0.0010	< 0.0030
RPD(%)		**0.0%**	**---**	**12.2%**	**0.0%**	**---**	**---**	**---**	**---**	**---**	**5.5%**	**---**	**---**	**---**	**---**	**---**	**5.8%**	**4.7%**	**---**	**16.7%**	**0.0%**	**---**	**2.8%**	**---**	**---**	**---**	**1.6%**	**---**	**---**
AEMP-12	26-Sep-2022	**0.0057** [#1]	< 0.00060	0.00033	0.046	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0096	< 0.0000019	0.00091	0.00074	< 0.10	0.00021	1.3	< 0.00010	0.30	< 0.00020	< 0.0010	< 0.0010	0.00055	< 0.0010	< 0.0030
(Duplicate)	26-Sep-2022	**0.0077** [#1]	< 0.00060	0.00031	0.047	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	0.0079	< 0.0000019	0.00085	0.00076	< 0.10	0.00021	1.3	< 0.00010	0.31	< 0.00020	< 0.0010	< 0.0010	0.00056	< 0.0010	< 0.0030
RPD(%)		**29.9%**	**---**	**6.3%**	**2.2%**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**19.4%**	**---**	**6.8%**	**2.7%**	**---**	**0.0%**	**0.0%**	**---**	**3.3%**	**---**	**---**	**---**	**1.8%**	**---**	**---**
AEMP-13	11-Jun-2020	**0.014** [#1]	< 0.00060	0.00064	0.082	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0014	0.13	< 0.00020	< 0.020	0.035	0.0000034	0.0013	0.0018	< 0.10	< 0.00020	1.4	< 0.00010	0.19	< 0.00020	< 0.0010	0.0010	0.00070	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2020	**0.012** [#1]	< 0.00060	0.00058	0.081	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	0.0013	0.13	< 0.00020	< 0.020	0.035	< 0.0000019	0.0013	0.0018	< 0.10	< 0.00020	1.4	< 0.00010	0.19	< 0.00020	< 0.0010	< 0.0010	0.00093	< 0.0010	< 0.0030
RPD(%)		**15.4%**	**---**	**9.8%**	**1.2%**	**---**	**---**	**3.9%**	**---**	**---**	**7.4%**	**0.0%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**28.2%**	**---**	**---**
AEMP-13	26-Jul-2020	**0.028** [#1]	< 0.00060	0.00032	0.094	< 0.0010	< 0.020	0.000038	< 0.0010	< 0.00030	0.0013	0.25	< 0.00020	< 0.020	0.12	< 0.0000019	0.0014	0.0025	< 0.10	0.00029	1.5	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00079	< 0.0010	< 0.0030
(Duplicate)	26-Jul-2020	**0.033** [#1]	< 0.00060	0.00068	0.096	< 0.0010	< 0.020	0.000030	< 0.0010	< 0.00030	**0.0022** [#1]	0.16	< 0.00020	< 0.020	0.10	< 0.0000019	0.0014	0.0029	< 0.10	0.00025	1.5	< 0.00010	0.26	< 0.00020	< 0.0010	< 0.0010	0.00081	< 0.0010	< 0.0030
RPD(%)		**16.4%**	**---**	**72.0%**	**2.1%**	**---**	**---**	**23.5%**	**---**	**---**	**51.4%**	**43.9%**	**---**	**---**	**18.2%**	**---**	**0.0%**	**14.8%**	**---**	**14.8%**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**2.5%**	**---**	**---**
AEMP-13	16-Sep-2020	**0.021** [#1]	< 0.00060	0.00030	0.054	< 0.0010	< 0.020	0.000023	< 0.0010	< 0.00030	0.0018	< 0.060	< 0.00020	< 0.020	0.025	< 0.0000019	0.0010	0.0033	< 0.10	0.00036	2.1	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.00096	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2020	**0.021** [#1]	< 0.00060	0.00030	0.051	< 0.0010	< 0.020	< 0.000020	< 0.0010	< 0.00030	0.0014	< 0.060	< 0.00020	< 0.020	0.021	< 0.0000019	0.00096	0.0023	< 0.10	0.00035	2.1	< 0.00010	0.24	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
RPD(%)		**0.0%**	**---**	**0.0%**	**5.7%**	**---**	**---**	**---**	**---**	**---**	**25.0%**	**---**	**---**	**---**	**17.4%**	**---**	**4.1%**	**35.7%**	**---**	**2.8%**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**4.1%**	**---**	**---**
AEMP-13	14-Jun-2022	**0.025** [#1]	< 0.00060	0.00037	0.050	< 0.0010	< 0.020	0.000025	< 0.0010	< 0.00030	0.0013	< 0.060	< 0.00020	< 0.020	0.0080	0.0000019	0.00095	0.0016	< 0.10	< 0.00020	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
(Duplicate)	14-Jun-2022	**0.024** [#1]	< 0.00060	0.00031	0.050	< 0.0010	< 0.020	0.000026	< 0.0010	< 0.00030	0.0013	0.061	< 0.00020	< 0.020	0.0078	0.0000023	0.00098	0.0016	< 0.10	< 0.00020	1.5	< 0.00010	0.17	< 0.00020	< 0.0010	< 0.0010	0.00060	< 0.0010	< 0.0030
RPD(%)		**4.1%**	**---**	**17.6%**	**0.0%**	**---**	**---**	**3.9%**	**---**	**---**	**0.0%**	**---**	**---**	**---**	**2.5%**	**19.0%**	**3.1%**	**0.0%**	**---**	**14.8%**	**0.0%**	**---**	**0.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1] denotes values exceeding
   (CCME. 2014. Canadian Environmental Quality Guidelines Summary Table. Water Quality Guidelines for the Protection of Freshwater Aquatic Life. http://st-ts.ccme.ca/?chems=all&chapters=1 accessed Aug 22, 2014.)

Aluminum:
Standard varies with pH.
pH < 6.5 = 0.005 mg/L
pH >= 6.5 = 0.1 mg/L

Boron:
Guideline based on long term exposure

Cadmium:
Guideline based on long term exposure

Chromium (Total):
Limit is for Chromium(III).

Copper:
Guideline is hardness dependent. Presented guideline set to lower limit.

Lead:
Guideline is hardness dependent. Presented guideline set to lower limit.

Mercury:
Guideline for Inorganic mercury

Nickel:
Guideline is hardness dependent. Presented guideline set to lower limit.

Silver:
Guideline based on long term exposure

Uranium:
Guideline based on long term exposure

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
AEMP																		
AEMP-01	16-Sep-2017	**0.52** [#1]	< 0.00060	0.00065	0.061	< 0.0010	< 0.020	0.000040	38	0.0010	0.00054	0.0020 [#1]	**0.88** [#1]	0.00048	< 0.020	11	0.022	< 0.0000020
	16-Oct-2017	**0.33** [#1]	< 0.00060	0.00050	0.053	< 0.0010	< 0.020	0.000050	37	< 0.0010	0.00034	0.0017	**0.50** [#1]	0.00034	< 0.020	11	0.015	< 0.0000020
	23-Jun-2018	**1.5** [#1]	< 0.00060	0.0015	0.073	< 0.0010	< 0.020	**0.00015** [#1]	37	0.0028	0.0025	**0.0055** [#1]	**2.3** [#1]	**0.0016** [#1]	< 0.020	11	0.054	0.0000049
	14-Aug-2018	**2.1** [#1]	< 0.00060	0.0016	0.099	< 0.0010	< 0.020	**0.00042** [#1]	51	0.0022	0.0033	**0.0064** [#1]	**3.3** [#1]	**0.0023** [#1]	< 0.020	15	0.13	0.000010
	18-Oct-2018	**0.45** [#1]	< 0.00060	0.00070	0.059	< 0.0010	< 0.020	0.000065	32	< 0.0010	0.00053	**0.0021** [#1]	**1.0** [#1]	0.00063	< 0.020	10	0.028	0.0000047
	10-Jun-2019	**2.1** [#1]	0.00094	0.0023	0.10	< 0.0010	< 0.020	**0.00015** [#1]	39	0.0038	0.0024	**0.0078** [#1]	**5.0** [#1]	**0.0026** [#1]	< 0.020	11	0.11	0.0000089
	26-Aug-2019	**1.9** [#1]	< 0.00060	0.0011	0.077	< 0.0010	< 0.020	0.000084	42	0.0028	0.0012	**0.0034** [#1]	**2.2** [#1]	0.0010 [#1]	< 0.020	12	0.04	0.0000033
	01-Oct-2019	**2.0** [#1]	< 0.00060	0.0017	0.11	< 0.0010	< 0.020	**0.00012** [#1]	39	0.0037	0.0015	**0.0050** [#1]	**3.4** [#1]	**0.0018** [#1]	< 0.020	12	0.047	0.0000074
	12-Jun-2020	**5.3** [#1]	< 0.00060	0.0050 [#1]	0.19	< 0.0010	< 0.020	**0.00036** [#1]	51	0.0089 [#1]	0.0060	**0.013** [#1]	**12** [#1]	**0.0061** [#1]	< 0.020	15	**0.22** [#1]	0.000021
	28-Jul-2020	**1.7** [#1]	< 0.00060	0.0020	0.11	< 0.0010	< 0.020	**0.00020** [#1]	44	0.0074	0.0021	**0.0060** [#1]	**3.6** [#1]	**0.0021** [#1]	< 0.020	12	0.086	0.000020
	22-Sep-2020	**0.86** [#1]	0.0019	0.00092	0.061	< 0.0010	< 0.020	0.000074	40	0.0012	0.00065	**0.0026** [#1]	**1.3** [#1]	0.00066	< 0.020	11	0.029	0.000026 [#1]
	07-Jun-2021	**3.4** [#1]	< 0.00060	0.0022	0.10	< 0.0010	< 0.020	**0.00019** [#1]	39	0.0059	0.0022	**0.0059** [#1]	**3.8** [#1]	**0.0022** [#1]	< 0.020	11	0.088	0.0000048
(Duplicate)	07-Jun-2021	**3.7** [#1]	< 0.00060	0.0021	0.098	< 0.0010	< 0.020	**0.00014** [#1]	37	0.0067	0.0020	**0.0061** [#1]	**3.3** [#1]	**0.0021** [#1]	< 0.020	10	0.075	< 0.0000019
	19-Aug-2021	**3.9** [#1]	< 0.00060	0.0032	0.14	< 0.0010	0.022	**0.00023** [#1]	46	0.0062	0.0039	**0.0091** [#1]	**8.5** [#1]	**0.0035** [#1]	< 0.020	14	0.16	0.0000042
	18-Sep-2021	**1.2** [#1]	0.00063	0.0015	0.071	< 0.0010	< 0.020	**0.00013** [#1]	38	0.0028	0.0013	**0.0041** [#1]	**2.4** [#1]	**0.0013** [#1]	< 0.020	11	0.048	0.0000031
	31-Mar-2022	**0.10** [#1]	< 0.00060	0.00047	0.059	< 0.0010	< 0.020	0.000024	42	< 0.0010	< 0.00030	**0.0023** [#1]	**0.67** [#1]	< 0.00020	< 0.020	12	0.012	0.0000022
	14-Jun-2022	**7.9** [#1]	< 0.00060	**0.0068** [#1]	0.24	< 0.0010	< 0.020	**0.00050** [#1]	55	**0.013** [#1]	0.0087	**0.019** [#1]	**16** [#1]	**0.0082** [#1]	< 0.020	16	**0.34** [#1]	**0.000034** [#1]
	06-Aug-2022	**0.97** [#1]	< 0.00060	0.0012	0.085	< 0.0010	< 0.020	0.000074	41	0.0018	0.00097	**0.0033** [#1]	**2.3** [#1]	**0.0011** [#1]	< 0.020	12	0.051	0.0000068
(Duplicate)	06-Aug-2022	**0.95** [#1]	< 0.00060	0.0012	0.086	< 0.0010	< 0.020	0.000089	41	0.0015	0.00094	**0.0031** [#1]	**2.3** [#1]	**0.0011** [#1]	< 0.020	12	0.050	0.0000055
	25-Sep-2022	**0.46** [#1]	< 0.00060	0.00067	0.057	< 0.0010	< 0.020	0.000047	39	< 0.0010	< 0.00030	**0.0022** [#1]	**0.71** [#1]	0.00045	< 0.020	9.9	0.020	< 0.0000019
AEMP-02	18-Aug-2017	**0.039** [#1]	< 0.00060	0.00026	0.085	< 0.0010	0.031	0.000020	74	< 0.0010	< 0.00030	0.00092	0.11	< 0.00020	< 0.020	27	0.0098	0.0000021
	16-Sep-2017	**0.031** [#1]	< 0.00060	0.00032	0.082	< 0.0010	0.024	< 0.000020	73	< 0.0010	< 0.00030	0.00064	0.096	< 0.00020	< 0.020	29	0.0087	< 0.0000020
(Duplicate)	16-Sep-2017	**0.032** [#1]	< 0.00060	0.00027	0.080	< 0.0010	0.023	< 0.000020	72	< 0.0010	< 0.00030	0.00035	0.10	< 0.00020	< 0.020	28	0.0084	< 0.0000020
	16-Oct-2017	**0.23** [#1]	< 0.00060	0.00040	0.079	< 0.0010	0.022	0.000027	75	< 0.0010	< 0.00030	0.00074	**0.57** [#1]	0.00030	< 0.020	31	0.02	< 0.0000020
	23-Jun-2018	**0.047** [#1]	< 0.00060	0.00036	0.086	< 0.0010	0.029	< 0.000020	76	< 0.0010	< 0.00030	0.00073	0.12	< 0.00020	< 0.020	27	0.0085	< 0.0000020
	12-Aug-2018	**0.030** [#1]	< 0.00060	0.00026	0.073	< 0.0010	0.023	< 0.000020	72	< 0.0010	< 0.00030	0.00033	0.11	< 0.00020	< 0.020	28	0.0091	0.0000025
	16-Oct-2018	**0.20** [#1]	< 0.00060	0.00024	0.074	< 0.0010	0.027	0.000031	78	< 0.0010	< 0.00030	0.00071	**0.50** [#1]	0.00026	< 0.020	31	0.017	0.0000020
	03-Jun-2019	**0.081** [#1]	< 0.00060	0.00032	0.076	< 0.0010	0.022	< 0.000020	67	< 0.0010	< 0.00030	0.00076	0.18	< 0.00020	< 0.020	25	0.0078	< 0.0000020
(Duplicate)	03-Jun-2019	**0.078** [#1]	< 0.00060	0.00027	0.077	< 0.0010	0.022	< 0.000020	68	< 0.0010	< 0.00030	0.00061	0.19	< 0.00020	< 0.020	25	0.0081	< 0.0000020
	28-Aug-2019	**0.079** [#1]	< 0.00060	0.00023	0.083	< 0.0010	0.023	< 0.000020	79	< 0.0010	< 0.00030	0.00047	0.17	< 0.00020	< 0.020	28	0.0087	< 0.0000020
	03-Oct-2019	**0.020** [#1]	< 0.00060	< 0.00020	0.075	< 0.0010	0.029	< 0.000020	79	< 0.0010	< 0.00030	0.00051	0.082	< 0.00020	< 0.020	28	0.0078	< 0.0000020
	10-Jun-2020	**0.082** [#1]	< 0.00060	0.00038	0.081	< 0.0010	< 0.020	< 0.000020	72	< 0.0010	< 0.00030	0.00067	0.29	< 0.00020	< 0.020	26	0.0067	< 0.0000019
	24-Jul-2020	**0.024** [#1]	< 0.00060	< 0.00020	0.081	< 0.0010	0.029	< 0.000020	81	0.0010	< 0.00030	0.00063	0.12	< 0.00020	< 0.020	28	0.0078	< 0.0000019
	18-Sep-2020	**0.016** [#1]	< 0.00060	0.00031	0.082	< 0.0010	0.025	< 0.000020	82	< 0.0010	< 0.00030	0.00058	0.074	< 0.00020	< 0.020	28	0.0074	0.0000024
	06-Jun-2021	**0.095** [#1]	< 0.00060	0.00036	0.072	< 0.0010	0.024	0.000034	72	0.0019	< 0.00030	0.00093	0.18	< 0.00020	< 0.020	26	0.0086	< 0.0000019
	18-Aug-2021	**0.012** [#1]	< 0.00060	< 0.00020	0.078	< 0.0010	0.036	< 0.000020	78	< 0.0010	< 0.00030	0.00045	0.070	< 0.00020	< 0.020	30	0.0076	< 0.0000019
	19-Sep-2021	**0.012** [#1]	< 0.00060	0.00028	0.080	< 0.0010	0.040	< 0.000020	86	< 0.0010	< 0.00030	0.00047	0.065	< 0.00020	< 0.020	32	0.0078	< 0.0000019
	11-Jun-2022	**0.038** [#1]	< 0.00060	0.00020	0.072	< 0.0010	0.025	< 0.000020	65	< 0.0010	< 0.00030	< 0.0010	0.11	< 0.00020	< 0.020	23	0.0076	< 0.0000019
	06-Aug-2022	**0.019** [#1]	< 0.00060	0.00024	0.081	< 0.0010	0.033	< 0.000020	74	< 0.0010	< 0.00030	< 0.0010	0.063	< 0.00020	< 0.020	27	0.0060	< 0.0000019
	26-Sep-2022	**0.018** [#1]	< 0.00060	< 0.00020	0.068	< 0.0010	0.032	< 0.000020	80	< 0.0010	< 0.00030	< 0.0010	0.066	< 0.00020	< 0.020	28	0.0067	< 0.0000019

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
AEMP-03	18-Aug-2017	**0.027** [#1]	< 0.00060	0.00036	0.085	< 0.0010	0.029	< 0.000020	74	< 0.0010	< 0.00030	0.00093	0.087	< 0.00020	< 0.020	27	0.0075	0.0000091
	16-Sep-2017	**0.022** [#1]	< 0.00060	0.00034	0.081	< 0.0010	0.023	0.000024	73	< 0.0010	< 0.00030	0.00054	0.071	< 0.00020	< 0.020	28	0.0063	< 0.0000020
	16-Oct-2017	**0.11** [#1]	< 0.00060	0.00026	0.073	< 0.0010	0.021	< 0.000020	73	< 0.0010	< 0.00030	0.00049	0.28	< 0.00020	< 0.020	30	0.014	< 0.0000020
	23-Jun-2018	**0.046** [#1]	< 0.00060	0.00035	0.086	< 0.0010	0.029	< 0.000020	76	< 0.0010	< 0.00030	0.00084	0.10	< 0.00020	< 0.020	27	0.0084	< 0.0000020
	12-Aug-2018	**0.026** [#1]	< 0.00060	0.00037	0.074	< 0.0010	0.020	< 0.000020	73	< 0.0010	< 0.00030	0.00026	0.091	< 0.00020	< 0.020	28	0.0081	0.0000025
	16-Oct-2018	**0.47** [#1]	< 0.00060	0.00041	0.081	< 0.0010	0.030	0.000032	78	< 0.0010	0.00051	0.0011	**1.1** [#1]	0.00062	< 0.020	31	0.034	0.0000021
	03-Jun-2019	**0.076** [#1]	< 0.00060	0.00025	0.077	< 0.0010	0.022	< 0.000020	68	< 0.0010	< 0.00030	0.00063	0.18	< 0.00020	< 0.020	25	0.0071	< 0.0000020
	28-Aug-2019	**0.054** [#1]	< 0.00060	0.00026	0.081	< 0.0010	< 0.020	< 0.000020	77	< 0.0010	< 0.00030	0.00030	0.12	< 0.00020	< 0.020	27	0.0063	< 0.0000020
	02-Oct-2019	**0.014** [#1]	< 0.00060	0.00027	0.072	< 0.0010	< 0.020	< 0.000020	83	< 0.0010	< 0.00030	**0.0024** [#1]	< 0.060	< 0.00020	< 0.020	31	0.011	< 0.0000020
	10-Jun-2020	**0.10** [#1]	< 0.00060	0.00038	0.079	< 0.0010	< 0.020	0.000026	70	< 0.0010	< 0.00030	0.00059	**0.34** [#1]	< 0.00020	< 0.020	25	0.0072	< 0.0000019
	24-Jul-2020	**0.021** [#1]	< 0.00060	< 0.00020	0.080	< 0.0010	0.029	< 0.000020	81	0.0078	< 0.00030	0.00063	0.17	< 0.00020	< 0.020	28	0.0054	< 0.0000019
	20-Sep-2020	**0.0094** [#1]	0.00076	< 0.00020	0.070	< 0.0010	0.025	< 0.000020	76	< 0.0010	< 0.00030	< 0.00020	< 0.060	< 0.00020	< 0.020	29	0.0041	< 0.0000019
	06-Jun-2021	**0.078** [#1]	< 0.00060	0.00036	0.071	< 0.0010	0.025	< 0.000020	71	0.0018	< 0.00030	0.00072	0.18	< 0.00020	< 0.020	25	0.0064	< 0.0000019
	18-Aug-2021	**0.011** [#1]	< 0.00060	< 0.00020	0.080	< 0.0010	0.039	< 0.000020	80	< 0.0010	< 0.00030	0.00041	< 0.060	< 0.00020	< 0.020	30	0.0054	< 0.0000019
	19-Sep-2021	0.0048	< 0.00060	0.00022	0.078	< 0.0010	0.040	< 0.000020	86	< 0.0010	< 0.00030	0.00038	< 0.060	< 0.00020	< 0.020	32	0.0047	< 0.0000019
	11-Jun-2022	**0.030** [#1]	< 0.00060	< 0.00020	0.075	< 0.0010	0.024	< 0.000020	68	< 0.0010	< 0.00030	< 0.0010	0.080	< 0.00020	< 0.020	24	0.0081	< 0.0000019
	06-Aug-2022	**0.018** [#1]	< 0.00060	0.00026	0.084	< 0.0010	0.033	< 0.000020	77	< 0.0010	< 0.00030	< 0.0010	0.065	< 0.00020	< 0.020	28	0.0053	< 0.0000019
	26-Sep-2022	**0.0061** [#1]	< 0.00060	0.00020	0.066	< 0.0010	0.027	< 0.000020	76	< 0.0010	< 0.00030	< 0.0010	< 0.060	< 0.00020	< 0.020	27	0.0046	< 0.0000019
AEMP-04	18-Aug-2017	**0.024** [#1]	< 0.00060	0.00030	0.089	< 0.0010	0.030	< 0.000020	77	< 0.0010	< 0.00030	0.00058	0.10	< 0.00020	< 0.020	28	0.0068	< 0.0000020
	16-Sep-2017	**0.019** [#1]	< 0.00060	0.00031	0.081	< 0.0010	0.022	< 0.000020	74	< 0.0010	< 0.00030	0.00028	0.069	< 0.00020	< 0.020	29	0.0057	< 0.0000020
	16-Oct-2017	**0.087** [#1]	< 0.00060	0.00027	0.072	< 0.0010	< 0.020	< 0.000020	74	< 0.0010	< 0.00030	0.00041	0.21	< 0.00020	< 0.020	31	0.01	< 0.0000020
(Duplicate)	16-Oct-2017	**0.084** [#1]	< 0.00060	0.00036	0.072	< 0.0010	0.021	< 0.000020	74	< 0.0010	< 0.00030	0.00046	0.20	< 0.00020	< 0.020	31	0.01	< 0.0000020
	23-Jun-2018	**0.090** [#1]	< 0.00060	0.00044	0.086	< 0.0010	0.029	< 0.000020	76	< 0.0010	< 0.00030	0.00083	0.14	< 0.00020	< 0.020	27	0.0098	< 0.0000020
(Duplicate)	23-Jun-2018	**0.057** [#1]	< 0.00060	0.00034	0.089	< 0.0010	0.031	< 0.000020	78	< 0.0010	< 0.00030	0.00077	0.15	< 0.00020	< 0.020	28	0.01	< 0.0000020
	12-Aug-2018	**0.020** [#1]	< 0.00060	0.00024	0.076	< 0.0010	0.023	< 0.000020	73	< 0.0010	< 0.00030	0.00050	0.088	< 0.00020	< 0.020	29	0.0072	0.0000027
	16-Oct-2018	**0.15** [#1]	< 0.00060	0.00027	0.072	< 0.0010	0.027	< 0.000020	76	< 0.0010	< 0.00030	0.00081	**0.35** [#1]	0.00021	< 0.020	31	0.012	< 0.0000020
	03-Jun-2019	**0.077** [#1]	< 0.00060	0.00026	0.076	< 0.0010	0.021	< 0.000020	68	< 0.0010	< 0.00030	0.00066	0.17	< 0.00020	< 0.020	25	0.007	< 0.0000020
	25-Aug-2019	**0.099** [#1]	< 0.00060	0.00021	0.074	< 0.0010	0.020	< 0.000020	72	< 0.0010	< 0.00030	0.00050	0.19	< 0.00020	< 0.020	26	0.0075	< 0.0000020
	02-Oct-2019	**0.013** [#1]	< 0.00060	< 0.00020	0.072	< 0.0010	< 0.020	< 0.000020	84	< 0.0010	< 0.00030	0.00030	< 0.060	< 0.00020	< 0.020	31	0.0044	< 0.0000020
	10-Jun-2020	**0.086** [#1]	< 0.00060	0.00034	0.078	< 0.0010	0.020	< 0.000020	70	< 0.0010	< 0.00030	0.00049	0.21	< 0.00020	< 0.020	26	0.0054	< 0.0000019
(Duplicate)	10-Jun-2020	**0.087** [#1]	< 0.00060	< 0.00020	0.079	< 0.0010	0.020	< 0.000020	70	< 0.0010	< 0.00030	0.00049	0.23	< 0.00020	< 0.020	27	0.0059	< 0.0000019
	24-Jul-2020	**2.9** [#1]	< 0.00060	0.0021	0.084	< 0.0010	< 0.020	**0.000095** [#1]	37	0.0054	0.0017	**0.0049** [#1]	**3.9** [#1]	**0.0022** [#1]	< 0.020	11	0.082	< 0.0000019
	18-Sep-2020	**0.010** [#1]	0.0010	< 0.00020	0.079	< 0.0010	0.024	< 0.000020	81	< 0.0010	< 0.00030	0.00070	< 0.060	< 0.00020	< 0.020	28	0.0045	< 0.0000019
	06-Jun-2021	**0.12** [#1]	< 0.00060	0.00046	0.072	< 0.0010	0.023	< 0.000020	73	0.0020	< 0.00030	0.0013	0.20	< 0.00020	< 0.020	26	0.0063	< 0.0000019
	18-Aug-2021	**0.013** [#1]	< 0.00060	0.00020	0.078	< 0.0010	0.042	< 0.000020	77	< 0.0010	< 0.00030	0.00047	< 0.060	< 0.00020	< 0.020	30	0.005	< 0.0000019
	19-Sep-2021	**0.0059** [#1]	< 0.00060	0.00023	0.079	< 0.0010	0.038	< 0.000020	86	< 0.0010	< 0.00030	0.00049	< 0.060	< 0.00020	< 0.020	32	0.004	< 0.0000019
	11-Jun-2022	**0.024** [#1]	< 0.00060	< 0.00020	0.074	< 0.0010	0.029	< 0.000020	66	< 0.0010	< 0.00030	< 0.0010	0.089	< 0.00020	< 0.020	24	< 0.0040	< 0.0000019
(Duplicate)	11-Jun-2022	**0.037** [#1]	< 0.00060	0.00023	0.073	< 0.0010	0.023	< 0.000020	66	< 0.0010	< 0.00030	< 0.0010	0.081	< 0.00020	< 0.020	24	0.0040	< 0.0000019
	06-Aug-2022	**0.015** [#1]	< 0.00060	0.00024	0.085	< 0.0010	0.037	< 0.000020	79	< 0.0010	< 0.00030	**0.0050** [#1]	0.062	< 0.00020	< 0.020	29	0.0074	< 0.0000019
	24-Sep-2022	**0.0054** [#1]	< 0.00060	0.00020	0.070	< 0.0010	0.029	< 0.000020	79	< 0.0010	< 0.00030	< 0.0010	0.062	< 0.00020	< 0.020	31	0.0063	< 0.0000019
AEMP-05	19-Aug-2017	**0.015** [#1]	< 0.00060	0.0011	0.16	< 0.0010	< 0.020	< 0.000020	52	< 0.0010	< 0.00030	0.00034	0.17	< 0.00020	< 0.020	14	0.013	0.0000038
	16-Sep-2017	**0.012** [#1]	< 0.00060	0.00073	0.15	< 0.0010	< 0.020	< 0.000020	48	< 0.0010	< 0.00030	0.00032	0.078	< 0.00020	< 0.020	13	0.0051	< 0.0000020
	15-Oct-2017	**0.025** [#1]	< 0.00060	0.00060	0.15	< 0.0010	< 0.020	< 0.000020	51	< 0.0010	< 0.00030	0.00030	0.11	< 0.00020	< 0.020	14	0.006	< 0.0000020
	23-Jun-2018	**1.4** [#1]	< 0.00060	0.0018	0.089	< 0.0010	< 0.020	**0.00017** [#1]	39	0.0025	0.0022	**0.0058** [#1]	**2.4** [#1]	**0.0018** [#1]	< 0.020	11	0.075	0.0000049

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
	13-Aug-2018	**0.033** [#1]	< 0.00060	0.0011	0.14	< 0.0010	< 0.020	< 0.000020	42	< 0.0010	< 0.00030	0.00029	**0.50** [#1]	< 0.00020	< 0.020	14	0.031	0.0000028
	18-Oct-2018	**0.033** [#1]	< 0.00060	0.00075	0.17	< 0.0010	< 0.020	< 0.000020	50	< 0.0010	< 0.00030	0.00042	**0.34** [#1]	< 0.00020	< 0.020	15	0.18	< 0.0000020
	02-Jun-2019	**0.067** [#1]	< 0.00060	0.0011	0.14	< 0.0010	< 0.020	< 0.000020	44	< 0.0010	< 0.00030	0.00038	**0.56** [#1]	< 0.00020	< 0.020	13	0.041	< 0.0000020
	27-Aug-2019	**0.016** [#1]	< 0.00060	0.00085	0.16	< 0.0010	< 0.020	< 0.000020	44	< 0.0010	< 0.00030	0.00027	0.12	< 0.00020	< 0.020	13	0.0056	< 0.0000020
	01-Oct-2019	**0.042** [#1]	< 0.00060	0.00069	0.16	< 0.0010	< 0.020	< 0.000020	42	< 0.0010	< 0.00030	0.00038	**0.41** [#1]	< 0.00020	< 0.020	16	0.0094	< 0.0000020
	11-Jun-2020	**0.036** [#1]	< 0.00060	0.0012	0.10	< 0.0010	< 0.020	0.000041	40	< 0.0010	< 0.00030	0.0012	**0.46** [#1]	< 0.00020	< 0.020	10	0.033	0.0000023
	26-Jul-2020	**0.021** [#1]	< 0.00060	0.0011	0.16	< 0.0010	< 0.020	< 0.000020	57	0.0013	< 0.00030	0.00084	**0.38** [#1]	< 0.00020	< 0.020	14	0.013	< 0.0000019
	16-Sep-2020	**0.0062** [#1]	< 0.00060	0.00077	0.13	< 0.0010	< 0.020	< 0.000020	43	< 0.0010	< 0.00030	0.00086	**0.43** [#1]	< 0.00020	< 0.020	13	0.0065	< 0.0000019
	07-Jun-2021	**0.14** [#1]	< 0.00060	0.00076	0.092	< 0.0010	< 0.020	0.000021	39	0.0013	< 0.00030	**0.0021** [#1]	**0.41** [#1]	< 0.00020	< 0.020	8.6	0.023	< 0.0000019
	19-Aug-2021	**0.0096** [#1]	< 0.00060	0.00081	0.094	< 0.0010	< 0.020	< 0.000020	26	< 0.0010	< 0.00030	0.00037	0.10	< 0.00020	< 0.020	11	0.0086	< 0.0000019
	18-Sep-2021	**0.099** [#1]	< 0.00060	0.0010	0.11	< 0.0010	0.022	< 0.000020	29	< 0.0010	< 0.00030	0.00069	**0.34** [#1]	< 0.00020	< 0.020	12	0.01	< 0.0000019
	14-Jun-2022	**0.027** [#1]	< 0.00060	0.00088	0.11	< 0.0010	< 0.020	< 0.000020	40	< 0.0010	< 0.00030	< 0.0010	0.15	< 0.00020	< 0.020	11	0.021	0.000002
	05-Aug-2022	**0.0083** [#1]	< 0.00060	0.0012	0.13	< 0.0010	< 0.020	< 0.000020	42	< 0.0010	< 0.00030	< 0.0010	0.15	< 0.00020	< 0.020	14	0.012	0.0000036
	25-Sep-2022	**0.033** [#1]	< 0.00060	0.00099	0.13	< 0.0010	< 0.020	< 0.000020	41	< 0.0010	< 0.00030	< 0.0010	0.16	< 0.00020	< 0.020	13	0.0046	< 0.0000019
AEMP-06	21-Aug-2017	**0.66** [#1]	< 0.00060	0.00095	0.061	< 0.0010	< 0.020	0.000055	34	0.0011	0.00079	**0.0023** [#1]	**1.3** [#1]	0.00071	< 0.020	11	0.031	0.0000028
	16-Sep-2017	**0.36** [#1]	< 0.00060	0.00063	0.049	< 0.0010	< 0.020	0.000032	31	< 0.0010	0.00042	0.0014	**0.68** [#1]	0.00043	< 0.020	10	0.019	< 0.0000020
	16-Oct-2017	**0.24** [#1]	< 0.00060	0.00050	0.044	< 0.0010	< 0.020	0.000023	31	< 0.0010	< 0.00030	0.0013	**0.36** [#1]	0.00025	< 0.020	11	0.016	< 0.0000020
	23-Jun-2018	**0.90** [#1]	< 0.00060	0.0012	0.055	< 0.0010	< 0.020	0.000087	29	0.0017	0.0012	**0.0038** [#1]	**1.2** [#1]	0.0010 [#1]	< 0.020	8.8	0.029	< 0.0000020
	13-Aug-2018	**0.56** [#1]	< 0.00060	0.00068	0.049	< 0.0010	< 0.020	0.000061	33	< 0.0010	0.00054	0.0018	**0.70** [#1]	0.00045	< 0.020	10	0.021	0.0000033
	18-Oct-2018	**1.7** [#1]	0.00098	0.0020	0.10	< 0.0010	< 0.020	**0.00015** [#1]	35	0.0033	0.0024	**0.0075** [#1]	**4.5** [#1]	**0.0027** [#1]	< 0.020	11	0.099	0.0000079
	03-Jun-2019	**3.7** [#1]	< 0.00060	0.0027	0.11	< 0.0010	< 0.020	**0.00014** [#1]	37	0.0060	0.0035	**0.0078** [#1]	**7.4** [#1]	**0.0031** [#1]	< 0.020	12	0.13	0.000011
	25-Aug-2019	**0.78** [#1]	< 0.00060	0.00072	0.054	< 0.0010	< 0.020	0.000047	32	0.0013	0.00054	0.0017	**1.1** [#1]	0.00059	< 0.020	10	0.021	0.0000021
(Duplicate)	02-Oct-2019	**0.66** [#1]	< 0.00060	0.00061	0.053	< 0.0010	< 0.020	0.000037	29	0.0011	0.00039	0.0017	**0.88** [#1]	0.00043	< 0.020	9.5	0.015	< 0.0000020
	03-Oct-2019	**0.70** [#1]	< 0.00060	0.00069	0.054	< 0.0010	< 0.020	0.000024	32	0.0016	0.00043	0.0017	**0.88** [#1]	0.00046	< 0.020	10	0.014	< 0.0000020
	12-Jun-2020	**2.5** [#1]	< 0.00060	0.0022	0.099	< 0.0010	< 0.020	**0.00014** [#1]	34	0.0042	0.0025	**0.0065** [#1]	**5.3** [#1]	**0.0029** [#1]	< 0.020	10	0.089	< 0.000019
	28-Jul-2020	**0.98** [#1]	< 0.00060	0.0013	0.068	< 0.0010	< 0.020	**0.000098** [#1]	34	0.0026	0.0012	**0.0041** [#1]	**2.0** [#1]	**0.0013** [#1]	< 0.020	9.8	0.046	< 0.000019
	22-Sep-2020	**0.55** [#1]	0.00082	0.00074	0.049	< 0.0010	< 0.020	0.000040	31	< 0.0010	0.00050	0.0019	**0.82** [#1]	0.00051	< 0.020	9.1	0.021	< 0.0000019
	06-Jun-2021	**3.4** [#1]	< 0.00060	0.0024	0.083	< 0.0010	0.021	**0.00012** [#1]	34	0.0070	0.0019	**0.0053** [#1]	**3.9** [#1]	0.0020	< 0.020	10	0.079	0.0000073
	18-Aug-2021	**4.9** [#1]	< 0.00060	0.0038	0.13	< 0.0010	0.022	**0.00022** [#1]	39	0.0073	0.0047	**0.011** [#1]	**9.1** [#1]	0.0046	< 0.020	12	0.16	0.000012
(Duplicate)	18-Aug-2021	**4.4** [#1]	< 0.00060	0.0036	0.13	< 0.0010	0.025	**0.00020** [#1]	39	0.0066	0.0043	**0.010** [#1]	**8.6** [#1]	0.0044	< 0.020	12	0.16	0.000013
	17-Sep-2021	**0.37** [#1]	< 0.00060	0.00051	0.045	< 0.0010	< 0.020	0.000028	32	0.0011	< 0.00030	0.0015	**0.61** [#1]	0.00028	< 0.020	9.3	0.016	0.0000026
	12-Jun-2022	**5.5** [#1]	< 0.00060	**0.0065** [#1]	0.20	< 0.0010	< 0.020	**0.00039** [#1]	45	**0.010** [#1]	0.0066	**0.014** [#1]	**16** [#1]	**0.0068** [#1]	< 0.020	13	**0.27** [#1]	0.00002
	06-Aug-2022	**1.6** [#1]	< 0.00060	0.0017	0.10	< 0.0010	< 0.020	**0.00012** [#1]	36	0.0025	0.0016	**0.0044** [#1]	**3.9** [#1]	**0.0020** [#1]	< 0.020	11	0.080	< 0.0000019
	24-Sep-2022	**0.88** [#1]	< 0.00060	0.0013	0.079	< 0.0010	< 0.020	0.000089	34	0.0023	0.00097	**0.0035** [#1]	**2.4** [#1]	**0.0013** [#1]	< 0.020	10	0.053	< 0.0000019
AEMP-07	21-Aug-2017	**0.62** [#1]	< 0.00060	0.00083	0.058	< 0.0010	< 0.020	0.000060	33	0.0011	0.00069	**0.0023** [#1]	**1.2** [#1]	0.00063	< 0.020	10	0.029	0.0000024
(Duplicate)	21-Aug-2017	**0.67** [#1]	< 0.00060	0.00093	0.059	< 0.0010	< 0.020	0.000053	33	0.0013	0.00077	**0.0025** [#1]	**1.3** [#1]	0.00074	< 0.020	11	0.031	0.0000026
	16-Sep-2017	**0.28** [#1]	< 0.00060	0.00056	0.047	< 0.0010	< 0.020	0.000028	30	< 0.0010	0.00034	0.0013	**0.67** [#1]	0.00039	< 0.020	10	0.018	< 0.0000020
	16-Oct-2017	**0.54** [#1]	< 0.00060	0.00086	0.056	< 0.0010	< 0.020	0.000057	29	0.0010	0.00050	0.0020 [#1]	**0.80** [#1]	0.00058	< 0.020	10	0.048	< 0.0000020
	23-Jun-2018	**1.1** [#1]	< 0.00060	0.0013	0.060	< 0.0010	< 0.020	**0.000098** [#1]	29	0.0022	0.0015	**0.0042** [#1]	**1.6** [#1]	**0.0014** [#1]	< 0.020	8.9	0.038	0.0000033
	13-Aug-2018	**1.4** [#1]	< 0.00060	0.0018	0.093	< 0.0010	< 0.020	**0.00017** [#1]	39	0.0019	0.0017	**0.0044** [#1]	**3.0** [#1]	**0.0019** [#1]	< 0.020	12	0.079	0.000010
	17-Oct-2018	**0.34** [#1]	< 0.00060	0.00060	0.052	< 0.0010	< 0.020	0.000040	28	< 0.0010	0.00042	0.0018	**0.66** [#1]	0.00047	< 0.020	9.1	0.024	< 0.0000020
(Duplicate)	17-Oct-2018	**0.34** [#1]	< 0.00060	0.00046	0.053	< 0.0010	< 0.020	0.000038	28	< 0.0010	0.00040	0.0015	**0.72** [#1]	0.00047	< 0.020	9.2	0.026	< 0.0000020
	03-Jun-2019	**3.5** [#1]	< 0.00060	0.0028	0.11	< 0.0010	< 0.020	**0.00015** [#1]	37	0.0062	0.0036	**0.0083** [#1]	**7.5** [#1]	**0.0034** [#1]	< 0.020	12	0.15	0.000013

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
	25-Aug-2019	**0.81** [#1]	< 0.00060	0.00061	0.051	< 0.0010	< 0.020	0.000028	31	0.0011	0.00047	0.0017	**0.89** [#1]	0.00046	< 0.020	9.9	0.018	< 0.0000020
	03-Oct-2019	**4.6** [#1]	< 0.00060	**0.0062** [#1]	0.34	< 0.0010	0.021	**0.00048** [#1]	70	**0.0093** [#1]	0.0069	**0.014** [#1]	**16** [#1]	**0.0077** [#1]	< 0.020	24	**0.36** [#1]	0.000021
	10-Jun-2020	**4.3** [#1]	< 0.00060	0.0034	0.13	< 0.0010	< 0.020	**0.00024** [#1]	35	0.0070	0.0034	**0.0081** [#1]	**7.1** [#1]	**0.0040** [#1]	< 0.020	11	0.14	0.000020
	24-Jul-2020	**1.8** [#1]	< 0.00060	0.0014	0.073	< 0.0010	< 0.020	0.000087	34	0.0033	0.00092	**0.0036** [#1]	**2.6** [#1]	**0.0015** [#1]	< 0.020	9.7	0.051	< 0.000019
(Duplicate)	24-Jul-2020	**2.0** [#1]	< 0.00060	0.0013	0.075	< 0.0010	< 0.020	**0.00012** [#1]	34	0.0032	0.0011	**0.0034** [#1]	**2.6** [#1]	**0.0014** [#1]	< 0.020	10	0.051	< 0.000019
	18-Sep-2020	**0.60** [#1]	< 0.00060	0.00069	0.060	< 0.0010	< 0.020	0.000037	34	0.0012	0.00043	**0.0023** [#1]	**1.0** [#1]	0.00046	< 0.020	9.0	0.024	< 0.0000019
(Duplicate)	18-Sep-2020	**0.53** [#1]	< 0.00060	0.00070	0.058	< 0.0010	< 0.020	0.000055	34	0.0013	0.00057	**0.0039** [#1]	**0.98** [#1]	0.00060	< 0.020	9.1	0.024	< 0.0000019
	06-Jun-2021	**3.2** [#1]	< 0.00060	0.0021	0.079	< 0.0010	< 0.020	**0.00011** [#1]	33	0.0057	0.0016	**0.0045** [#1]	**3.5** [#1]	**0.0017** [#1]	< 0.020	9.6	0.069	0.0000060
	18-Aug-2021	**4.5** [#1]	< 0.00060	0.0037	0.13	< 0.0010	< 0.020	**0.00020** [#1]	39	0.0073	0.0042	0.010	**8.5** [#1]	**0.0043** [#1]	< 0.020	12	0.15	0.000012
	17-Sep-2021	**0.63** [#1]	< 0.00060	0.00083	0.053	< 0.0010	< 0.020	0.000048	33	0.0014	0.00048	**0.0022** [#1]	**1.2** [#1]	0.00062	< 0.020	9.6	0.028	< 0.0000019
	12-Jun-2022	**5.1** [#1]	< 0.00060	**0.0067** [#1]	0.18	< 0.0010	< 0.020	**0.00045** [#1]	44	**0.0091** [#1]	0.0066	**0.015** [#1]	**14** [#1]	**0.0069** [#1]	< 0.020	13	**0.25** [#1]	**0.000032** [#1]
	06-Aug-2022	**8.5** [#1]	< 0.00060	**0.0093** [#1]	0.39	< 0.0010	0.023	**0.00071** [#1]	75	**0.014** [#1]	0.010	**0.021** [#1]	**24** [#1]	**0.012** [#1]	< 0.020	23	**0.53** [#1]	< 0.0000019
(Duplicate)	06-Aug-2022	**7.7** [#1]	< 0.00060	**0.0083** [#1]	0.37	< 0.0010	0.022	**0.00066** [#1]	73	**0.013** [#1]	0.0096	**0.019** [#1]	**21** [#1]	**0.011** [#1]	< 0.020	22	**0.49** [#1]	< 0.0000019
	24-Sep-2022	**3.8** [#1]	< 0.00060	0.0045	0.16	< 0.0010	< 0.020	**0.00033** [#1]	45	0.0070	0.0044	**0.013** [#1]	**8.6** [#1]	**0.0050** [#1]	< 0.020	13	**0.22** [#1]	0.000020
(Duplicate)	24-Sep-2022	**3.8** [#1]	< 0.00060	0.0046	0.17	< 0.0010	0.021	**0.00035** [#1]	47	0.0071	0.0047	**0.014** [#1]	**8.9** [#1]	**0.0052** [#1]	< 0.020	14	**0.23** [#1]	**0.000029** [#1]
AEMP-08	17-Aug-2017	**0.65** [#1]	< 0.00060	0.0011	0.066	< 0.0010	< 0.020	0.000071	39	0.0011	0.00079	**0.0025** [#1]	**1.2** [#1]	0.00077	< 0.020	12	0.031	0.0000038
	21-Aug-2017	**0.50** [#1]	< 0.00060	0.00079	0.056	< 0.0010	< 0.020	0.000035	33	< 0.0010	0.00056	0.0020 [#1]	**0.98** [#1]	0.00054	< 0.020	10	0.024	0.0000026
	16-Sep-2017	**1.2** [#1]	< 0.00060	0.0015	0.085	< 0.0010	< 0.020	**0.000092** [#1]	39	0.0022	0.0016	**0.0037** [#1]	**3.2** [#1]	**0.0017** [#1]	< 0.020	14	0.077	0.0000026
	16-Oct-2017	**0.33** [#1]	< 0.00060	0.00056	0.048	< 0.0010	< 0.020	0.000029	31	< 0.0010	0.00039	0.0013	**0.74** [#1]	0.00040	< 0.020	11	0.02	< 0.0000020
	23-Jun-2018	**0.80** [#1]	< 0.00060	0.00098	0.063	< 0.0010	< 0.020	0.000066	31	0.0014	0.0011	**0.0031** [#1]	**1.6** [#1]	0.00089	< 0.020	9.5	0.038	0.0000030
	13-Aug-2018	**0.73** [#1]	< 0.00060	0.00083	0.057	< 0.0010	< 0.020	0.000087	35	< 0.0010	0.00072	**0.0023** [#1]	**1.1** [#1]	0.00060	< 0.020	11	0.028	0.0000039
	17-Oct-2018	**0.12** [#1]	< 0.00060	0.00029	0.041	< 0.0010	< 0.020	< 0.000020	29	< 0.0010	< 0.00030	0.00095	0.19	< 0.00020	< 0.020	10	0.0069	< 0.0000020
	03-Jun-2019	**1.7** [#1]	< 0.00060	0.0017	0.086	< 0.0010	< 0.020	**0.00012** [#1]	37	0.0031	0.0021	**0.0048** [#1]	**4.0** [#1]	**0.0021** [#1]	< 0.020	13	0.092	0.0000080
	28-Aug-2019	**0.59** [#1]	< 0.00060	0.00052	0.056	< 0.0010	< 0.020	0.000023	35	< 0.0010	0.00037	0.0015	**0.86** [#1]	0.00042	< 0.020	11	0.018	< 0.0000020
	03-Oct-2019	**0.38** [#1]	< 0.00060	0.00064	0.054	< 0.0010	< 0.020	0.000031	33	< 0.0010	0.00039	0.0015	**0.87** [#1]	0.00041	< 0.020	10	0.015	0.0000020
	10-Jun-2020	**3.7** [#1]	< 0.00060	0.0032	0.14	< 0.0010	< 0.020	**0.00023** [#1]	35	0.0058	0.0030	**0.0074** [#1]	**6.8** [#1]	**0.0036** [#1]	< 0.020	10	0.13	< 0.000019
	24-Jul-2020	**1.9** [#1]	< 0.00060	0.0013	0.074	< 0.0010	< 0.020	0.000063	34	0.0030	0.0013	**0.0035** [#1]	**2.4** [#1]	**0.0012** [#1]	< 0.020	9.9	0.047	< 0.000019
	18-Sep-2020	**0.58** [#1]	< 0.00060	0.00085	0.061	< 0.0010	< 0.020	0.000047	34	0.0012	0.00055	**0.0037** [#1]	**1.1** [#1]	0.00053	< 0.020	9.2	0.025	< 0.0000019
	06-Jun-2021	**3.4** [#1]	< 0.00060	0.0021	0.074	< 0.0010	< 0.020	**0.00010** [#1]	33	0.0057	0.0016	**0.0041** [#1]	**3.2** [#1]	**0.0017** [#1]	< 0.020	9.5	0.065	0.0000053
	18-Aug-2021	**4.4** [#1]	< 0.00060	0.0037	0.13	< 0.0010	< 0.020	**0.00021** [#1]	39	0.0069	0.0043	**0.010** [#1]	**8.5** [#1]	**0.0043** [#1]	< 0.020	13	0.15	0.000013
	17-Sep-2021	**0.46** [#1]	< 0.00060	0.00061	0.049	< 0.0010	< 0.020	0.000030	33	0.0011	0.00042	0.0016	**0.85** [#1]	0.00040	< 0.020	9.9	0.021	< 0.0000019
	31-Mar-2022	**0.027** [#1]	< 0.00061	0.00026	0.034	< 0.0010	< 0.020	0.000038	36	< 0.0010	< 0.00030	**0.0021** [#1]	0.061	**0.0051** [#1]	< 0.020	10	0.0055	0.0000032
	12-Jun-2022	**3.3** [#1]	< 0.00060	0.0036	0.13	< 0.0010	< 0.020	**0.00027** [#1]	43	0.0057	0.0040	**0.0095** [#1]	**9.0** [#1]	**0.0040** [#1]	< 0.020	11	0.16	0.000023
	06-Aug-2022	**1.7** [#1]	< 0.00060	0.0019	0.11	< 0.0010	< 0.020	**0.00014** [#1]	39	0.0025	0.0018	**0.0048** [#1]	**4.2** [#1]	**0.0022** [#1]	< 0.020	12	0.090	< 0.0000019
	25-Sep-2022	**0.49** [#1]	< 0.00060	0.00073	0.056	< 0.0010	< 0.020	0.000042	33	< 0.0010	< 0.00030	0.0020 [#1]	**1.0** [#1]	0.00054	< 0.020	11	0.024	< 0.0000019
AEMP-09	21-Aug-2017	**3.2** [#1]	< 0.00060	0.0033	0.12	< 0.0010	0.021	**0.00021** [#1]	48	0.0067	0.0040	**0.0092** [#1]	**7.1** [#1]	**0.0040** [#1]	< 0.020	16	0.16	0.000011
	16-Sep-2017	**0.24** [#1]	< 0.00060	0.00057	0.052	< 0.0010	< 0.020	0.000033	34	< 0.0010	0.00032	0.0014	**0.40** [#1]	0.00038	< 0.020	11	0.028	0.0000022
	16-Oct-2017	**2.5** [#1]	< 0.00060	0.0024	0.14	< 0.0010	0.052	**0.00020** [#1]	45	0.0041	0.0029	**0.0073** [#1]	**6.2** [#1]	**0.0031** [#1]	< 0.020	15	**0.21** [#1]	< 0.0000020
	23-Jun-2018	**1.8** [#1]	< 0.00060	0.0023	0.083	< 0.0010	< 0.020	**0.00012** [#1]	34	0.0037	0.0025	**0.0061** [#1]	**3.4** [#1]	**0.0024** [#1]	< 0.020	11	0.082	0.0000069
	12-Aug-2018	**0.74** [#1]	< 0.00060	0.0010	0.062	< 0.0010	< 0.020	0.000073	36	0.0011	0.00079	**0.0023** [#1]	**1.3** [#1]	0.00076	< 0.020	11	0.038	0.0000043
	17-Oct-2018	**0.87** [#1]	< 0.00060	0.0013	0.087	< 0.0010	0.020	**0.000091** [#1]	32	0.0016	0.0011	**0.0057** [#1]	**1.9** [#1]	**0.0012** [#1]	< 0.020	11	0.058	0.0000043
	02-Jun-2019	**3.7** [#1]	0.0028	0.0035	0.13	< 0.0010	< 0.020	**0.00020** [#1]	43	0.0067	0.0045	**0.011** [#1]	**8.9** [#1]	**0.0043** [#1]	< 0.020	13	0.18	0.000015
	28-Aug-2019	**0.72** [#1]	< 0.00060	0.00050	0.062	< 0.0010	< 0.020	0.000032	34	< 0.0010	0.00046	**0.0024** [#1]	**0.89** [#1]	0.00049	< 0.020	11	0.022	< 0.0000020
	03-Oct-2019	**0.57** [#1]	< 0.00060	0.00076	0.067	< 0.0010	< 0.020	0.000047	33	0.0011	0.00058	**0.0028** [#1]	**1.4** [#1]	0.00076	< 0.020	10	0.031	0.0000029
	10-Jun-2020	**2.3** [#1]	< 0.00060	0.0027	0.13	< 0.0010	0.022	**0.00018** [#1]	33	0.0036	0.0024	**0.0062** [#1]	**5.8** [#1]	**0.0029** [#1]	< 0.020	9.8	0.11	< 0.000019

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
	24-Jul-2020	**0.019** [#1]	< 0.00060	0.00022	0.080	< 0.0010	0.033	< 0.000020	82	< 0.0010	< 0.00030	0.00067	0.088	< 0.00020	< 0.020	28	0.0052	< 0.000019
	18-Sep-2020	**1.0** [#1]	0.0022	0.0013	0.076	< 0.0010	< 0.020	0.000066	37	0.0024	0.0010	**0.0041** [#1]	**1.9** [#1]	0.0010 [#1]	< 0.020	10	0.051	< 0.0000019
	06-Jun-2021	**4.3** [#1]	< 0.00060	0.0022	0.11	< 0.0010	0.054	**0.00013** [#1]	34	0.0069	0.0019	**0.0052** [#1]	**3.3** [#1]	**0.0020** [#1]	0.044	10	0.11	0.0000054
	18-Aug-2021	**4.4** [#1]	< 0.00060	0.0036	0.14	< 0.0010	0.022	**0.00021** [#1]	40	0.0067	0.0046	**0.011** [#1]	**8.2** [#1]	**0.0046** [#1]	< 0.020	12	0.17	0.000011
	17-Sep-2021	**0.47** [#1]	0.0011	0.00068	0.055	< 0.0010	< 0.020	0.000033	36	< 0.0010	0.00038	**0.0027** [#1]	**0.83** [#1]	0.00041	< 0.020	9.9	0.028	0.0000023
	11-Jun-2022	**7.6** [#1]	< 0.00060	**0.0085** [#1]	0.26	< 0.0010	0.030	**0.00035** [#1]	47	**0.015** [#1]	0.0092	**0.018** [#1]	**22** [#1]	**0.0090** [#1]	< 0.020	16	**0.33** [#1]	0.000026 [#1]
	05-Aug-2022	**1.9** [#1]	< 0.00060	0.0021	0.11	< 0.0010	< 0.020	**0.00016** [#1]	38	0.0032	0.0020	**0.0052** [#1]	**4.9** [#1]	**0.0024** [#1]	< 0.020	12	0.12	0.000011
	24-Sep-2022	**3.9** [#1]	< 0.00060	0.0046	0.17	< 0.0010	0.024	**0.00038** [#1]	47	0.0072	0.0044	**0.015** [#1]	**9.2** [#1]	**0.0053** [#1]	< 0.020	14	**0.21** [#1]	**0.000035** [#1]
AEMP-10	23-Jun-2018	**0.93** [#1]	< 0.00060	0.0011	0.061	< 0.0010	< 0.020	0.000080	32	0.0018	0.0012	**0.0036** [#1]	**1.5** [#1]	0.00093	< 0.020	8.7	0.031	0.0000033
	14-Aug-2018	**1.6** [#1]	< 0.00060	0.0013	0.077	< 0.0010	< 0.020	**0.00015** [#1]	40	0.0014	0.0016	**0.0037** [#1]	**2.0** [#1]	**0.0012** [#1]	< 0.020	12	0.052	0.0000068
(Duplicate)	14-Aug-2018	**1.4** [#1]	< 0.00060	0.0011	0.076	< 0.0010	< 0.020	**0.00015** [#1]	40	0.0016	0.0015	**0.0036** [#1]	**2.1** [#1]	**0.0011** [#1]	< 0.020	12	0.052	0.0000052
	18-Oct-2018	**0.44** [#1]	< 0.00060	0.00069	0.057	< 0.0010	< 0.020	0.000053	28	< 0.0010	0.00047	0.0016	**0.89** [#1]	0.00057	< 0.020	9.6	0.028	< 0.0000020
	10-Jun-2019	**2.0** [#1]	0.00096	0.0021	0.098	< 0.0010	< 0.020	**0.00015** [#1]	38	0.0033	0.0024	**0.0074** [#1]	**4.8** [#1]	**0.0026** [#1]	< 0.020	10	0.11	0.0000090
	26-Aug-2019	**1.7** [#1]	< 0.00060	0.0013	0.076	< 0.0010	< 0.020	0.000083	40	0.0026	0.0010	**0.0031** [#1]	**2.2** [#1]	**0.0011** [#1]	< 0.020	11	0.042	< 0.0000020
	01-Oct-2019	**1.6** [#1]	< 0.00060	0.0011	0.085	< 0.0010	< 0.020	0.000086	37	0.0026	0.0010	**0.0043** [#1]	**2.3** [#1]	**0.0014** [#1]	< 0.020	11	0.028	0.0000061
	12-Jun-2020	**4.7** [#1]	< 0.00060	0.0039	0.16	< 0.0010	< 0.020	**0.00028** [#1]	45	0.0074	0.0049	**0.012** [#1]	**11** [#1]	**0.0051** [#1]	< 0.020	13	0.18	0.000024
	28-Jul-2020	**1.1** [#1]	< 0.00060	0.0017	0.084	< 0.0010	< 0.020	**0.00012** [#1]	39	0.0032	0.0013	**0.0042** [#1]	**2.8** [#1]	**0.0016** [#1]	< 0.020	10	0.064	< 0.000019
	22-Sep-2020	**0.76** [#1]	0.00087	0.00099	0.060	< 0.0010	< 0.020	0.000065	39	0.0021	0.00075	**0.0028** [#1]	**1.2** [#1]	0.00075	< 0.020	10	0.032	0.0000023
	7-Jun-21	**2.7** [#1]	< 0.00060	0.0016	0.081	< 0.0010	0.020	0.000088	38	0.0044	0.0015	**0.0050** [#1]	**3.3** [#1]	**0.0017** [#1]	< 0.020	10	0.064	0.0000029
	19-Aug-2021	**3.0** [#1]	< 0.00060	0.0027	0.12	< 0.0010	0.048	**0.00018** [#1]	41	0.0045	0.0029	**0.0073** [#1]	**6.6** [#1]	**0.0030** [#1]	< 0.020	12	0.12	0.000011
	18-Sep-2021	**1.7** [#1]	< 0.00060	0.0013	0.075	< 0.0010	< 0.020	0.000062	37	0.0033	0.0010	**0.0032** [#1]	**1.9** [#1]	0.0010 [#1]	< 0.020	11	0.039	0.0000038
	10-Aug-2022	**0.84** [#1]	< 0.00060	0.0010	0.075	< 0.0010	< 0.020	0.000077	35	< 0.0010	0.00076	**0.0024** [#1]	**1.6** [#1]	0.00088	< 0.020	10	0.037	0.0000034
AEMP-11	23-Jun-2018	**0.88** [#1]	< 0.00060	0.00099	0.066	< 0.0010	< 0.020	0.000085	32	0.0019	0.0014	**0.0036** [#1]	**1.7** [#1]	0.0010 [#1]	< 0.020	9.3	0.042	0.0000036
	14-Aug-2018	**1.2** [#1]	< 0.00060	0.00086	0.065	< 0.0010	< 0.020	**0.00013** [#1]	37	0.0012	0.0013	**0.0029** [#1]	**1.5** [#1]	0.00097	< 0.020	11	0.043	0.0000043
	18-Oct-2018	**1.0** [#1]	< 0.00060	0.0011	0.071	< 0.0010	< 0.020	0.000071	32	0.0018	0.0011	**0.0031** [#1]	**2.1** [#1]	**0.0012** [#1]	< 0.020	11	0.049	0.0000038
	10-Jun-2019	**2.1** [#1]	0.00098	0.0023	0.10	< 0.0010	< 0.020	**0.00016** [#1]	38	0.0038	0.0027	**0.0079** [#1]	**5.4** [#1]	**0.0028** [#1]	< 0.020	11	0.12	0.0000092
	26-Aug-2019	**1.5** [#1]	< 0.00060	0.0010	0.074	< 0.0010	< 0.020	0.000063	39	0.0025	0.0011	**0.0031** [#1]	**2.1** [#1]	0.00098	< 0.020	11	0.039	0.0000036
	01-Oct-2019	**1.6** [#1]	0.0015	0.0018	0.11	< 0.0010	0.023	**0.00014** [#1]	36	0.0028	0.0025	**0.0078** [#1]	**6.7** [#1]	**0.0025** [#1]	< 0.020	11	0.086	0.0000092
	12-Jun-2020	**8.1** [#1]	< 0.00060	**0.0081** [#1]	0.33	< 0.0010	< 0.020	**0.00062** [#1]	69	**0.014** [#1]	0.0094	**0.021** [#1]	**21** [#1]	**0.011** [#1]	< 0.020	21	**0.41** [#1]	< 0.000019
	28-Jul-2020	**1.3** [#1]	< 0.00060	0.0014	0.072	< 0.0010	0.021	**0.000097** [#1]	36	0.0037	0.0012	**0.0045** [#1]	**2.3** [#1]	**0.0012** [#1]	< 0.020	9.8	0.049	< 0.000019
	22-Sep-2020	**0.67** [#1]	0.0020	0.00094	0.058	< 0.0010	< 0.020	0.000056	36	< 0.0010	0.00063	**0.0022** [#1]	**1.2** [#1]	0.00067	< 0.020	9.7	0.031	0.0000022
	07-Jun-2021	**2.2** [#1]	< 0.00060	0.0018	0.082	< 0.0010	< 0.020	**0.00012** [#1]	38	0.0052	0.0016	**0.0045** [#1]	**3.3** [#1]	0.0017	< 0.020	10	0.067	< 0.0000019
	19-Aug-2021	**2.9** [#1]	< 0.00060	0.0026	0.13	< 0.0010	0.030	**0.00019** [#1]	42	0.0046	0.0030	**0.0075** [#1]	**6.8** [#1]	0.0031	< 0.020	12	0.13	0.0000086
(Duplicate)	19-Aug-2021	**3.4** [#1]	< 0.00060	0.0030	0.13	< 0.0010	0.028	**0.00021** [#1]	43	0.0052	0.0033	**0.0084** [#1]	**7.3** [#1]	0.0034	< 0.020	12	0.14	0.0000095
	18-Sep-2021	**0.78** [#1]	0.0010	0.0011	0.068	< 0.0010	< 0.020	0.000058	36	0.0023	0.00086	**0.0034** [#1]	**1.7** [#1]	0.00091	< 0.020	11	0.037	0.0000037
	10-Aug-2022	**0.91** [#1]	< 0.00060	0.0011	0.081	< 0.0010	0.020	0.000069	34	0.0014	0.0010	**0.0028** [#1]	**2.3** [#1]	**0.0012** [#1]	< 0.020	10	0.051	0.0000041
AEMP-12	23-Jun-2018	**0.55** [#1]	< 0.00060	0.00069	0.055	< 0.0010	< 0.020	0.000049	31	0.0010	0.00067	**0.0024** [#1]	**0.96** [#1]	0.00058	< 0.020	9.7	0.024	< 0.0000020
	14-Aug-2018	**0.94** [#1]	< 0.00060	0.0011	0.073	< 0.0010	< 0.020	0.000089	44	0.0013	0.0012	**0.0029** [#1]	**1.9** [#1]	0.00099	< 0.020	14	0.051	0.0000050
	17-Oct-2018	**0.20** [#1]	< 0.00060	0.00027	0.066	< 0.0010	0.023	0.000027	63	< 0.0010	< 0.00030	0.00086	**0.48** [#1]	0.00028	< 0.020	24	0.016	< 0.0000020
	03-Jun-2019	**1.5** [#1]	< 0.00060	0.0014	0.081	< 0.0010	< 0.020	0.000084	43	0.0025	0.0016	**0.0040** [#1]	**3.0** [#1]	**0.0015** [#1]	< 0.020	15	0.068	0.0000054
	28-Aug-2019	**0.53** [#1]	< 0.00060	0.00046	0.053	< 0.0010	< 0.020	0.000031	35	< 0.0010	0.00034	0.0013	**0.65** [#1]	0.00031	< 0.020	11	0.014	< 0.0000020
(Duplicate)	28-Aug-2019	**0.61** [#1]	< 0.00060	0.00051	0.054	< 0.0010	< 0.020	0.000025	35	< 0.0010	0.00036	0.0013	**0.64** [#1]	0.00030	< 0.020	11	0.014	< 0.0000020

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
	03-Oct-2019	**0.34** [#1]	0.00072	0.00057	0.051	< 0.0010	< 0.020	0.000025	32	< 0.0010	< 0.00030	0.0016	**0.64** [#1]	0.00036	< 0.020	10	0.013	< 0.0000020
	10-Jun-2020	**0.66** [#1]	< 0.00060	0.00085	0.10	< 0.0010	< 0.020	0.000049	73	0.0012	0.00072	0.0018	**1.5** [#1]	0.00084	< 0.020	26	0.04	< 0.0000019
	24-Jul-2020	**1.2** [#1]	< 0.00060	0.00058	0.068	< 0.0010	0.025	0.000054	43	0.0025	0.00068	**0.0027** [#1]	**1.4** [#1]	0.00075	< 0.020	13	0.031	< 0.000019
	18-Sep-2020	**0.036** [#1]	< 0.00060	0.00032	0.085	< 0.0010	0.026	0.000022	81	< 0.0010	< 0.00030	0.00074	0.19	< 0.00020	< 0.020	28	0.022	< 0.0000019
	07-Jun-2021	**0.89** [#1]	< 0.00060	0.00049	0.069	< 0.0010	0.022	0.000053	51	0.0022	0.00048	0.0020 [#1]	**1.1** [#1]	0.00058	< 0.020	17	0.025	< 0.0000019
	18-Aug-2021	**1.0** [#1]	< 0.00060	0.00087	0.083	< 0.0010	0.054	0.000049	63	0.0016	0.00079	**0.0024** [#1]	**1.4** [#1]	0.00072	< 0.020	23	0.035	< 0.0000019
	17-Sep-2021	**0.52** [#1]	< 0.00060	0.00061	0.051	< 0.0010	< 0.020	0.000033	37	0.0014	0.00039	0.0020 [#1]	**0.83** [#1]	0.00042	< 0.020	11	0.02	< 0.0000019
	31-Mar-2022	**0.043** [#1]	< 0.00060	0.00036	0.036	< 0.0010	< 0.020	0.000028	24	< 0.0010	< 0.00030	0.0014	0.073	0.00048	< 0.020	8.9	< 0.0040	0.0000031
	12-Jun-2022	**3.1** [#1]	< 0.00060	0.0035	0.17	< 0.0010	0.031	**0.00022** [#1]	57	0.0061	0.0040	**0.0094** [#1]	**8.7** [#1]	**0.0041** [#1]	< 0.020	20	0.16	< 0.000019
	05-Aug-2022	**0.28** [#1]	< 0.00060	0.00064	0.073	< 0.0010	< 0.020	< 0.000020	52	< 0.0010	< 0.00030	0.0012	**0.53** [#1]	0.00032	< 0.020	18	0.021	< 0.0000019
	26-Sep-2022	**0.59** [#1]	< 0.00060	0.00081	0.060	< 0.0010	< 0.020	0.000049	34	0.0013	0.00052	**0.0026** [#1]	**1.2** [#1]	0.00074	< 0.020	10	0.035	< 0.0000019
(Duplicate)	26-Sep-2022	**0.60** [#1]	< 0.00060	0.00087	0.061	< 0.0010	< 0.020	0.000057	34	0.0014	0.00044	**0.0029** [#1]	**1.2** [#1]	0.00072	< 0.020	10	0.034	0.0000025
AEMP-13	14-Aug-2018	**1.8** [#1]	< 0.00060	0.0017	0.099	< 0.0010	< 0.020	**0.00024** [#1]	48	0.0022	0.0020	**0.0049** [#1]	**3.0** [#1]	**0.0017** [#1]	< 0.020	15	0.09	0.0000071
	18-Oct-2018	**0.42** [#1]	< 0.00060	0.00063	0.067	< 0.0010	< 0.020	0.000075	43	< 0.0010	0.00048	0.0020 [#1]	**0.75** [#1]	0.00053	< 0.020	12	0.064	< 0.0000020
	02-Jun-2019	**4.2** [#1]	< 0.00060	0.0041	0.18	< 0.0010	< 0.020	**0.00033** [#1]	56	0.0075	0.0055	**0.012** [#1]	**10** [#1]	**0.0052** [#1]	< 0.020	17	**0.22** [#1]	0.0000068
	27-Aug-2019	**1.3** [#1]	< 0.00060	0.00093	0.085	< 0.0010	< 0.020	0.000055	48	0.0016	0.00073	**0.0023** [#1]	**1.5** [#1]	0.00052	< 0.020	14	0.091	< 0.0000020
	02-Oct-2019	**1.2** [#1]	< 0.00060	0.00097	0.12	< 0.0010	< 0.020	**0.00011** [#1]	72	0.0019	0.0020	**0.0029** [#1]	**3.6** [#1]	0.00090	< 0.020	20	**0.65** [#1]	0.0000045
	11-Jun-2020	**0.82** [#1]	< 0.00060	0.0013	0.11	< 0.0010	< 0.020	0.000087	42	0.0018	0.0010	**0.0035** [#1]	**1.8** [#1]	**0.0011** [#1]	< 0.020	11	0.068	< 0.000019
(Duplicate)	11-Jun-2020	**1.3** [#1]	< 0.00060	0.0017	0.11	< 0.0010	< 0.020	**0.00012** [#1]	42	0.0023	0.0016	**0.0049** [#1]	**2.8** [#1]	**0.0015** [#1]	< 0.020	11	0.084	< 0.000019
	26-Jul-2020	**1.2** [#1]	< 0.00060	0.0020	0.19	< 0.0010	< 0.020	**0.00016** [#1]	76	0.0026	0.0012	**0.0033** [#1]	**3.6** [#1]	**0.0012** [#1]	< 0.020	17	**0.25** [#1]	< 0.000019
(Duplicate)	26-Jul-2020	**0.96** [#1]	< 0.00060	0.0012	0.18	< 0.0010	< 0.020	**0.00016** [#1]	75	0.0030	0.0014	**0.0036** [#1]	**3.3** [#1]	**0.0011** [#1]	< 0.020	17	**0.24** [#1]	< 0.000019
	16-Sep-2020	**2.3** [#1]	< 0.00060	0.0017	0.099	< 0.0010	< 0.020	**0.00012** [#1]	48	0.0035	0.0016	**0.0047** [#1]	**3.6** [#1]	**0.0016** [#1]	< 0.020	14	0.093	< 0.000019
(Duplicate)	16-Sep-2020	**1.9** [#1]	< 0.00060	0.0014	0.086	< 0.0010	< 0.020	**0.000099** [#1]	46	0.0029	0.0013	**0.0036** [#1]	**2.8** [#1]	**0.0013** [#1]	< 0.020	13	0.073	< 0.000019
	07-Jun-2021	**0.32** [#1]	< 0.00060	0.0011	0.10	< 0.0010	< 0.020	0.000038	42	0.0016	0.00037	0.0019	**0.83** [#1]	0.00040	< 0.020	9.2	0.041	< 0.0000019
	19-Aug-2021	**3.6** [#1]	< 0.00060	0.0031	0.13	< 0.0010	< 0.020	**0.00020** [#1]	43	0.0053	0.0036	**0.0087** [#1]	**7.6** [#1]	**0.0032** [#1]	< 0.020	13	0.14	0.000012
	18-Sep-2021	**2.4** [#1]	< 0.00060	0.0014	0.074	< 0.0010	0.029	0.000083	39	0.0040	0.0013	**0.0038** [#1]	**2.5** [#1]	**0.0013** [#1]	< 0.020	11	0.051	0.0000050
	31-Mar-2022	**0.12** [#1]	< 0.00060	0.00048	0.063	< 0.0010	< 0.020	0.000029	47	< 0.0010	< 0.00030	0.0020 [#1]	0.19	< 0.00020	< 0.020	13	0.0051	< 0.0000019
(Duplicate)	31-Mar-2022	**0.11** [#1]	< 0.00060	0.00049	0.061	< 0.0010	< 0.020	0.000027	46	< 0.0010	< 0.00030	**0.0022** [#1]	0.19	0.00046	< 0.020	13	0.0048	< 0.0000019
	14-Jun-2022	**5.5** [#1]	< 0.00060	0.0037	0.18	< 0.0010	0.026	**0.00028** [#1]	42	0.0080	0.0041	**0.0098** [#1]	**8.0** [#1]	**0.0041** [#1]	< 0.020	12	0.15	0.000026 [#1]
(Duplicate)	14-Jun-2022	**4.9** [#1]	< 0.00060	0.0037	0.15	< 0.0010	0.023	**0.00027** [#1]	42	0.0074	0.0040	**0.0092** [#1]	**7.4** [#1]	**0.0041** [#1]	< 0.020	11	0.15	0.000025
	05-Aug-2022	**0.56** [#1]	< 0.00060	0.00080	0.069	< 0.0010	< 0.020	0.000046	39	< 0.0010	0.00044	**0.0022** [#1]	**0.93** [#1]	0.00051	< 0.020	11	0.033	< 0.0000019
	25-Sep-2022	**0.21** [#1]	< 0.00060	0.00066	0.090	< 0.0010	< 0.020	0.000065	55	< 0.0010	0.00075	0.0019	**0.82** [#1]	0.00027	< 0.020	14	**0.33** [#1]	< 0.0000019
Relative Percent Difference (RPD) Report																		
AEMP-01	07-Jun-2021	**3.4** [#1]	< 0.00060	0.0022	0.10	< 0.0010	< 0.020	**0.00019** [#1]	39	0.0059	0.0022	**0.0059** [#1]	**3.8** [#1]	**0.0022** [#1]	< 0.020	11	0.088	0.0000048
(Duplicate)	07-Jun-2021	**3.7** [#1]	< 0.00060	0.0021	0.098	< 0.0010	< 0.020	**0.00014** [#1]	37	0.0067	0.0020	**0.0061** [#1]	**3.3** [#1]	**0.0021** [#1]	< 0.020	10	0.075	< 0.0000019
RPD(%)		**8.5%**	**---**	**4.7%**	**2.0%**	**---**	**---**	**30.3%**	**5.3%**	**12.7%**	**9.5%**	**3.3%**	**14.1%**	**4.7%**	**---**	**9.5%**	**16.0%**	**---**
AEMP-01	06-Aug-2022	**0.97** [#1]	< 0.00060	0.0012	0.085	< 0.0010	< 0.020	0.000074	41	0.0018	0.00097	**0.0033** [#1]	**2.3** [#1]	**0.0011** [#1]	< 0.020	12	0.051	0.0000068
(Duplicate)	06-Aug-2022	**0.95** [#1]	< 0.00060	0.0012	0.086	< 0.0010	< 0.020	0.000089	41	0.0015	0.00094	**0.0031** [#1]	**2.3** [#1]	**0.0011** [#1]	< 0.020	12	0.050	0.0000055
RPD(%)		**2.1%**	**---**	**0.0%**	**1.2%**	**---**	**---**	**18.4%**	**0.0%**	**18.2%**	**3.1%**	**6.3%**	**0.0%**	**0.0%**	**---**	**0.0%**	**2.0%**	**21.1%**
AEMP-02	16-Sep-2017	**0.031** [#1]	< 0.00060	0.00032	0.082	< 0.0010	0.024	< 0.000020	73	< 0.0010	< 0.00030	0.00064	0.096	< 0.00020	< 0.020	29	0.0087	< 0.0000020
(Duplicate)	16-Sep-2017	**0.032** [#1]	< 0.00060	0.00027	0.080	< 0.0010	0.023	< 0.000020	72	< 0.0010	< 0.00030	0.00035	0.10	< 0.00020	< 0.020	28	0.0084	< 0.0000020
RPD(%)		**3.2%**	**---**	**16.9%**	**2.5%**	**---**	**4.3%**	**---**	**1.4%**	**---**	**---**	**58.6%**	**4.1%**	**---**	**---**	**3.5%**	**3.5%**	**---**
AEMP-02	03-Jun-2019	**0.081** [#1]	< 0.00060	0.00032	0.076	< 0.0010	0.022	< 0.000020	67	< 0.0010	< 0.00030	0.00076	0.18	< 0.00020	< 0.020	25	0.0078	< 0.0000020
(Duplicate)	03-Jun-2019	**0.078** [#1]	< 0.00060	0.00027	0.077	< 0.0010	0.022	< 0.000020	68	< 0.0010	< 0.00030	0.00061	0.19	< 0.00020	< 0.020	25	0.0081	< 0.0000020
RPD(%)		**3.8%**	**---**	**16.9%**	**1.3%**	**---**	**0.0%**	**---**	**1.5%**	**---**	**---**	**21.9%**	**5.4%**	**---**	**---**	**0.0%**	**3.8%**	**---**

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
AEMP-04	16-Oct-2017	**0.087** [#1]	< 0.00060	0.00027	0.072	< 0.0010	< 0.020	< 0.000020	74	< 0.0010	< 0.00030	0.00041	0.21	< 0.00020	< 0.020	31	0.01	< 0.0000020
(Duplicate)	16-Oct-2017	**0.084** [#1]	< 0.00060	0.00036	0.072	< 0.0010	0.021	< 0.000020	74	< 0.0010	< 0.00030	0.00046	0.20	< 0.00020	< 0.020	31	0.01	< 0.0000020
RPD(%)		**3.5%**	**---**	**28.6%**	**0.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**	**11.5%**	**4.9%**	**---**	**---**	**0.0%**	**0.0%**	**---**
AEMP-04	23-Jun-2018	**0.090** [#1]	< 0.00060	0.00044	0.086	< 0.0010	0.029	< 0.000020	76	< 0.0010	< 0.00030	0.00083	0.14	< 0.00020	< 0.020	27	0.0098	< 0.0000020
(Duplicate)	23-Jun-2018	**0.057** [#1]	< 0.00060	0.00034	0.089	< 0.0010	0.031	< 0.000020	78	< 0.0010	< 0.00030	0.00077	0.15	< 0.00020	< 0.020	28	0.01	< 0.0000020
RPD(%)		**44.9%**	**---**	**25.6%**	**3.4%**	**---**	**6.7%**	**---**	**2.6%**	**---**	**---**	**7.5%**	**6.9%**	**---**	**---**	**3.6%**	**2.0%**	**---**
AEMP-04	10-Jun-2020	**0.086** [#1]	< 0.00060	0.00034	0.078	< 0.0010	0.020	< 0.000020	70	< 0.0010	< 0.00030	0.00049	0.21	< 0.00020	< 0.020	26	0.0054	< 0.0000019
(Duplicate)	10-Jun-2020	**0.087** [#1]	< 0.00060	< 0.00020	0.079	< 0.0010	0.020	< 0.000020	70	< 0.0010	< 0.00030	0.00049	0.23	< 0.00020	< 0.020	27	0.0059	< 0.0000019
RPD(%)		**1.2%**	**---**	**---**	**1.3%**	**---**	**0.0%**	**---**	**0.0%**	**---**	**---**	**0.0%**	**9.1%**	**---**	**---**	**3.8%**	**8.8%**	**---**
AEMP-04	11-Jun-2022	**0.024** [#1]	< 0.00060	< 0.00020	0.074	< 0.0010	0.029	< 0.000020	66	< 0.0010	< 0.00030	< 0.0010	0.089	< 0.00020	< 0.020	24	< 0.0040	< 0.0000019
(Duplicate)	11-Jun-2022	**0.037** [#1]	< 0.00060	0.00023	0.073	< 0.0010	0.023	< 0.000020	66	< 0.0010	< 0.00030	< 0.0010	0.081	< 0.00020	< 0.020	24	0.0040	< 0.0000019
RPD(%)		**42.6%**	**---**	**---**	**1.4%**	**---**	**23.1%**	**---**	**0.0%**	**---**	**---**	**---**	**9.4%**	**---**	**---**	**0.0%**	**---**	**---**
AEMP-05	19-Aug-2021	**0.0096** [#1]	< 0.00060	0.00081	0.094	< 0.0010	< 0.020	< 0.000020	26	< 0.0010	< 0.00030	0.00037	0.10	< 0.00020	< 0.020	11	0.0086	< 0.0000019
RPD(%)		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-06	25-Aug-2019	**0.78** [#1]	< 0.00060	0.00072	0.054	< 0.0010	< 0.020	0.000047	32	0.0013	0.00054	0.0017	**1.1** [#1]	0.00059	< 0.020	10	0.021	0.0000021
(Duplicate)	02-Oct-2019	**0.66** [#1]	< 0.00060	0.00061	0.053	< 0.0010	< 0.020	0.000037	29	0.0011	0.00039	0.0017	**0.88** [#1]	0.00043	< 0.020	9.5	0.015	< 0.0000020
RPD(%)		**16.7%**	**---**	**16.5%**	**1.9%**	**---**	**---**	**23.8%**	**9.8%**	**16.7%**	**32.3%**	**0.0%**	**22.2%**	**31.4%**	**---**	**5.1%**	**33.3%**	**---**
AEMP-06	18-Aug-2021	**4.9** [#1]	< 0.00060	0.0038	0.13	< 0.0010	0.022	**0.00022** [#1]	39	0.0073	0.0047	**0.011** [#1]	**9.1** [#1]	0.0046	< 0.020	12	0.16	0.000012
(Duplicate)	18-Aug-2021	**4.4** [#1]	< 0.00060	0.0036	0.13	< 0.0010	0.025	**0.00020** [#1]	39	0.0066	0.0043	**0.010** [#1]	**8.6** [#1]	0.0044	< 0.020	12	0.16	0.000013
RPD(%)		**10.8%**	**---**	**5.4%**	**0.0%**	**---**	**12.8%**	**9.5%**	**0.0%**	**10.1%**	**8.9%**	**9.5%**	**5.6%**	**4.4%**	**---**	**0.0%**	**0.0%**	**8.0%**
AEMP-07	21-Aug-2017	**0.62** [#1]	< 0.00060	0.00083	0.058	< 0.0010	< 0.020	0.000060	33	0.0011	0.00069	**0.0023** [#1]	**1.2** [#1]	0.00063	< 0.020	10	0.029	0.0000024
(Duplicate)	21-Aug-2017	**0.67** [#1]	< 0.00060	0.00093	0.059	< 0.0010	< 0.020	0.000053	33	0.0013	0.00077	**0.0025** [#1]	**1.3** [#1]	0.00074	< 0.020	11	0.031	0.0000026
RPD(%)		**7.8%**	**---**	**11.4%**	**1.7%**	**---**	**---**	**12.4%**	**0.0%**	**16.7%**	**11.0%**	**8.3%**	**8.0%**	**16.1%**	**---**	**9.5%**	**6.7%**	**8.0%**
AEMP-07	17-Oct-2018	**0.34** [#1]	< 0.00060	0.00060	0.052	< 0.0010	< 0.020	0.000040	28	< 0.0010	0.00042	0.0018	**0.66** [#1]	0.00047	< 0.020	9.1	0.024	< 0.0000020
(Duplicate)	17-Oct-2018	**0.34** [#1]	< 0.00060	0.00046	0.053	< 0.0010	< 0.020	0.000038	28	< 0.0010	0.00040	0.0015	**0.72** [#1]	0.00047	< 0.020	9.2	0.026	< 0.0000020
RPD(%)		**0.0%**	**---**	**26.4%**	**1.9%**	**---**	**---**	**5.1%**	**0.0%**	**---**	**4.9%**	**18.2%**	**8.7%**	**0.0%**	**---**	**1.1%**	**8.0%**	**---**
AEMP-07	24-Jul-2020	**1.8** [#1]	< 0.00060	0.0014	0.073	< 0.0010	< 0.020	0.000087	34	0.0033	0.00092	**0.0036** [#1]	**2.6** [#1]	**0.0015** [#1]	< 0.020	9.7	0.051	< 0.000019
(Duplicate)	24-Jul-2020	**2.0** [#1]	< 0.00060	0.0013	0.075	< 0.0010	< 0.020	**0.00012** [#1]	34	0.0032	0.0011	**0.0034** [#1]	**2.6** [#1]	**0.0014** [#1]	< 0.020	10	0.051	< 0.000019
RPD(%)		**10.5%**	**---**	**7.4%**	**2.7%**	**---**	**---**	**31.9%**	**0.0%**	**3.1%**	**17.8%**	**5.7%**	**0.0%**	**6.9%**	**---**	**3.0%**	**0.0%**	**---**
AEMP-07	18-Sep-2020	**0.60** [#1]	< 0.00060	0.00069	0.060	< 0.0010	< 0.020	0.000037	34	0.0012	0.00043	**0.0023** [#1]	**1.0** [#1]	0.00046	< 0.020	9.0	0.024	< 0.0000019
(Duplicate)	18-Sep-2020	**0.53** [#1]	< 0.00060	0.00070	0.058	< 0.0010	< 0.020	0.000055	34	0.0013	0.00057	**0.0039** [#1]	**0.98** [#1]	0.00060	< 0.020	9.1	0.024	< 0.0000019
RPD(%)		**12.4%**	**---**	**1.4%**	**3.4%**	**---**	**---**	**39.1%**	**0.0%**	**8.0%**	**28.0%**	**51.6%**	**2.0%**	**26.4%**	**---**	**1.1%**	**0.0%**	**---**
AEMP-07	06-Aug-2022	**8.5** [#1]	< 0.00060	**0.0093** [#1]	0.39	< 0.0010	0.023	**0.00071** [#1]	75	**0.014** [#1]	0.010	**0.021** [#1]	**24** [#1]	**0.012** [#1]	< 0.020	23	**0.53** [#1]	< 0.0000019
(Duplicate)	06-Aug-2022	**7.7** [#1]	< 0.00060	**0.0083** [#1]	0.37	< 0.0010	0.022	**0.00066** [#1]	73	**0.013** [#1]	0.0096	**0.019** [#1]	**21** [#1]	**0.011** [#1]	< 0.020	22	**0.49** [#1]	< 0.0000019
RPD(%)		**9.9%**	**---**	**11.4%**	**5.3%**	**---**	**4.4%**	**7.3%**	**2.7%**	**7.4%**	**4.1%**	**10.0%**	**13.3%**	**8.7%**	**---**	**4.4%**	**7.8%**	**---**
AEMP-07	24-Sep-2022	**3.8** [#1]	< 0.00060	0.0045	0.16	< 0.0010	< 0.020	**0.00033** [#1]	45	0.0070	0.0044	**0.013** [#1]	**8.6** [#1]	**0.0050** [#1]	< 0.020	13	**0.22** [#1]	0.000020
(Duplicate)	24-Sep-2022	**3.8** [#1]	< 0.00060	0.0046	0.17	< 0.0010	0.021	**0.00035** [#1]	47	0.0071	0.0047	**0.014** [#1]	**8.9** [#1]	**0.0052** [#1]	< 0.020	14	**0.23** [#1]	**0.000029** [#1]
RPD(%)		**0.0%**	**---**	**2.2%**	**6.1%**	**---**	**---**	**5.9%**	**4.3%**	**1.4%**	**6.6%**	**7.4%**	**3.4%**	**3.9%**	**---**	**7.4%**	**4.4%**	**36.7%**
AEMP-10	14-Aug-2018	**1.6** [#1]	< 0.00060	0.0013	0.077	< 0.0010	< 0.020	**0.00015** [#1]	40	0.0014	0.0016	**0.0037** [#1]	**2.0** [#1]	**0.0012** [#1]	< 0.020	12	0.052	0.0000068
(Duplicate)	14-Aug-2018	**1.4** [#1]	< 0.00060	0.0011	0.076	< 0.0010	< 0.020	**0.00015** [#1]	40	0.0016	0.0015	**0.0036** [#1]	**2.1** [#1]	**0.0011** [#1]	< 0.020	12	0.052	0.0000052
RPD(%)		**13.3%**	**---**	**16.7%**	**1.3%**	**---**	**---**	**0.0%**	**0.0%**	**13.3%**	**6.5%**	**2.7%**	**4.9%**	**8.7%**	**---**	**0.0%**	**0.0%**	**26.7%**
AEMP-11	19-Aug-2021	**2.9** [#1]	< 0.00060	0.0026	0.13	< 0.0010	0.030	**0.00019** [#1]	42	0.0046	0.0030	**0.0075** [#1]	**6.8** [#1]	0.0031	< 0.020	12	0.13	0.0000086
(Duplicate)	19-Aug-2021	**3.4** [#1]	< 0.00060	0.0030	0.13	< 0.0010	0.028	**0.00021** [#1]	43	0.0052	0.0033	**0.0084** [#1]	**7.3** [#1]	0.0034	< 0.020	12	0.14	0.0000095
RPD(%)		**15.9%**	**---**	**14.3%**	**0.0%**	**---**	**6.9%**	**---**	**2.4%**	**12.2%**	**9.5%**	**11.3%**	**---**	**9.2%**	**---**	**0.0%**	**7.4%**	**9.9%**

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**
AEMP-12	28-Aug-2019	**0.53** [#1]	< 0.00060	0.00046	0.053	< 0.0010	< 0.020	0.000031	35	< 0.0010	0.00034	0.0013	**0.65** [#1]	0.00031	< 0.020	11	0.014	< 0.0000020
(Duplicate)	28-Aug-2019	**0.61** [#1]	< 0.00060	0.00051	0.054	< 0.0010	< 0.020	0.000025	35	< 0.0010	0.00036	0.0013	**0.64** [#1]	0.00030	< 0.020	11	0.014	< 0.0000020
RPD(%)		**14.0%**	**---**	**10.3%**	**1.9%**	**---**	**---**	**21.4%**	**0.0%**	**---**	**5.7%**	**0.0%**	**1.6%**	**3.3%**	**---**	**0.0%**	**0.0%**	**---**
AEMP-12	26-Sep-2022	**0.59** [#1]	< 0.00060	0.00081	0.060	< 0.0010	< 0.020	0.000049	34	0.0013	0.00052	**0.0026** [#1]	**1.2** [#1]	0.00074	< 0.020	10	0.035	< 0.0000019
(Duplicate)	26-Sep-2022	**0.60** [#1]	< 0.00060	0.00087	0.061	< 0.0010	< 0.020	0.000057	34	0.0014	0.00044	**0.0029** [#1]	**1.2** [#1]	0.00072	< 0.020	10	0.034	0.0000025
RPD(%)		**1.7%**	**---**	**7.1%**	**1.7%**	**---**	**---**	**15.1%**	**0.0%**	**7.4%**	**16.7%**	**10.9%**	**0.0%**	**2.7%**	**---**	**0.0%**	**2.9%**	**---**
AEMP-13	11-Jun-2020	**0.82** [#1]	< 0.00060	0.0013	0.11	< 0.0010	< 0.020	0.000087	42	0.0018	0.0010	**0.0035** [#1]	**1.8** [#1]	**0.0011** [#1]	< 0.020	11	0.068	< 0.000019
(Duplicate)	11-Jun-2020	**1.3** [#1]	< 0.00060	0.0017	0.11	< 0.0010	< 0.020	**0.00012** [#1]	42	0.0023	0.0016	**0.0049** [#1]	**2.8** [#1]	**0.0015** [#1]	< 0.020	11	0.084	< 0.000019
RPD(%)		**45.3%**	**---**	**26.7%**	**0.0%**	**---**	**---**	**31.9%**	**0.0%**	**24.4%**	**46.2%**	**33.3%**	**43.5%**	**30.8%**	**---**	**0.0%**	**21.1%**	**---**
AEMP-13	26-Jul-2020	**1.2** [#1]	< 0.00060	0.0020	0.19	< 0.0010	< 0.020	**0.00016** [#1]	76	0.0026	0.0012	**0.0033** [#1]	**3.6** [#1]	**0.0012** [#1]	< 0.020	17	**0.25** [#1]	< 0.000019
(Duplicate)	26-Jul-2020	**0.96** [#1]	< 0.00060	0.0012	0.18	< 0.0010	< 0.020	**0.00016** [#1]	75	0.0030	0.0014	**0.0036** [#1]	**3.3** [#1]	**0.0011** [#1]	< 0.020	17	**0.24** [#1]	< 0.000019
RPD(%)		**22.2%**	**---**	**50.0%**	**5.4%**	**---**	**---**	**0.0%**	**1.3%**	**14.3%**	**15.4%**	**8.7%**	**8.7%**	**8.7%**	**---**	**0.0%**	**4.1%**	**---**
AEMP-13	16-Sep-2020	**2.3** [#1]	< 0.00060	0.0017	0.099	< 0.0010	< 0.020	**0.00012** [#1]	48	0.0035	0.0016	**0.0047** [#1]	**3.6** [#1]	**0.0016** [#1]	< 0.020	14	0.093	< 0.000019
(Duplicate)	16-Sep-2020	**1.9** [#1]	< 0.00060	0.0014	0.086	< 0.0010	< 0.020	**0.000099** [#1]	46	0.0029	0.0013	**0.0036** [#1]	**2.8** [#1]	**0.0013** [#1]	< 0.020	13	0.073	< 0.000019
RPD(%)		**19.0%**	**---**	**19.4%**	**14.1%**	**---**	**---**	**19.2%**	**4.3%**	**18.8%**	**20.7%**	**26.5%**	**25.0%**	**20.7%**	**---**	**7.4%**	**24.1%**	**---**
AEMP-13	31-Mar-2022	**0.12** [#1]	< 0.00060	0.00048	0.063	< 0.0010	< 0.020	0.000029	47	< 0.0010	< 0.00030	0.0020 [#1]	0.19	< 0.00020	< 0.020	13	0.0051	< 0.0000019
(Duplicate)	31-Mar-2022	**0.11** [#1]	< 0.00060	0.00049	0.061	< 0.0010	< 0.020	0.000027	46	< 0.0010	< 0.00030	**0.0022** [#1]	0.19	0.00046	< 0.020	13	0.0048	< 0.0000019
RPD(%)		**8.7%**	**---**	**2.1%**	**3.2%**	**---**	**---**	**7.1%**	**2.2%**	**---**	**---**	**9.5%**	**0.0%**	**---**	**---**	**0.0%**	**6.1%**	**---**
AEMP-13	14-Jun-2022	**5.5** [#1]	< 0.00060	0.0037	0.18	< 0.0010	0.026	**0.00028** [#1]	42	0.0080	0.0041	**0.0098** [#1]	**8.0** [#1]	**0.0041** [#1]	< 0.020	12	0.15	0.000026 [#1]
(Duplicate)	14-Jun-2022	**4.9** [#1]	< 0.00060	0.0037	0.15	< 0.0010	0.023	**0.00027** [#1]	42	0.0074	0.0040	**0.0092** [#1]	**7.4** [#1]	**0.0041** [#1]	< 0.020	11	0.15	0.000025
RPD(%)		**11.5%**	**---**	**0.0%**	**18.2%**	**---**	**12.2%**	**3.6%**	**0.0%**	**7.8%**	**2.5%**	**6.3%**	**7.8%**	**0.0%**	**---**	**8.7%**	**0.0%**	**3.9%**

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1] denotes values exceeding
   (CCME. 2014. Canadian Environmental Quality Guidelines Summary Table. Water Quality Guidelines for the Protection of Freshwater Aquatic Life. http://st-ts.ccme.ca/?chems=all&chapters=1 accessed Aug 22, 2014.)

Aluminum:
Standard varies with pH.
pH < 6.5 = 0.005 mg/L
pH >= 6.5 = 0.1 mg/L

Boron:
Guideline based on long term exposure

Cadmium:
Guideline is hardness dependent. Presented guideline based on long term exposure at hardness of 50 mg/L.

Chromium (Total):

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Aluminum (mg/L)	Antimony (mg/L)	Arsenic (mg/L)	Barium (mg/L)	Beryllium (mg/L)	Boron (mg/L)	Cadmium (mg/L)	Calcium (mg/L)	Chromium (Total) (mg/L)	Cobalt (mg/L)	Copper (mg/L)	Iron (mg/L)	Lead (mg/L)	Lithium (mg/L)	Magnesium (mg/L)	Manganese (mg/L)	Mercury (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.005**	**---**	**0.005**	**---**	**---**	**1.5**	**0.00009**	**---**	**0.0089**	**---**	**0.002**	**0.3**	**0.001**	**---**	**---**	**0.2**	**0.000026**

Limit is for Chromium(III).

Copper:
Guideline is hardness dependent. Presented guideline set to lower limit.

Lead:
Guideline is hardness dependent. Presented guideline set to lower limit.

Manganese:
Guideline is pH and hardness dependent. Presented guideline set to lower limit.

Mercury:
Guideline for Inorganic mercury

Nickel:
Guideline is hardness dependent. Presented guideline set to lower limit.

Silver:
Guideline based on long term exposure

Uranium:
Guideline based on long term exposure

Zinc:
Guideline is pH, DOC, and hardness dependent. Presented guideline set to lower limit for short-term exposure.

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
AEMP																
AEMP-01	16-Sep-2017	0.0011	0.0029	< 0.10	1.1	0.00034	2.4	< 0.00010	9.4	0.23	< 0.00020	< 0.0010	0.0082	0.00083	0.0026	0.023
	16-Oct-2017	0.0011	0.0026	< 0.10	1.1	0.00039	2.1	< 0.00010	9.1	0.24	< 0.00020	< 0.0010	0.0083	0.00080	0.0020	0.0045
	23-Jun-2018	0.0016	0.0086	< 0.10	1.2	0.00060	2.9	< 0.00010	6.4	0.17	< 0.00020	< 0.0010	0.018	0.0011	0.0040	0.026
	14-Aug-2018	0.0010	0.011	0.17	1.3	0.00048	4.3	< 0.00010	7.5	0.27	< 0.00020	< 0.0010	0.024	0.0011	0.0054	**0.056** [#1]
	18-Oct-2018	0.00076	0.0025	< 0.10	1.1	0.00030	2.1	< 0.00010	9.4	0.22	< 0.00020	< 0.0010	0.0079	0.00057	0.0016	0.0070
	10-Jun-2019	0.0013	0.0087	0.11	1.6	0.00045	4.2	< 0.00010	6.3	0.19	< 0.00020	< 0.0010	0.028	0.00086	0.0059	**0.045** [#1]
	26-Aug-2019	0.0011	0.0049	< 0.10	1.5	0.00062	5.5	< 0.00010	8.3	0.27	< 0.00020	< 0.0010	0.086	0.0011	0.0055	0.013
	01-Oct-2019	0.0014	0.0066	< 0.10	1.5	0.00061	3.3	< 0.00010	9.2	0.25	< 0.00020	< 0.0010	0.037	0.00097	0.0060	0.017
	12-Jun-2020	0.0018	0.020	0.24	2.3	0.00066	8.8	< 0.00010	5.2	0.24	< 0.00020	< 0.0010	0.045	0.0012	0.014	**0.078** [#1]
	28-Jul-2020	0.0013	0.0079	< 0.10	1.1	0.00062	3.7	< 0.00010	6.0	0.21	< 0.00020	< 0.0010	0.029	0.00098	0.0056	0.025
	22-Sep-2020	0.0011	0.0044	< 0.10	1.2	0.00036	3.3	< 0.00010	7.3	0.21	< 0.00020	< 0.0010	0.019	0.00090	0.0042	0.0076
	07-Jun-2021	0.0012	0.0089	0.11	1.6	0.00051	3.9	< 0.00010	6.2	0.18	< 0.00020	< 0.0010	0.084	0.00098	0.0091	0.029
(Duplicate)	07-Jun-2021	0.0011	0.0084	< 0.10	1.5	0.00054	3.7	< 0.00010	6.2	0.18	< 0.00020	< 0.0010	0.091	0.00092	0.0087	0.026
	19-Aug-2021	0.0014	0.013	0.17	2.1	0.00046	6.4	< 0.00010	6.6	0.23	< 0.00020	< 0.0010	0.041	0.00094	0.010	**0.083** [#1]
	18-Sep-2021	0.0012	0.0060	< 0.10	1.3	0.00043	3.4	< 0.00010	7.5	0.22	< 0.00020	< 0.0010	0.018	0.00091	0.0042	**0.092** [#1]
	31-Mar-2022	0.0011	0.0015	< 0.10	1.3	0.00037	2.9	< 0.00010	12	0.27	< 0.00020	< 0.0010	0.002	0.00081	< 0.0010	< 0.0030
	14-Jun-2022	0.0018	**0.026** [#1]	0.33	2.4	0.00081	9.0	< 0.00010	4.0	0.20	< 0.00020	< 0.0010	0.14	0.0013	0.024	**0.087** [#1]
	06-Aug-2022	0.0012	0.0041	< 0.10	1.6	0.00046	5.3	< 0.00010	7.6	0.23	< 0.00020	< 0.0010	0.014	0.00081	0.0029	**0.080** [#1]
(Duplicate)	06-Aug-2022	0.0012	0.0041	< 0.10	1.6	0.00046	5.7	< 0.00010	7.7	0.23	< 0.00020	< 0.0010	0.016	0.00084	0.0030	**0.064** [#1]
	25-Sep-2022	0.0011	0.0025	< 0.10	1.2	0.00040	3.0	< 0.00010	8.9	0.22	< 0.00020	< 0.0010	0.011	0.00076	0.0015	0.0050
AEMP-02	18-Aug-2017	0.0018	0.00079	< 0.10	1.1	0.00021	2.1	< 0.00010	22	1.3	< 0.00020	< 0.0010	0.0032	0.0010	0.0014	< 0.0030
	16-Sep-2017	0.0017	0.00077	< 0.10	1.0	< 0.00020	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2017	0.0018	0.00078	< 0.10	0.98	< 0.00020	2.1	< 0.00010	19	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	0.0013	< 0.0030
	16-Oct-2017	0.0019	0.0014	< 0.10	1.1	0.00025	2.3	< 0.00010	20	1.4	< 0.00020	< 0.0010	0.0039	0.0012	0.0020	< 0.0030
	23-Jun-2018	0.0027	0.0012	< 0.10	1.1	0.00031	2.0	< 0.00010	18	1.3	< 0.00020	< 0.0010	< 0.0010	0.0016	< 0.0010	< 0.0030
	12-Aug-2018	0.0018	0.0010	< 0.10	0.93	< 0.00020	2.1	< 0.00010	14	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	16-Oct-2018	0.0019	0.0013	< 0.10	1.1	0.00031	2.3	< 0.00010	18	1.5	< 0.00020	< 0.0010	0.0038	0.0013	< 0.0010	< 0.0030
	03-Jun-2019	0.0016	0.00089	< 0.10	1.1	< 0.00020	1.8	< 0.00010	15	1.1	< 0.00020	< 0.0010	0.0012	0.0011	< 0.0010	< 0.0030
(Duplicate)	03-Jun-2019	0.0017	0.00079	< 0.10	1.0	< 0.00020	1.8	< 0.00010	15	1.1	< 0.00020	< 0.0010	0.0022	0.0011	< 0.0010	< 0.0030
	28-Aug-2019	0.0018	0.00083	< 0.10	1.1	< 0.00020	2.1	< 0.00010	17	1.2	< 0.00020	< 0.0010	0.077	0.0011	< 0.0010	< 0.0030
	03-Oct-2019	0.0016	0.0010	< 0.10	1.0	0.00032	1.8	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0010	0.0012	< 0.0010	< 0.0030
	10-Jun-2020	0.0026	0.00091	< 0.10	1.0	< 0.00020	2.2	< 0.00010	13	1.2	< 0.00020	< 0.0010	0.0024	0.0015	< 0.0010	< 0.0030
	24-Jul-2020	0.0019	< 0.00050	< 0.10	0.89	< 0.00020	1.9	< 0.00010	22	1.4	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	0.0033
	18-Sep-2020	0.0018	0.00094	< 0.10	1.2	0.00020	1.9	< 0.00010	19	1.4	< 0.00020	0.0020	< 0.0010	0.0014	< 0.0010	< 0.0030
	06-Jun-2021	0.0018	0.0013	< 0.10	0.95	0.00024	2.1	< 0.00010	15	1.2	< 0.00020	< 0.0010	0.0042	0.0012	< 0.0010	< 0.0030
	18-Aug-2021	0.0020	0.00071	< 0.10	1.2	< 0.00020	2.3	< 0.00010	26	1.5	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	19-Sep-2021	0.0019	0.00058	< 0.10	1.1	0.00024	2.2	< 0.00010	31	1.6	< 0.00020	< 0.0010	0.0012	0.0011	< 0.0010	0.0043
	11-Jun-2022	0.0018	0.00088	< 0.10	0.91	< 0.00020	1.8	< 0.00010	16	1.2	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	06-Aug-2022	0.0017	0.00073	< 0.10	1.1	< 0.00020	2.2	< 0.00010	23	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0078
	26-Sep-2022	0.0018	0.00066	< 0.10	1.1	0.00024	2.1	< 0.00010	26	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
AEMP-03	18-Aug-2017	0.0020	0.00068	< 0.10	1.1	0.00023	2.1	< 0.00010	21	1.3	< 0.00020	< 0.0010	< 0.0010	0.00096	0.0022	< 0.0030
	16-Sep-2017	0.0021	0.00059	< 0.10	0.98	0.00024	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0042
	16-Oct-2017	0.0019	0.00091	< 0.10	1.0	0.00027	2.2	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0035	0.0012	0.0014	< 0.0030
	23-Jun-2018	0.0026	0.0010	< 0.10	1.1	0.00025	2.0	< 0.00010	18	1.3	< 0.00020	< 0.0010	0.0022	0.0015	< 0.0010	< 0.0030
	12-Aug-2018	0.0017	0.00069	< 0.10	0.97	< 0.00020	2.1	< 0.00010	14	1.4	< 0.00020	< 0.0010	0.0041	0.0010	< 0.0010	< 0.0030
	16-Oct-2018	0.0018	0.0021	< 0.10	1.1	0.00027	2.6	< 0.00010	18	1.5	< 0.00020	< 0.0010	0.0095	0.0013	< 0.0010	0.0053
	03-Jun-2019	0.0017	0.00084	< 0.10	1.0	0.00022	1.8	< 0.00010	15	1.1	< 0.00020	< 0.0010	0.0012	0.0011	< 0.0010	< 0.0030
	28-Aug-2019	0.0016	0.00052	< 0.10	1.0	0.00020	2.0	< 0.00010	16	1.2	< 0.00020	< 0.0010	0.0011	0.0011	< 0.0010	< 0.0030
	02-Oct-2019	0.0019	0.00080	< 0.10	1.1	0.00023	2.0	< 0.00010	20	1.4	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	10-Jun-2020	0.0024	0.0011	< 0.10	1.0	< 0.00020	2.2	0.00011	12	1.2	< 0.00020	< 0.0010	0.0019	0.0016	< 0.0010	< 0.0030
	24-Jul-2020	0.0021	0.00072	< 0.10	0.89	< 0.00020	1.9	< 0.00010	21	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	20-Sep-2020	0.0017	0.00067	< 0.10	1.0	< 0.00020	1.9	< 0.00010	19	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	06-Jun-2021	0.0018	0.0011	< 0.10	0.93	< 0.00020	2.0	< 0.00010	15	1.2	< 0.00020	< 0.0010	0.0010	0.0011	< 0.0010	< 0.0030
	18-Aug-2021	0.0021	0.00083	< 0.10	1.2	< 0.00020	2.4	< 0.00010	26	1.5	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	19-Sep-2021	0.0017	0.00068	< 0.10	1.2	0.00023	2.2	< 0.00010	30	1.6	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	11-Jun-2022	0.0017	0.00085	< 0.10	0.92	0.00028	1.9	< 0.00010	16	1.2	< 0.00020	< 0.0010	< 0.0010	0.0010	< 0.0010	< 0.0030
	06-Aug-2022	0.0019	0.00062	< 0.10	1.1	< 0.00020	2.3	< 0.00010	24	1.4	< 0.00020	< 0.0010	0.0016	0.0011	< 0.0010	< 0.0030
	26-Sep-2022	0.0018	0.00058	< 0.10	1.0	< 0.00020	2.0	< 0.00010	24	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
AEMP-04	18-Aug-2017	0.0021	0.00089	< 0.10	1.2	0.00021	2.2	< 0.00010	22	1.3	< 0.00020	< 0.0010	0.0012	0.0010	0.0018	< 0.0030
	16-Sep-2017	0.0018	0.00076	< 0.10	1.0	< 0.00020	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	0.0011	< 0.0030
	16-Oct-2017	0.0020	0.00088	< 0.10	1.0	0.00025	2.1	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0015	0.0013	0.0015	< 0.0030
(Duplicate)	16-Oct-2017	0.0020	0.00084	< 0.10	1.0	0.00026	2.1	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0022	0.0013	0.0014	< 0.0030
	23-Jun-2018	0.0028	0.0012	< 0.10	1.1	0.00028	2.0	< 0.00010	19	1.3	< 0.00020	< 0.0010	0.0014	0.0015	< 0.0010	< 0.0030
(Duplicate)	23-Jun-2018	0.0023	0.00087	< 0.10	1.2	0.00023	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	0.0015	0.0013	< 0.0010	< 0.0030
	12-Aug-2018	0.0018	0.00074	< 0.10	0.92	< 0.00020	2.1	< 0.00010	14	1.4	< 0.00020	< 0.0010	0.0012	0.0011	< 0.0010	< 0.0030
	16-Oct-2018	0.0019	0.0010	< 0.10	1.0	0.00079	2.2	< 0.00010	17	1.5	< 0.00020	< 0.0010	0.0031	0.0012	< 0.0010	< 0.0030
	03-Jun-2019	0.0018	0.00091	< 0.10	1.0	< 0.00020	1.8	< 0.00010	15	1.2	< 0.00020	< 0.0010	0.0013	0.0011	< 0.0010	< 0.0030
	25-Aug-2019	0.0016	0.00084	< 0.10	0.94	0.00033	1.9	< 0.00010	13	1.2	< 0.00020	< 0.0010	0.0055	0.0012	< 0.0010	< 0.0030
	02-Oct-2019	0.0019	0.00071	< 0.10	1.1	0.00025	2.0	< 0.00010	20	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	10-Jun-2020	0.0021	0.00095	< 0.10	0.87	0.00025	2.2	< 0.00010	12	1.3	< 0.00020	< 0.0010	0.0023	0.0013	< 0.0010	< 0.0030
(Duplicate)	10-Jun-2020	0.0020	0.00096	< 0.10	0.90	0.00025	2.3	< 0.00010	12	1.3	< 0.00020	< 0.0010	0.0031	0.0013	< 0.0010	< 0.0030
	24-Jul-2020	0.0013	0.0072	< 0.10	1.2	0.00039	3.9	< 0.00010	8.1	0.21	< 0.00020	< 0.0010	0.065	0.0010	0.0088	0.018
	18-Sep-2020	0.0016	0.013	< 0.10	1.1	0.00020	1.9	< 0.00010	18	1.4	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	06-Jun-2021	0.0021	0.0014	< 0.10	0.97	0.00033	2.1	< 0.00010	15	1.3	< 0.00020	< 0.0010	0.0025	0.0015	< 0.0010	< 0.0030
	18-Aug-2021	0.0020	0.00068	< 0.10	1.1	< 0.00020	2.3	< 0.00010	25	1.4	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	19-Sep-2021	0.0017	0.00056	< 0.10	1.1	0.00022	2.2	< 0.00010	30	1.6	< 0.00020	< 0.0010	< 0.0010	0.0012	< 0.0010	< 0.0030
	11-Jun-2022	0.0018	0.00082	< 0.10	0.93	< 0.00020	1.9	< 0.00010	15	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2022	0.0018	0.00089	< 0.10	0.92	0.00025	1.8	< 0.00010	15	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
	06-Aug-2022	0.0018	0.00091	< 0.10	1.2	< 0.00020	2.4	< 0.00010	26	1.5	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	0.0072
	24-Sep-2022	0.0019	< 0.00050	< 0.10	1.1	< 0.00020	2.1	< 0.00010	25	1.4	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
AEMP-05	19-Aug-2017	0.0017	0.0011	< 0.10	1.7	< 0.00020	0.27	< 0.00010	5.7	0.25	< 0.00020	< 0.0010	< 0.0010	0.00041	0.0024	< 0.0030
	16-Sep-2017	0.0016	0.0013	< 0.10	1.7	< 0.00020	0.27	< 0.00010	5.4	0.20	< 0.00020	< 0.0010	< 0.0010	0.00036	0.0011	< 0.0030
	15-Oct-2017	0.0016	0.0011	< 0.10	2.3	0.00027	0.41	< 0.00010	5.4	0.20	< 0.00020	< 0.0010	< 0.0010	0.00034	0.0015	< 0.0030
	23-Jun-2018	0.0016	0.0081	< 0.10	1.2	0.00054	2.8	< 0.00010	6.4	0.19	< 0.00020	< 0.0010	0.022	0.0011	0.0044	0.024

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
	13-Aug-2018	0.0017	0.0011	< 0.10	1.4	< 0.00020	0.50	< 0.00010	3.6	0.16	< 0.00020	< 0.0010	0.0011	0.00017	< 0.0010	< 0.0030
	18-Oct-2018	0.0016	0.0016	< 0.10	3.5	< 0.00020	0.36	< 0.00010	4.2	0.20	< 0.00020	< 0.0010	0.0014	0.00035	< 0.0010	< 0.0030
	02-Jun-2019	0.0010	0.0014	< 0.10	2.3	< 0.00020	1.1	< 0.00010	3.8	0.14	< 0.00020	< 0.0010	0.0011	0.00028	< 0.0010	0.0071
	27-Aug-2019	0.0014	0.00078	< 0.10	2.0	< 0.00020	0.25	< 0.00010	3.4	0.16	< 0.00020	< 0.0010	< 0.0010	0.00020	< 0.0010	< 0.0030
	01-Oct-2019	0.0013	0.0011	< 0.10	1.8	< 0.00020	0.33	< 0.00010	3.3	0.15	< 0.00020	< 0.0010	0.0012	0.00017	< 0.0010	< 0.0030
	11-Jun-2020	0.0018	0.0022	< 0.10	1.5	< 0.00020	1.3	< 0.00010	4.3	0.16	< 0.00020	< 0.0010	0.0011	0.00048	< 0.0010	< 0.0030
	26-Jul-2020	0.0015	0.00084	< 0.10	1.4	< 0.00020	0.35	< 0.00010	4.9	0.24	< 0.00020	< 0.0010	< 0.0010	0.00032	< 0.0010	< 0.0030
	16-Sep-2020	0.0014	0.0010	< 0.10	1.4	< 0.00020	0.37	< 0.00010	4.0	0.17	< 0.00020	< 0.0010	< 0.0010	0.00016	< 0.0010	< 0.0030
	07-Jun-2021	0.0019	0.0049	< 0.10	1.3	< 0.00020	1.5	< 0.00010	3.3	0.16	< 0.00020	< 0.0010	0.0030	0.00074	< 0.0010	0.0035
	19-Aug-2021	0.0014	0.0011	< 0.10	0.75	< 0.00020	0.12	< 0.00010	3.7	0.16	< 0.00020	< 0.0010	< 0.0010	0.00034	< 0.0010	< 0.0030
	18-Sep-2021	0.0017	0.0015	< 0.10	1.1	< 0.00020	0.47	< 0.00010	4.1	0.16	< 0.00020	< 0.0010	0.0025	0.00034	< 0.0010	< 0.0030
	14-Jun-2022	0.0011	0.0015	< 0.10	1.5	< 0.00020	1.1	< 0.00010	3.5	0.15	< 0.00020	< 0.0010	0.0016	0.00038	< 0.0010	< 0.0030
	05-Aug-2022	0.0017	0.0014	< 0.10	1.1	< 0.00020	0.45	< 0.00010	4.5	0.20	< 0.00020	< 0.0010	< 0.0010	0.00033	< 0.0010	< 0.0030
	25-Sep-2022	0.0021	0.0018	< 0.10	1.5	< 0.00020	< 0.50	< 0.00010	4.6	0.17	< 0.00020	< 0.0010	< 0.0010	0.00039	< 0.0010	< 0.0030
AEMP-06	21-Aug-2017	0.0010	0.0031	< 0.10	1.1	0.00035	2.4	< 0.00010	8.3	0.23	< 0.00020	< 0.0010	0.0087	0.00075	0.0023	0.0074
	16-Sep-2017	0.00086	0.0021	< 0.10	0.96	0.00022	2.0	< 0.00010	9.4	0.21	< 0.00020	< 0.0010	0.0061	0.00062	0.0020	0.0065
	16-Oct-2017	0.0013	0.0018	< 0.10	1.0	0.00024	1.8	< 0.00010	9.1	0.22	< 0.00020	< 0.0010	0.0069	0.00080	0.0019	0.0036
	23-Jun-2018	0.0014	0.0051	< 0.10	0.98	0.00043	2.1	< 0.00010	6.8	0.17	< 0.00020	< 0.0010	0.010	0.00092	0.0030	0.012
	13-Aug-2018	0.00085	0.0028	< 0.10	0.92	0.00030	2.2	< 0.00010	8.7	0.22	< 0.00020	< 0.0010	0.0071	0.00066	0.0016	0.0094
	18-Oct-2018	0.0012	0.0086	0.12	1.5	0.00031	5.0	< 0.00010	9.1	0.23	< 0.00020	< 0.0010	0.019	0.00076	0.0046	0.036
	03-Jun-2019	0.0011	0.011	0.14	1.9	0.00030	5.6	< 0.00010	7.0	0.20	< 0.00020	< 0.0010	0.048	0.00083	0.0095	0.034
	25-Aug-2019	0.00085	0.0025	< 0.10	1.1	0.00039	3.2	< 0.00010	8.4	0.22	< 0.00020	< 0.0010	0.020	0.00065	0.0024	0.0073
(Duplicate)	02-Oct-2019	0.00084	0.0024	< 0.10	1.1	0.00027	3.0	< 0.00010	8.2	0.21	< 0.00020	< 0.0010	0.014	0.00062	0.0024	0.0052
	03-Oct-2019	0.00084	0.0023	< 0.10	1.2	0.00025	3.2	< 0.00010	9.1	0.22	< 0.00020	< 0.0010	0.016	0.00066	0.0024	0.0050
	12-Jun-2020	0.0011	0.0086	< 0.10	1.6	0.00044	5.1	< 0.00010	6.5	0.21	< 0.00020	< 0.0010	0.030	0.00075	0.0073	**0.038 [#1]**
	28-Jul-2020	0.0011	0.0058	< 0.10	0.98	0.00052	2.9	< 0.00010	6.7	0.19	< 0.00020	< 0.0010	0.017	0.00079	0.0039	0.018
	22-Sep-2020	0.00080	0.0023	< 0.10	1.0	0.00031	2.3	**0.00029 [#1]**	7.0	0.18	< 0.00020	< 0.0010	0.012	0.00072	0.0030	0.0056
	06-Jun-2021	0.0010	0.0071	< 0.10	1.7	0.00041	4.5	< 0.00010	6.8	0.17	< 0.00020	< 0.0010	0.078	0.00071	0.010	0.026
	18-Aug-2021	0.0015	0.014	0.17	2.3	0.00046	7.5	< 0.00010	7.1	0.21	< 0.00020	< 0.0010	0.043	0.0010	0.013	**0.095 [#1]**
(Duplicate)	18-Aug-2021	0.0014	0.013	0.18	2.2	0.00042	7.1	< 0.00010	7.1	0.21	< 0.00020	< 0.0010	0.037	0.0010	0.012	**0.074 [#1]**
	17-Sep-2021	0.00079	0.0018	< 0.10	0.99	0.00028	2.4	< 0.00010	7.0	0.18	< 0.00020	< 0.0010	0.011	0.00062	0.0016	< 0.0030
	12-Jun-2022	0.0020	0.021	0.31	2.5	0.00066	9.1	< 0.00010	5.1	0.19	< 0.00020	< 0.0010	0.056	0.0011	0.016	**0.15 [#1]**
	06-Aug-2022	0.0011	0.0057	< 0.10	1.8	0.00036	7.0	< 0.00010	7.7	0.21	< 0.00020	< 0.0010	0.022	0.00070	0.0046	**0.069 [#1]**
	24-Sep-2022	0.0010	0.0044	< 0.10	1.5	0.00030	4.8	< 0.00010	9.0	0.19	< 0.00020	< 0.0010	0.021	0.00071	0.0041	0.012
AEMP-07	21-Aug-2017	0.00097	0.0030	< 0.10	1.1	0.00034	2.4	< 0.00010	8.1	0.23	< 0.00020	< 0.0010	0.0089	0.00074	0.0022	0.0082
(Duplicate)	21-Aug-2017	0.0010	0.0032	< 0.10	1.1	0.00038	2.4	< 0.00010	8.2	0.23	< 0.00020	< 0.0010	0.011	0.00079	0.0024	0.0078
	16-Sep-2017	0.00076	0.0018	< 0.10	0.89	< 0.00020	1.9	< 0.00010	9.0	0.20	< 0.00020	< 0.0010	0.0038	0.00057	0.0017	0.0042
	16-Oct-2017	0.00095	0.0026	< 0.10	1.1	0.00028	1.9	< 0.00010	8.8	0.22	< 0.00020	< 0.0010	0.023	0.00075	0.0038	0.0064
	23-Jun-2018	0.0014	0.0059	< 0.10	1.1	0.00042	2.4	< 0.00010	7.2	0.16	< 0.00020	< 0.0010	0.017	0.00094	0.0040	0.014
	13-Aug-2018	0.00098	0.0060	0.12	1.2	0.00040	3.2	< 0.00010	9.0	0.23	< 0.00020	< 0.0010	0.019	0.00081	0.0043	0.021
	17-Oct-2018	0.00091	0.0020	< 0.10	1.0	< 0.00020	2.1	< 0.00010	9.5	0.21	< 0.00020	< 0.0010	0.013	0.00059	< 0.0010	0.0039
(Duplicate)	17-Oct-2018	0.00078	0.0020	< 0.10	1.0	< 0.00020	2.2	< 0.00010	9.7	0.21	< 0.00020	< 0.0010	0.0069	0.00054	< 0.0010	0.0038
	03-Jun-2019	0.0014	0.012	0.15	1.9	0.00031	5.5	< 0.00010	9.8	0.20	< 0.00020	< 0.0010	0.12	0.00088	0.0096	0.035

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
	25-Aug-2019	0.00082	0.0024	< 0.10	1.1	0.00035	3.0	< 0.00010	8.3	0.22	< 0.00020	< 0.0010	0.013	0.00065	0.0017	0.0060
	03-Oct-2019	0.0019	0.021	0.51	2.2	0.00063	9.0	< 0.00010	8.6	0.27	< 0.00020	< 0.0010	0.059	0.0012	0.015	**0.072** [#1]
	10-Jun-2020	0.0015	0.011	0.17	1.6	0.00050	5.0	< 0.00010	6.0	0.20	< 0.00020	< 0.0010	0.11	0.00092	0.013	0.033
	24-Jul-2020	0.00096	0.0047	< 0.10	1.1	0.00040	3.2	< 0.00010	6.5	0.19	< 0.00020	< 0.0010	0.038	0.00072	0.0056	0.0091
(Duplicate)	24-Jul-2020	0.0012	0.0049	< 0.10	1.1	0.00039	3.2	< 0.00010	6.6	0.20	< 0.00020	< 0.0010	0.039	0.00072	0.0048	0.0094
	18-Sep-2020	0.00075	0.0027	< 0.10	1.1	0.00027	3.0	< 0.00010	7.4	0.18	< 0.00020	0.0012	0.046	0.00063	0.0017	0.0053
(Duplicate)	18-Sep-2020	0.0010	0.0033	< 0.10	1.2	0.00023	2.7	< 0.00010	7.7	0.18	< 0.00020	0.0061	0.014	0.0012	0.0019	0.0056
	06-Jun-2021	0.00099	0.0064	< 0.10	1.6	0.00042	4.3	< 0.00010	6.6	0.17	< 0.00020	< 0.0010	0.082	0.00065	0.010	0.020
	18-Aug-2021	0.0016	0.015	0.17	2.3	0.00041	7.2	< 0.00010	7.3	0.22	< 0.00020	< 0.0010	0.041	0.0010	0.013	**0.088** [#1]
	17-Sep-2021	0.00087	0.0024	< 0.10	1.1	0.00030	3.0	< 0.00010	7.1	0.18	< 0.00020	< 0.0010	0.014	0.00068	0.0026	0.0040
	12-Jun-2022	0.0068	0.023	0.28	2.4	0.00095	8.0	< 0.00010	6.1	0.19	**0.00030** [#1]	< 0.0010	0.055	0.0019	0.017	**0.16** [#1]
	06-Aug-2022	0.0025	**0.030** [#1]	0.61	3.1	0.00099	12	0.00015	8.1	0.29	< 0.00020	< 0.0010	0.089	0.0016	0.026	**0.17** [#1]
(Duplicate)	06-Aug-2022	0.0023	**0.028** [#1]	0.57	2.9	0.00092	11	0.00012	8.0	0.28	< 0.00020	< 0.0010	0.079	0.0016	0.023	**0.16** [#1]
	24-Sep-2022	0.0016	0.014	0.19	2.0	0.00057	5.9	< 0.00010	8.2	0.21	< 0.00020	< 0.0010	0.054	0.0011	0.012	**0.086** [#1]
(Duplicate)	24-Sep-2022	0.0017	0.019	0.21	2.0	0.00058	6.1	< 0.00010	8.4	0.22	< 0.00020	< 0.0010	0.053	0.0011	0.012	**0.081** [#1]
AEMP-08	17-Aug-2017	0.0012	0.0037	< 0.10	1.1	0.00052	2.6	< 0.00010	7.3	0.25	< 0.00020	< 0.0010	0.011	0.00094	0.0032	0.011
	21-Aug-2017	0.00095	0.0027	< 0.10	1.1	0.00031	2.2	< 0.00010	8.3	0.24	< 0.00020	< 0.0010	0.011	0.00072	0.0019	0.0057
	16-Sep-2017	0.00095	0.0051	< 0.10	1.2	0.00026	3.0	< 0.00010	9.4	0.24	< 0.00020	< 0.0010	0.016	0.00074	0.0043	0.016
	16-Oct-2017	0.00077	0.0020	< 0.10	0.99	0.00033	2.1	< 0.00010	9.2	0.23	< 0.00020	< 0.0010	0.0069	0.00060	0.0026	0.0040
	23-Jun-2018	0.0011	0.0043	< 0.10	1.0	0.00028	2.3	< 0.00010	7.3	0.20	< 0.00020	< 0.0010	0.010	0.00073	0.0026	0.011
	13-Aug-2018	0.0010	0.0034	< 0.10	1.0	0.00034	2.6	< 0.00010	9.2	0.26	< 0.00020	< 0.0010	0.015	0.00074	0.0021	0.011
	17-Oct-2018	0.00075	0.0012	< 0.10	0.94	< 0.00020	1.6	< 0.00010	9.4	0.28	< 0.00020	< 0.0010	0.0020	0.00052	< 0.0010	< 0.0030
	03-Jun-2019	0.0012	0.0065	< 0.10	1.4	0.00039	3.7	< 0.00010	7.9	0.31	< 0.00020	< 0.0010	0.019	0.00076	0.0046	0.021
	28-Aug-2019	0.00091	0.0018	< 0.10	1.1	0.00032	2.9	< 0.00010	8.8	0.29	< 0.00020	< 0.0010	0.015	0.00069	0.0024	0.0044
	03-Oct-2019	0.00092	0.0023	< 0.10	1.1	0.00037	3.1	< 0.00010	8.9	0.27	< 0.00020	< 0.0010	0.0074	0.00060	0.0018	0.0051
	10-Jun-2020	0.0013	0.0096	0.15	2.4	0.00043	13	< 0.00010	6.0	0.20	< 0.00020	< 0.0010	0.086	0.00092	0.011	0.030 [#1]
	24-Jul-2020	0.00095	0.0040	0.10	1.1	0.00031	3.2	< 0.00010	6.7	0.20	< 0.00020	< 0.0010	0.044	0.00075	0.0051	0.012
	18-Sep-2020	0.00094	0.0062	< 0.10	1.1	0.00029	3.7	< 0.00010	7.7	0.19	< 0.00020	0.0018	0.014	0.00087	0.0019	0.0060
	06-Jun-2021	0.0011	0.0059	< 0.10	1.6	0.00038	4.1	< 0.00010	6.7	0.17	< 0.00020	< 0.0010	0.15	0.00068	0.0086	0.018
	18-Aug-2021	0.0015	0.013	0.17	2.3	0.00049	6.9	< 0.00010	7.5	0.23	< 0.00020	< 0.0010	0.044	0.0010	0.013	**0.095** [#1]
	17-Sep-2021	0.00086	0.0020	< 0.10	1.0	0.00030	2.6	< 0.00010	7.5	0.21	< 0.00020	< 0.0010	0.0083	0.00061	0.0019	< 0.0030
	31-Mar-2022	0.00055	0.0011	0.16	1	< 0.00020	1.6	< 0.00010	9.5	0.22	< 0.00020	< 0.0010	< 0.0010	0.00036	< 0.0010	0.023
	12-Jun-2022	0.0027	0.014	0.19	2.0	0.00073	6.1	< 0.00010	5.3	0.20	< 0.00020	< 0.0010	0.039	0.0011	0.010	**0.10** [#1]
	06-Aug-2022	0.0012	0.0060	< 0.10	1.9	0.00036	7.1	< 0.00010	8.4	0.26	< 0.00020	< 0.0010	0.027	0.00077	0.0050	**0.074** [#1]
	25-Sep-2022	0.00095	0.0023	< 0.10	1.2	0.00022	2.5	< 0.00010	8.7	0.22	< 0.00020	< 0.0010	0.014	0.00063	0.0021	0.0062
AEMP-09	21-Aug-2017	0.0015	0.013	0.18	1.6	0.00051	5.0	< 0.00010	8.8	0.28	< 0.00020	< 0.0010	0.030	0.0011	0.0087	0.034
	16-Sep-2017	0.00094	0.0017	< 0.10	0.94	0.00024	1.8	< 0.00010	10	0.24	< 0.00020	< 0.0010	0.0054	0.00076	0.0014	0.0032
	16-Oct-2017	0.0011	0.0090	0.11	1.8	0.00043	5.3	< 0.00010	28	0.26	< 0.00020	< 0.0010	0.028	0.00081	0.0081	0.026
	23-Jun-2018	0.0012	0.0083	< 0.10	1.2	0.00042	3.0	< 0.00010	7.5	0.18	< 0.00020	< 0.0010	0.019	0.00095	0.0059	0.024
	12-Aug-2018	0.0010	0.0034	< 0.10	1.1	0.00036	2.4	< 0.00010	10	0.26	< 0.00020	< 0.0010	0.019	0.00071	0.0024	0.010
	17-Oct-2018	0.0011	0.0039	< 0.10	1.2	0.00031	2.6	< 0.00010	12	0.27	< 0.00020	< 0.0010	0.061	0.00070	0.0025	0.011
	02-Jun-2019	0.0017	0.015	0.18	1.8	0.00048	5.7	< 0.00010	9.1	0.21	< 0.00020	< 0.0010	0.035	0.0010	0.011	**0.074** [#1]
	28-Aug-2019	0.0011	0.0018	< 0.10	1.1	0.00032	2.9	< 0.00010	9.4	0.24	< 0.00020	< 0.0010	0.016	0.00069	0.0027	0.0038
	03-Oct-2019	0.0011	0.0055	< 0.10	1.2	0.00033	2.9	< 0.00010	10	0.24	< 0.00020	< 0.0010	0.010	0.00062	0.0024	0.0086
	10-Jun-2020	0.0013	0.0081	0.12	2.3	0.00037	12	< 0.00010	8.0	0.20	< 0.00020	< 0.0010	0.027	0.00083	0.0068	**0.045** [#1]

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
	24-Jul-2020	0.0021	0.0016	< 0.10	0.85	0.00024	1.9	0.00014	22	1.4	< 0.00020	< 0.0010	< 0.0010	0.0013	< 0.0010	< 0.0030
	18-Sep-2020	0.0010	0.0041	< 0.10	1.3	0.00039	3.3	< 0.00010	10	0.20	< 0.00020	0.0017	0.053	0.00085	0.0035	0.011
	06-Jun-2021	0.0011	0.0068	0.24	2.3	0.00048	4.4	< 0.00010	7.5	0.21	< 0.00020	< 0.0010	0.12	0.00083	0.012	0.021
	18-Aug-2021	0.0012	0.014	0.19	2.1	0.00036	6.2	< 0.00010	7.4	0.22	< 0.00020	< 0.0010	0.053	0.0011	0.012	**0.042** [#1]
	17-Sep-2021	0.0015	0.0023	< 0.10	1.1	0.00029	2.5	< 0.00010	9.2	0.20	< 0.00020	< 0.0010	0.010	0.00077	0.0020	< 0.0030
	11-Jun-2022	0.0018	**0.029** [#1]	0.38	3.4	0.00075	20	0.00010	5.3	0.21	< 0.00020	< 0.0010	0.058	0.0011	0.024	**0.14** [#1]
	05-Aug-2022	0.0014	0.0066	< 0.10	2.1	0.00038	8.7	< 0.00010	9.9	0.23	< 0.00020	< 0.0010	0.030	0.00082	0.0057	**0.083** [#1]
	24-Sep-2022	0.0018	0.015	0.23	2.0	0.00060	6.1	< 0.00010	10	0.23	< 0.00020	< 0.0010	0.050	0.0011	0.012	**0.090** [#1]
AEMP-10	23-Jun-2018	0.0011	0.0050	< 0.10	1.1	0.00041	2.5	< 0.00010	6.1	0.15	< 0.00020	< 0.0010	0.024	0.00085	0.0027	0.011
	14-Aug-2018	0.0011	0.0057	< 0.10	1.3	0.00047	4.1	< 0.00010	7.8	0.24	< 0.00020	< 0.0010	0.029	0.00084	0.0035	0.021
(Duplicate)	14-Aug-2018	0.0011	0.0054	< 0.10	1.3	0.00042	3.8	< 0.00010	7.7	0.23	< 0.00020	< 0.0010	0.068	0.00086	0.0037	0.020
	18-Oct-2018	0.00079	0.0031	< 0.10	0.98	< 0.00020	1.9	< 0.00010	9.5	0.22	< 0.00020	< 0.0010	0.014	0.00057	0.0016	0.0055
	10-Jun-2019	0.0012	0.0081	0.11	1.5	0.00038	4.0	< 0.00010	6.2	0.18	< 0.00020	< 0.0010	0.028	0.00087	0.0056	**0.042** [#1]
	26-Aug-2019	0.0011	0.0043	< 0.10	1.5	0.00053	5.2	< 0.00010	8.1	0.24	< 0.00020	< 0.0010	0.028	0.00097	0.0048	0.013
	01-Oct-2019	0.0012	0.0051	< 0.10	1.4	0.00050	3.1	< 0.00010	8.9	0.24	< 0.00020	< 0.0010	0.039	0.00095	0.0050	0.012
	12-Jun-2020	0.0019	0.017	0.19	2.0	0.00061	7.8	< 0.00010	5.2	0.22	< 0.00020	< 0.0010	0.044	0.0011	0.013	**0.079** [#1]
	28-Jul-2020	0.0011	0.0063	< 0.10	1.0	0.00067	3.3	< 0.00010	6.0	0.19	< 0.00020	< 0.0010	0.020	0.00083	0.0037	0.012
	22-Sep-2020	0.0012	0.0039	< 0.10	1.1	0.00050	3.0	0.00013	7.2	0.19	< 0.00020	< 0.0010	0.016	0.00094	0.0038	0.0077
	7-Jun-21	0.00099	0.0066	< 0.10	1.6	0.00032	4.2	< 0.00010	7.1	0.17	< 0.00020	< 0.0010	0.069	0.00079	0.0075	0.017
	19-Aug-2021	0.0015	0.0098	0.13	2.1	0.00052	7.9	< 0.00010	6.9	0.21	< 0.00020	0.0013	0.031	0.0011	0.0082	**0.099** [#1]
	18-Sep-2021	0.0011	0.0046	< 0.10	1.6	0.00042	5.9	< 0.00010	7.5	0.21	< 0.00020	< 0.0010	0.040	0.00091	0.0053	0.0098
	10-Aug-2022	0.00086	0.0033	< 0.10	1.3	0.00030	4.6	< 0.00010	7.2	0.21	< 0.00020	< 0.0010	0.015	0.00076	0.0024	0.0097
AEMP-11	23-Jun-2018	0.00095	0.0049	< 0.10	1.1	0.00036	2.6	< 0.00010	6.6	0.16	< 0.00020	< 0.0010	0.018	0.00079	0.0028	0.011
	14-Aug-2018	0.00092	0.0044	< 0.10	1.2	0.00036	3.3	< 0.00010	7.6	0.22	< 0.00020	< 0.0010	0.017	0.00080	0.0031	0.016
	18-Oct-2018	0.00089	0.0040	< 0.10	1.2	0.00031	2.5	< 0.00010	9.9	0.27	< 0.00020	< 0.0010	0.016	0.00059	0.0035	0.012
	10-Jun-2019	0.0012	0.0086	0.13	1.6	0.00040	4.2	< 0.00010	6.4	0.18	< 0.00020	< 0.0010	0.032	0.00076	0.0063	**0.038** [#1]
	26-Aug-2019	0.0011	0.0046	< 0.10	1.4	0.00047	5.0	< 0.00010	8.0	0.24	< 0.00020	< 0.0010	0.043	0.0011	0.0050	0.0096
	01-Oct-2019	0.0014	0.0090	0.10	1.7	0.00048	3.9	< 0.00010	9.8	0.24	< 0.00020	< 0.0010	0.020	0.00098	0.0048	**0.044** [#1]
	12-Jun-2020	0.0025	**0.031** [#1]	0.50	2.5	0.00074	12	0.00013	5.6	0.27	< 0.00020	< 0.0010	0.074	0.0015	0.023	**0.11** [#1]
	28-Jul-2020	0.0013	0.0061	< 0.10	1.1	0.00052	3.2	0.00014	6.1	0.18	< 0.00020	< 0.0010	0.017	0.00089	0.0048	0.012
	22-Sep-2020	0.00085	0.0032	< 0.10	1.1	0.00044	2.8	< 0.00010	7.0	0.18	< 0.00020	< 0.0010	0.017	0.00076	0.0033	0.0067
	07-Jun-2021	0.0011	0.0069	< 0.10	1.6	0.00041	4.0	< 0.00010	7.1	0.17	< 0.00020	< 0.0010	0.075	0.00095	0.0068	0.020
	19-Aug-2021	0.0013	0.011	0.15	2.0	0.00044	7.7 [#17]	< 0.00010	7.0	0.21	< 0.00020	< 0.0010	0.036	0.00088	0.0079	**0.080** [#1]
(Duplicate)	19-Aug-2021	0.0014	0.011	0.15	2.2	0.00054	8.2	< 0.00010	7.2	0.22	< 0.00020	< 0.0010	0.043	0.00094	0.0094	**0.12** [#1]
	18-Sep-2021	0.0011	0.0060	< 0.10	1.2	0.00052	3.1	< 0.00010	7.7	0.20	< 0.00020	< 0.0010	0.013	0.00085	0.0028	**0.11** [#1]
	10-Aug-2022	0.00087	0.0039	< 0.10	1.4	0.00032	4.9	< 0.00010	7.0	0.20	< 0.00020	< 0.0010	0.015	0.00071	0.0030	**0.053** [#1]
AEMP-12	23-Jun-2018	0.00081	0.0030	< 0.10	0.97	0.00026	2.2	< 0.00010	7.5	0.23	< 0.00020	< 0.0010	0.0081	0.00064	0.0019	0.0072
	14-Aug-2018	0.0011	0.0045	< 0.10	1.1	0.00097	2.6	< 0.00010	9.6	0.43	< 0.00020	< 0.0010	0.013	0.00081	0.0027	0.014
	17-Oct-2018	0.0016	0.0016	< 0.10	1.0	0.00023	2.1	< 0.00010	16	1.1	< 0.00020	< 0.0010	0.0057	0.0011	< 0.0010	0.0042
	03-Jun-2019	0.0013	0.0053	< 0.10	1.4	0.00025	3.2	< 0.00010	9.5	0.49	< 0.00020	< 0.0010	0.021	0.00086	0.0042	0.016
	28-Aug-2019	0.00074	0.0016	< 0.10	1.0	0.00034	2.5	< 0.00010	8.7	0.30	< 0.00020	< 0.0010	0.0097	0.00073	0.0019	0.0037
(Duplicate)	28-Aug-2019	0.0010	0.0016	< 0.10	1.0	0.00030	2.6	< 0.00010	8.9	0.31	< 0.00020	< 0.0010	0.0073	0.00067	0.0021	0.0036

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
	03-Oct-2019	0.00068	0.0022	< 0.10	1.1	0.00032	2.3	< 0.00010	9.0	0.27	< 0.00020	< 0.0010	0.0084	0.00060	0.0014	0.0043
	10-Jun-2020	0.0022	0.0026	< 0.10	1.3	< 0.00020	2.8	< 0.00010	13	1.2	< 0.00020	< 0.0010	0.0094	0.0014	0.0022	0.0066
	24-Jul-2020	0.0012	0.0037	< 0.10	0.95	0.00022	2.6	< 0.00010	9.8	0.43	< 0.00020	< 0.0010	0.023	0.00093	0.0033	0.0068
	18-Sep-2020	0.0019	0.0013	< 0.10	1.2	0.00029	1.3	< 0.00010	21	1.4	< 0.00020	0.0036	0.0015	0.0016	< 0.0010	< 0.0030
	07-Jun-2021	0.0013	0.0033	< 0.10	1.3	< 0.00020	3.6	< 0.00010	11	0.65	< 0.00020	< 0.0010	0.016	0.00093	0.0022	0.0057
	18-Aug-2021	0.0018	0.0031	< 0.10	1.4	0.00023	3.3	< 0.00010	20	1.0	< 0.00020	< 0.0010	0.016	0.0011	0.0022	0.0084
	17-Sep-2021	0.00087	0.0024	< 0.10	1.0	0.00027	2.8	< 0.00010	8.9	0.29	< 0.00020	< 0.0010	0.019	0.00067	0.0023	< 0.0030
	31-Mar-2022	0.00063	0.0007	< 0.10	0.91	< 0.00020	1.7	< 0.00010	7.8	0.18	< 0.00020	< 0.0010	0.0015	0.00043	0.0011	0.0036
	12-Jun-2022	0.0027	0.014	0.13	2.3	0.00048	11	< 0.00010	12	0.80	< 0.00020	< 0.0010	0.041	0.0012	0.0093	**0.098 [#1]**
	05-Aug-2022	0.0013	0.0014	< 0.10	1.2	0.00025	2.6	< 0.00010	15	0.73	< 0.00020	< 0.0010	0.0043	0.00081	0.0010	< 0.0030
	26-Sep-2022	0.00098	0.0027	< 0.10	1.1	0.00025	2.8	< 0.00010	9.3	0.28	< 0.00020	< 0.0010	0.012	0.00064	0.0019	0.0071
(Duplicate)	26-Sep-2022	0.00093	0.0028	< 0.10	1.2	0.00026	2.8	< 0.00010	9.2	0.28	< 0.00020	< 0.0010	0.013	0.00065	0.002	0.0074
AEMP-13	14-Aug-2018	0.0012	0.0074	< 0.10	1.3	0.00046	4.6	< 0.00010	8.4	0.26	< 0.00020	< 0.0010	0.026	0.00099	0.0055	0.030
	18-Oct-2018	0.0011	0.0030	< 0.10	1.1	0.00040	2.2	< 0.00010	11	0.29	< 0.00020	< 0.0010	0.011	0.00090	0.0015	0.0052
	02-Jun-2019	0.0015	0.018	0.29	2.0	0.00051	6.2	< 0.00010	7.3	0.22	< 0.00020	< 0.0010	0.039	0.0012	0.012	**0.056 [#1]**
	27-Aug-2019	0.0013	0.0038	< 0.10	1.5	0.00037	5.3	< 0.00010	9.1	0.30	< 0.00020	< 0.0010	0.035	0.00098	0.0039	0.0066
	02-Oct-2019	0.0015	0.0059	< 0.10	1.8	0.00037	3.6	< 0.00010	8.9	0.47	< 0.00020	< 0.0010	0.032	0.0010	0.0039	0.0091
	11-Jun-2020	0.0018	0.0055	< 0.10	1.6	0.00030	2.5	< 0.00010	4.6	0.20	< 0.00020	< 0.0010	0.017	0.00078	0.0039	0.014
(Duplicate)	11-Jun-2020	0.0020	0.0068	< 0.10	1.6	0.00037	3.3	< 0.00010	4.7	0.20	< 0.00020	< 0.0010	0.017	0.00082	0.0042	0.017
	26-Jul-2020	0.0016	0.0055	< 0.10	2.0	0.00051	7.0	< 0.00010	6.2	0.36	< 0.00020	< 0.0010	0.029	0.00093	0.0037	0.020
(Duplicate)	26-Jul-2020	0.0014	0.0051	< 0.10	1.9	0.00044	7.0	< 0.00010	6.1	0.36	< 0.00020	< 0.0010	0.012	0.00088	0.0032	0.022
	16-Sep-2020	0.0011	0.0070	< 0.10	1.8	0.00053	7.9	< 0.00010	7.1	0.26	< 0.00020	< 0.0010	0.056	0.0010	0.0056	0.017
(Duplicate)	16-Sep-2020	0.0011	0.0058	< 0.10	1.6	0.00046	7.1	< 0.00010	7.1	0.25	< 0.00020	< 0.0010	0.045	0.0010	0.0052	0.013
	07-Jun-2021	0.0019	0.0034	< 0.10	1.4	0.00024	2.0	< 0.00010	3.4	0.17	< 0.00020	< 0.0010	0.0069	0.00084	0.0011	0.0055
	19-Aug-2021	0.0013	0.012	0.13	2.0	0.00058	6.1	< 0.00010	6.4	0.23	< 0.00020	< 0.0010	0.036	0.00089	0.0093	**0.090 [#1]**
	18-Sep-2021	0.0010	0.0064	< 0.10	1.4	0.00047	3.4	< 0.00010	7.6	0.23	< 0.00020	< 0.0010	0.080	0.0011	0.0074	0.014
	31-Mar-2022	0.0013	0.0019	< 0.10	1.4	0.00043	2.8	< 0.00010	13	0.33	< 0.00020	< 0.0010	0.0022	0.00097	< 0.0010	< 0.0030
(Duplicate)	31-Mar-2022	0.0012	0.0019	< 0.10	1.3	0.00041	2.7	< 0.00010	13	0.32	< 0.00020	< 0.0010	0.003	0.00098	< 0.0010	< 0.0030
	14-Jun-2022	0.0025	0.015	0.14	3.5	0.00060	20	< 0.00010	4.0	0.18	< 0.00020	< 0.0010	0.11	0.0011	0.016	**0.045 [#1]**
(Duplicate)	14-Jun-2022	0.0022	0.014	0.13	3.5	0.00052	19	< 0.00010	3.9	0.18	< 0.00020	< 0.0010	0.12	0.0011	0.015	**0.042 [#1]**
	05-Aug-2022	0.0011	0.0026	< 0.10	1.3	0.00040	3.9	< 0.00010	7.7	0.23	< 0.00020	< 0.0010	0.014	0.00080	0.0017	0.0049
	25-Sep-2022	0.0012	0.0040	< 0.10	1.4	0.00040	3.1	< 0.00010	8.5	0.32	< 0.00020	< 0.0010	0.0041	0.00085	< 0.0010	0.0033
Relative Percent Difference (RPD) Report																
AEMP-01	07-Jun-2021	0.0012	0.0089	0.11	1.6	0.00051	3.9	< 0.00010	6.2	0.18	< 0.00020	< 0.0010	0.084	0.00098	0.0091	0.029
(Duplicate)	07-Jun-2021	0.0011	0.0084	< 0.10	1.5	0.00054	3.7	< 0.00010	6.2	0.18	< 0.00020	< 0.0010	0.091	0.00092	0.0087	0.026
RPD(%)		**8.7%**	**5.8%**	**---**	**6.5%**	**5.7%**	**5.3%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**8.0%**	**6.3%**	**4.5%**	**10.9%**
AEMP-01	06-Aug-2022	0.0012	0.0041	< 0.10	1.6	0.00046	5.3	< 0.00010	7.6	0.23	< 0.00020	< 0.0010	0.014	0.00081	0.0029	**0.080 [#1]**
(Duplicate)	06-Aug-2022	0.0012	0.0041	< 0.10	1.6	0.00046	5.7	< 0.00010	7.7	0.23	< 0.00020	< 0.0010	0.016	0.00084	0.0030	**0.064 [#1]**
RPD(%)		**0.0%**	**0.0%**	**---**	**0.0%**	**0.0%**	**7.3%**	**---**	**1.3%**	**0.0%**	**---**	**---**	**13.3%**	**3.6%**	**3.4%**	**22.2%**
AEMP-02	16-Sep-2017	0.0017	0.00077	< 0.10	1.0	< 0.00020	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	16-Sep-2017	0.0018	0.00078	< 0.10	0.98	< 0.00020	2.1	< 0.00010	19	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	0.0013	< 0.0030
RPD(%)		**5.7%**	**1.3%**	**---**	**2.0%**	**---**	**0.0%**	**---**	**0.0%**	**8.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**
AEMP-02	03-Jun-2019	0.0016	0.00089	< 0.10	1.1	< 0.00020	1.8	< 0.00010	15	1.1	< 0.00020	< 0.0010	0.0012	0.0011	< 0.0010	< 0.0030
(Duplicate)	03-Jun-2019	0.0017	0.00079	< 0.10	1.0	< 0.00020	1.8	< 0.00010	15	1.1	< 0.00020	< 0.0010	0.0022	0.0011	< 0.0010	< 0.0030
RPD(%)		**6.1%**	**11.9%**	**---**	**9.5%**	**---**	**0.0%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**58.8%**	**0.0%**	**---**	**---**

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
AEMP-04	16-Oct-2017	0.0020	0.00088	< 0.10	1.0	0.00025	2.1	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0015	0.0013	0.0015	< 0.0030
(Duplicate)	16-Oct-2017	0.0020	0.00084	< 0.10	1.0	0.00026	2.1	< 0.00010	19	1.4	< 0.00020	< 0.0010	0.0022	0.0013	0.0014	< 0.0030
RPD(%)		**0.0%**	**4.7%**	**---**	**0.0%**	**3.9%**	**0.0%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**37.8%**	**0.0%**	**6.9%**	**---**
AEMP-04	23-Jun-2018	0.0028	0.0012	< 0.10	1.1	0.00028	2.0	< 0.00010	19	1.3	< 0.00020	< 0.0010	0.0014	0.0015	< 0.0010	< 0.0030
(Duplicate)	23-Jun-2018	0.0023	0.00087	< 0.10	1.2	0.00023	2.1	< 0.00010	19	1.3	< 0.00020	< 0.0010	0.0015	0.0013	< 0.0010	< 0.0030
RPD(%)		**19.6%**	**31.9%**	**---**	**8.7%**	**19.6%**	**4.9%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**6.9%**	**14.3%**	**---**	**---**
AEMP-04	10-Jun-2020	0.0021	0.00095	< 0.10	0.87	0.00025	2.2	< 0.00010	12	1.3	< 0.00020	< 0.0010	0.0023	0.0013	< 0.0010	< 0.0030
(Duplicate)	10-Jun-2020	0.0020	0.00096	< 0.10	0.90	0.00025	2.3	< 0.00010	12	1.3	< 0.00020	< 0.0010	0.0031	0.0013	< 0.0010	< 0.0030
RPD(%)		**4.9%**	**1.0%**	**---**	**3.4%**	**0.0%**	**4.4%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**29.6%**	**0.0%**	**---**	**---**
AEMP-04	11-Jun-2022	0.0018	0.00082	< 0.10	0.93	< 0.00020	1.9	< 0.00010	15	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
(Duplicate)	11-Jun-2022	0.0018	0.00089	< 0.10	0.92	0.00025	1.8	< 0.00010	15	1.2	< 0.00020	< 0.0010	< 0.0010	0.0011	< 0.0010	< 0.0030
RPD(%)		**0.0%**	**8.2%**	**---**	**1.1%**	**---**	**5.4%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**---**	**0.0%**	**---**	**---**
AEMP-05	19-Aug-2021	0.0014	0.0011	< 0.10	0.75	< 0.00020	0.12	< 0.00010	3.7	0.16	< 0.00020	< 0.0010	< 0.0010	0.00034	< 0.0010	< 0.0030
RPD(%)		**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**	**---**
AEMP-06	25-Aug-2019	0.00085	0.0025	< 0.10	1.1	0.00039	3.2	< 0.00010	8.4	0.22	< 0.00020	< 0.0010	0.020	0.00065	0.0024	0.0073
(Duplicate)	02-Oct-2019	0.00084	0.0024	< 0.10	1.1	0.00027	3.0	< 0.00010	8.2	0.21	< 0.00020	< 0.0010	0.014	0.00062	0.0024	0.0052
RPD(%)		**1.2%**	**4.1%**	**---**	**0.0%**	**36.4%**	**6.5%**	**---**	**2.4%**	**4.7%**	**---**	**---**	**35.3%**	**4.7%**	**0.0%**	**33.6%**
AEMP-06	18-Aug-2021	0.0015	0.014	0.17	2.3	0.00046	7.5	< 0.00010	7.1	0.21	< 0.00020	< 0.0010	0.043	0.0010	0.013	**0.095 [#1]**
(Duplicate)	18-Aug-2021	0.0014	0.013	0.18	2.2	0.00042	7.1	< 0.00010	7.1	0.21	< 0.00020	< 0.0010	0.037	0.0010	0.012	**0.074 [#1]**
RPD(%)		**6.9%**	**7.4%**	**5.7%**	**4.4%**	**9.1%**	**5.5%**	**---**	**0.0%**	**0.0%**	**---**	**---**	**15.0%**	**0.0%**	**8.0%**	**24.9%**
AEMP-07	21-Aug-2017	0.00097	0.0030	< 0.10	1.1	0.00034	2.4	< 0.00010	8.1	0.23	< 0.00020	< 0.0010	0.0089	0.00074	0.0022	0.0082
(Duplicate)	21-Aug-2017	0.0010	0.0032	< 0.10	1.1	0.00038	2.4	< 0.00010	8.2	0.23	< 0.00020	< 0.0010	0.011	0.00079	0.0024	0.0078
RPD(%)		**3.0%**	**6.5%**	**---**	**0.0%**	**11.1%**	**0.0%**	**---**	**1.2%**	**0.0%**	**---**	**---**	**21.1%**	**6.5%**	**8.7%**	**5.0%**
AEMP-07	17-Oct-2018	0.00091	0.0020	< 0.10	1.0	< 0.00020	2.1	< 0.00010	9.5	0.21	< 0.00020	< 0.0010	0.013	0.00059	< 0.0010	0.0039
(Duplicate)	17-Oct-2018	0.00078	0.0020	< 0.10	1.0	< 0.00020	2.2	< 0.00010	9.7	0.21	< 0.00020	< 0.0010	0.0069	0.00054	< 0.0010	0.0038
RPD(%)		**15.4%**	**0.0%**	**---**	**0.0%**	**---**	**4.7%**	**---**	**2.1%**	**0.0%**	**---**	**---**	**61.3%**	**8.8%**	**---**	**2.6%**
AEMP-07	24-Jul-2020	0.00096	0.0047	< 0.10	1.1	0.00040	3.2	< 0.00010	6.5	0.19	< 0.00020	< 0.0010	0.038	0.00072	0.0056	0.0091
(Duplicate)	24-Jul-2020	0.0012	0.0049	< 0.10	1.1	0.00039	3.2	< 0.00010	6.6	0.20	< 0.00020	< 0.0010	0.039	0.00072	0.0048	0.0094
RPD(%)		**22.2%**	**4.2%**	**---**	**0.0%**	**2.5%**	**0.0%**	**---**	**1.5%**	**5.1%**	**---**	**---**	**2.6%**	**0.0%**	**15.4%**	**3.2%**
AEMP-07	18-Sep-2020	0.00075	0.0027	< 0.10	1.1	0.00027	3.0	< 0.00010	7.4	0.18	< 0.00020	0.0012	0.046	0.00063	0.0017	0.0053
(Duplicate)	18-Sep-2020	0.0010	0.0033	< 0.10	1.2	0.00023	2.7	< 0.00010	7.7	0.18	< 0.00020	0.0061	0.014	0.0012	0.0019	0.0056
RPD(%)		**28.6%**	**20.0%**	**---**	**8.7%**	**16.0%**	**10.5%**	**---**	**4.0%**	**0.0%**	**---**	**134.2%**	**106.7%**	**62.3%**	**11.1%**	**5.5%**
AEMP-07	06-Aug-2022	0.0025	**0.030 [#1]**	0.61	3.1	0.00099	12	0.00015	8.1	0.29	< 0.00020	< 0.0010	0.089	0.0016	0.026	**0.17 [#1]**
(Duplicate)	06-Aug-2022	0.0023	**0.028 [#1]**	0.57	2.9	0.00092	11	0.00012	8.0	0.28	< 0.00020	< 0.0010	0.079	0.0016	0.023	**0.16 [#1]**
RPD(%)		**8.3%**	**6.9%**	**6.8%**	**6.7%**	**7.3%**	**8.7%**	**22.2%**	**1.2%**	**3.5%**	**---**	**---**	**11.9%**	**0.0%**	**12.2%**	**6.1%**
AEMP-07	24-Sep-2022	0.0016	0.014	0.19	2.0	0.00057	5.9	< 0.00010	8.2	0.21	< 0.00020	< 0.0010	0.054	0.0011	0.012	**0.086 [#1]**
(Duplicate)	24-Sep-2022	0.0017	0.019	0.21	2.0	0.00058	6.1	< 0.00010	8.4	0.22	< 0.00020	< 0.0010	0.053	0.0011	0.012	**0.081 [#1]**
RPD(%)		**6.1%**	**30.3%**	**10.0%**	**0.0%**	**1.7%**	**3.3%**	**---**	**2.4%**	**4.7%**	**---**	**---**	**1.9%**	**0.0%**	**0.0%**	**6.0%**
AEMP-10	14-Aug-2018	0.0011	0.0057	< 0.10	1.3	0.00047	4.1	< 0.00010	7.8	0.24	< 0.00020	< 0.0010	0.029	0.00084	0.0035	0.021
(Duplicate)	14-Aug-2018	0.0011	0.0054	< 0.10	1.3	0.00042	3.8	< 0.00010	7.7	0.23	< 0.00020	< 0.0010	0.068	0.00086	0.0037	0.020
RPD(%)		**0.0%**	**5.4%**	**---**	**0.0%**	**11.2%**	**7.6%**	**---**	**1.3%**	**4.3%**	**---**	**---**	**80.4%**	**2.4%**	**5.6%**	**4.9%**
AEMP-11	19-Aug-2021	0.0013	0.011	0.15	2.0	0.00044	7.7 [#17]	< 0.00010	7.0	0.21	< 0.00020	< 0.0010	0.036	0.00088	0.0079	**0.080 [#1]**
(Duplicate)	19-Aug-2021	0.0014	0.011	0.15	2.2	0.00054	8.2	< 0.00010	7.2	0.22	< 0.00020	< 0.0010	0.043	0.00094	0.0094	**0.12 [#1]**
RPD(%)		**7.4%**	**0.0%**	**0.0%**	**9.5%**	**20.4%**	**6.3%**	**---**	**2.8%**	**4.7%**	**---**	**---**	**17.7%**	**6.6%**	**17.3%**	**40.0%**

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**
AEMP-12	28-Aug-2019	0.00074	0.0016	< 0.10	1.0	0.00034	2.5	< 0.00010	8.7	0.30	< 0.00020	< 0.0010	0.0097	0.00073	0.0019	0.0037
(Duplicate)	28-Aug-2019	0.0010	0.0016	< 0.10	1.0	0.00030	2.6	< 0.00010	8.9	0.31	< 0.00020	< 0.0010	0.0073	0.00067	0.0021	0.0036
RPD(%)		**29.9%**	**0.0%**	**---**	**0.0%**	**12.5%**	**3.9%**	**---**	**2.3%**	**3.3%**	**---**	**---**	**28.2%**	**8.6%**	**10.0%**	**2.7%**
AEMP-12	26-Sep-2022	0.00098	0.0027	< 0.10	1.1	0.00025	2.8	< 0.00010	9.3	0.28	< 0.00020	< 0.0010	0.012	0.00064	0.0019	0.0071
(Duplicate)	26-Sep-2022	0.00093	0.0028	< 0.10	1.2	0.00026	2.8	< 0.00010	9.2	0.28	< 0.00020	< 0.0010	0.013	0.00065	0.002	0.0074
RPD(%)		**5.2%**	**3.6%**	**---**	**8.7%**	**3.9%**	**0.0%**	**---**	**1.1%**	**0.0%**	**---**	**---**	**8.0%**	**1.6%**	**5.1%**	**4.1%**
AEMP-13	11-Jun-2020	0.0018	0.0055	< 0.10	1.6	0.00030	2.5	< 0.00010	4.6	0.20	< 0.00020	< 0.0010	0.017	0.00078	0.0039	0.014
(Duplicate)	11-Jun-2020	0.0020	0.0068	< 0.10	1.6	0.00037	3.3	< 0.00010	4.7	0.20	< 0.00020	< 0.0010	0.017	0.00082	0.0042	0.017
RPD(%)		**10.5%**	**21.1%**	**---**	**0.0%**	**20.9%**	**27.6%**	**---**	**2.2%**	**0.0%**	**---**	**---**	**0.0%**	**5.0%**	**7.4%**	**19.4%**
AEMP-13	26-Jul-2020	0.0016	0.0055	< 0.10	2.0	0.00051	7.0	< 0.00010	6.2	0.36	< 0.00020	< 0.0010	0.029	0.00093	0.0037	0.020
(Duplicate)	26-Jul-2020	0.0014	0.0051	< 0.10	1.9	0.00044	7.0	< 0.00010	6.1	0.36	< 0.00020	< 0.0010	0.012	0.00088	0.0032	0.022
RPD(%)		**13.3%**	**7.5%**	**---**	**5.1%**	**14.7%**	**0.0%**	**---**	**1.6%**	**0.0%**	**---**	**---**	**82.9%**	**5.5%**	**14.5%**	**9.5%**
AEMP-13	16-Sep-2020	0.0011	0.0070	< 0.10	1.8	0.00053	7.9	< 0.00010	7.1	0.26	< 0.00020	< 0.0010	0.056	0.0010	0.0056	0.017
(Duplicate)	16-Sep-2020	0.0011	0.0058	< 0.10	1.6	0.00046	7.1	< 0.00010	7.1	0.25	< 0.00020	< 0.0010	0.045	0.0010	0.0052	0.013
RPD(%)		**0.0%**	**18.8%**	**---**	**11.8%**	**14.1%**	**10.7%**	**---**	**0.0%**	**3.9%**	**---**	**---**	**21.8%**	**0.0%**	**7.4%**	**26.7%**
AEMP-13	31-Mar-2022	0.0013	0.0019	< 0.10	1.4	0.00043	2.8	< 0.00010	13	0.33	< 0.00020	< 0.0010	0.0022	0.00097	< 0.0010	< 0.0030
(Duplicate)	31-Mar-2022	0.0012	0.0019	< 0.10	1.3	0.00041	2.7	< 0.00010	13	0.32	< 0.00020	< 0.0010	0.003	0.00098	< 0.0010	< 0.0030
RPD(%)		**8.0%**	**0.0%**	**---**	**7.4%**	**4.8%**	**3.6%**	**---**	**0.0%**	**3.1%**	**---**	**---**	**30.8%**	**1.0%**	**---**	**---**
AEMP-13	14-Jun-2022	0.0025	0.015	0.14	3.5	0.00060	20	< 0.00010	4.0	0.18	< 0.00020	< 0.0010	0.11	0.0011	0.016	**0.045 [#1]**
(Duplicate)	14-Jun-2022	0.0022	0.014	0.13	3.5	0.00052	19	< 0.00010	3.9	0.18	< 0.00020	< 0.0010	0.12	0.0011	0.015	**0.042 [#1]**
RPD(%)		**12.8%**	**6.9%**	**7.4%**	**0.0%**	**14.3%**	**5.1%**	**---**	**2.5%**	**0.0%**	**---**	**---**	**8.7%**	**0.0%**	**6.5%**	**6.9%**

NOTES:

1. --- in guideline row(s) denotes no criteria for that parameter.
2. --- in detail data row(s) denotes parameter not analyzed.
3. Highlighting indicates parameters above applied guideline/criteria.
4. Highlighting indicates non-detect parameters above applied guideline/criteria.
5. Highlighting indicates parameters at applied guideline/criteria.
6. Superscript [#1] denotes values exceeding
   (CCME. 2014. Canadian Environmental Quality Guidelines Summary Table. Water Quality Guidelines for the Protection of Freshwater Aquatic Life. http://st-ts.ccme.ca/?chems=all&chapters=1 accessed Aug 22, 2014.)

Aluminum:
Standard varies with pH.
pH < 6.5 = 0.005 mg/L
pH >= 6.5 = 0.1 mg/L

Boron:
Guideline based on long term exposure

Cadmium:
Guideline is hardness dependent. Presented guideline based on long term exposure at hardness of 50 mg/L.

Chromium (Total):

Table 5

Surface Water Analytical Results: Total Metals and Trace Elements

PROJECT No.: 417085-42051-22200

Sampling Location	Date (dd-mmm-yyyy)	Molybdenum (mg/L)	Nickel (mg/L)	Phosphorus (mg/L)	Potassium (mg/L)	Selenium (mg/L)	Silicon (mg/L)	Silver (mg/L)	Sodium (mg/L)	Strontium (mg/L)	Thallium (mg/L)	Tin (mg/L)	Titanium (mg/L)	Uranium (mg/L)	Vanadium (mg/L)	Zinc (mg/L)
CCME CEQG Freshwater Aquatic Life [#1]		**0.073**	**0.025**	**---**	**---**	**0.001**	**---**	**0.00025**	**---**	**---**	**0.0008**	**---**	**---**	**0.015**	**---**	**0.037**

Limit is for Chromium(III).

Copper:
Guideline is hardness dependent. Presented guideline set to lower limit.

Lead:
Guideline is hardness dependent. Presented guideline set to lower limit.

Manganese:
Guideline is pH and hardness dependent. Presented guideline set to lower limit.

Mercury:
Guideline for Inorganic mercury

Nickel:
Guideline is hardness dependent. Presented guideline set to lower limit.

Silver:
Guideline based on long term exposure

Uranium:
Guideline based on long term exposure

Zinc:
Guideline is pH, DOC, and hardness dependent. Presented guideline set to lower limit for short-term exposure.

Table 6

Surface Water: Screening Tool Temporal Trend Statistically Significant Results

PROJECT No.: 417085-42051-22200		Mann-Kendall Trend				Seasonal Kendall Trend			
Sample Type	Direction	Theil-Sen Slope	Kendall Stat	tau	p-value	Theil-Sen Slope	Kendall Stat	tau	p-value
INDICATORS									
Chloride	---	0.002	0	0.00	1.00	0.016	10	0.12	0.52
Sulphate	---	-0.086	-2	-0.07	0.90	-0.188	-16	-0.19	0.28
Iron	---	-0.004	0	0.00	1.00	0.030	14	0.17	0.35
Total Dissolved Solids	---	0.484	0	0.00	1.00	0.906	8	0.62	0.91
Total Suspended Solids	---	2.654	10	0.36	0.27	2.459	18	0.21	0.22
Calcium	---	-0.025	0	0.00	1.00	-0.089	-8	-0.10	0.62
Magnesium	---	-0.011	-4	-0.14	0.71	-0.037	-10	-0.12	0.52
Hardness		-0.061	0	0.00	1.00	-0.157	-7	-0.08	0.67
Dissolved Aluminum	---	5.56E-05	0	0.00	1.00	3.95E-04	10	0.12	0.52
Total Aluminum	---	0.005	0	0.00	1.00	0.006	6	0.07	0.72
Dissolved Arsenic	---	-6.13E-07	-2	-0.07	0.90	-4.06E-06	-14	-0.17	0.35
Total Arsenic	---	-3.41E-07	0	0.00	1.00	1.59E-05	10	0.12	0.52
Dissolved Barium	---	-4.29E-04	-7	-0.25	0.45	-2.15E-04	-18	-0.21	0.22
Total Barium	---	-8.19E-05	0	0.00	1.00	-9.80E-05	-2	-0.02	0.94
Total Cadmium	---	2.17E-06	2	0.07	0.90	1.05E-06	14	0.17	0.35
Total Chromium	---	7.79E-05	10	0.36	0.27	2.66E-05	16	0.19	0.28
Dissolved Copper	---	-9.77E-06	-4	-0.14	0.71	3.22E-06	4	0.05	0.83
Total Copper	Increasing	6.62E-05	10	0.36	0.27	5.30E-05	24	0.29	0.10
Total Lead	---	2.22E-05	6	0.21	0.54	2.21E-05	10	0.12	0.52
Total Manganese	---	2.51E-04	2	0.07	0.90	6.65E-04	6	0.07	0.72
Dissolved Molybdenum	---	-8.24E-06	-4	-0.14	0.71	-4.65E-06	-18	-0.21	0.22
Total Molybdenum	---	-6.50E-06	-2	-0.07	0.90	-8.39E-06	-15	-0.18	0.32
Dissolved Nickel	---	-4.94E-06	-2	-0.07	0.90	-8.35E-06	-10	-0.12	0.52
Total Nickel	---	6.71E-05	4	0.14	0.71	1.16E-04	18	0.21	0.22
Dissolved Selenium	---	1.48E-06	2	0.07	0.90	3.89E-06	12	0.14	0.43
Total Selenium	---	1.01E-06	2	0.07	0.90	1.63E-06	10	0.12	0.52
Dissolved Uranium	---	-4.97E-06	-4	-0.14	0.71	-3.43E-06	-8	-0.10	0.62
Total Uranium	---	-7.17E-06	-6	-0.21	0.54	-1.77E-06	-6	-0.07	0.72
Total Zinc	Increasing	0.002	14	0.50	0.11	0.002	34	0.40	**0.02**

Notes: --- No significant trend for associated parameter

X 1. The p-value for the associated statistical test is less than or equal to 0.05 inidcating a statistically significant result.

Table 7

Surface Water: Screening Tool Temporal Trend Statistically Significant Results

PROJECT No.: 417085-42051-22200

Sample Type	Site	Direction	Linear Regression						Mann-Kendall Trend				Seasonal Kendall Trend			
			Slope	Intercept	p-value	Power	Violations	Transformation	Theil-Sen Slope	Kendall Stat	tau	p-value	Theil-Sen Slope	Kendall Stat	tau	p-value
INDICATORS																
Bicarbonate	AEMP-05	Decreasing	-2.139E-07	514.37	0.1331	0.35	None	None	-6.846	-55	-0.36	**0.039**	-6.630	-17	-0.37	0.0803
Chloride	AEMP-05	Decreasing	-1.185E-08	22.81	**0.0026**	0.94	None	None	-0.343	-70	-0.46	**0.009**	-0.334	-29	-0.63	**0.0026**
	AEMP-06	Decreasing	-1.853E-08	37.82	**0.0184**	0.74	None	None	-0.425	-39	-0.25	0.149	-0.455	-18	-0.39	0.0689
	AEMP-07	Decreasing	-2.378E-08	46.02	**0.0025**	0.95	None	None	-0.702	-59	-0.43	**0.016**	-0.656	-20	-0.50	**0.0245**
	AEMP-08	Decreasing	-1.659E-08	34.77	**0.0408**	0.60	None	None	-0.325	-35	-0.23	0.196	-0.325	-15	-0.33	0.1304
	AEMP-12	Increasing	2.569E-09	-1.54	0.1420	0.34	N	log10	0.976	42	0.40	**0.040**	0.993	10	0.33	0.1939
	AEMP-13	Decreasing	-3.515E-08	63.70	0.0615	0.54	None	None	-0.845	-24	-0.26	0.207	-1.007	-14	-0.54	**0.0449**
Sulphate	AEMP-09	Decreasing	-1.048E-09	5.36	0.5879	0.09	N	log10	-1.731	-42	-0.31	0.089	-1.512	-19	-0.48	**0.0310**
Calcium	AEMP-05	Decreasing	-1.896E-09	6.71	**0.0355**	0.63	N	log10	-2.189	-58	-0.38	**0.030**	-1.825	-18	-0.39	0.0689
Magnesium	AEMP-01	Decreasing	-5.928E-09	19.58	0.3303	0.17	None	None	-0.143	-19	-0.12	0.490	-0.304	-20	-0.49	**0.0225**
Manganese	AEMP-03	Decreasing	-1.12E-11	0.02	**0.0001**	1.00	None	None	0.000	-52	-0.67	**0.002**	0.000	-16	-0.80	**0.0094**
Potassium	AEMP-07	Increasing	1.4E-09	-1.33	**0.0180**	0.75	L	None	0.03	29	0.21	0.248	0.03	12	0.30	0.1990
Sodium	AEMP-02	Increasing	3.263E-08	-32.49	0.1113	0.39	L	None	0.96	28	0.18	0.305	1.03	20	0.43	**0.0420**
	AEMP-03	Increasing	3.272E-08	-32.14	0.1298	0.36	L	None	0.98	28	0.18	0.303	0.98	20	0.43	**0.0366**
	AEMP-05	Decreasing	-7.854E-09	16.72	**0.0319**	0.65	L	None	-0.23	-42	-0.27	0.120	-0.24	-14	-0.30	0.1642
	AEMP-07	Decreasing	-1.221E-08	26.99	**0.0113**	0.82	None	None	-0.33	-52	-0.38	**0.036**	-0.29	-16	-0.40	0.0798
	AEMP-08	Decreasing	-9.086E-09	22.16	0.0824	0.45	None	None	-0.20	-43	-0.25	0.141	-0.20	-21	-0.46	**0.0333**
Conductivity	AEMP-02	Increasing	4.048E-07	12.62	0.1085	0.40	None	None	15.21	40	0.26	0.138	17.54	23	0.50	**0.0192**
	AEMP-03	Increasing	3.382E-07	117.98	0.1839	0.28	None	None	12.13	37	0.24	0.171	15.60	21	0.46	**0.0333**
	AEMP-05	Decreasing	-4.203E-07	972.99	**0.0094**	0.84	None	None	-11.89	-66	-0.43	**0.012**	-10.54	-20	-0.43	**0.0366**
Hardness	AEMP-05	Decreasing	-2.501E-07	552.14	**0.0154**	0.77	None	None	-7.03	-60	-0.39	**0.023**	-5.55	-22	-0.48	**0.0214**
Total Dissolved Solids	AEMP-01	Increasing	2.078E-07	-142.60	0.0699	0.49	None	None	6.34	53	0.35	**0.045**	6.81	14	0.34	0.1273
	AEMP-03	Increasing	2.553E-07	14.52	0.1242	0.37	None	None	10.53	47	0.31	0.079	10.22	22	0.48	**0.0209**
Total Suspended Solids	AEMP-06	Increasing	1.04E-06	-1538.38	**0.0356**	0.63	None	None	18.25	38	0.25	0.160	16.65	14	0.30	0.1690
	AEMP-07	Increasing	1.435E-08	-18.15	**0.0209**	0.73	None	log10	37.22	50	0.37	**0.043**	32.94	18	0.45	**0.0471**
Turbidity	AEMP-03	Decreasing	-1.295E-08	22.22	0.0910	0.45	None	None	-0.41	-38	-0.42	**0.042**	-0.12	-9	-0.35	0.2115
	AEMP-07	Increasing	1.513E-06	-2297.04	**0.0191**	0.77	None	None	38.18	28	0.31	0.139	28.99	12	0.46	0.0896
Sulphide (as Hydrogen Sulphide)	AEMP-01	Increasing	1.005E-10	-0.15	**0.0500**	0.60	None	None	0.0030	27	0.41	0.074	0.0025	6	0.60	0.2207
	AEMP-07	Increasing	2.124E-10	-0.32	**0.0002**	1.00	L	None	0.0066	39	0.59	**0.009**	0.0070	14	0.88	**0.0098**
	AEMP-08	Increasing	1.436E-10	-0.22	**0.0156**	0.85	None	None	0.0048	21	0.47	0.071	0.01	2	0.33	0.73
	AEMP-11	Increasing	1.479E-10	-0.23	**0.0216**	0.78	None	None	0.0034	30	0.55	**0.022**	0.0032	8	0.50	0.1473
Dissolved Organic Carbon	AEMP-01	Increasing	1.517E-08	-18.28	**0.0155**	0.77	None	None	0.3990	47	0.31	0.081	0.3534	17	0.41	0.0694
	AEMP-06	Increasing	1.224E-08	-14.26	**0.0176**	0.75	None	None	0.3286	53	0.35	**0.049**	0.2543	17	0.37	0.0887
	AEMP-07	Increasing	1.49E-08	-18.31	**0.0038**	0.93	None	None	0.3925	55	0.40	**0.026**	0.3830	23	0.58	**0.0097**
	AEMP-08	Increasing	7.048E-09	-6.21	0.2111	0.25	None	None	0.1684	32	0.19	0.276	0.2562	21	0.46	**0.0314**
	AEMP-11	Increasing	1.971E-08	-25.50	**0.0271**	0.71	None	None	0.6605	37	0.47	**0.028**	0.8784	16	0.73	**0.0101**

Table 7

Surface Water: Screening Tool Temporal Trend Statistically Significant Results

PROJECT No.: 417085-42051-22200

Sample Type		Site	Direction	Linear Regression						Mann-Kendall Trend				Seasonal Kendall Trend			
				Slope	Intercept	p-value	Power	Violations	Transformation	Theil-Sen Slope	Kendall Stat	tau	p-value	Theil-Sen Slope	Kendall Stat	tau	p-value
Total Organic Carbon		AEMP-01	Increasing	2.488E-09	-2.29	**0.0107**	0.82	N, L	log10	0.42	63	0.41	**0.019**	0.41	21	0.51	**0.0215**
		AEMP-02	Decreasing	-2.146E-09	4.65	0.1014	0.41	None	log10	-0.27	-48	-0.31	0.074	-0.29	-22	-0.48	**0.0246**
		AEMP-03	Decreasing	-2.583E-09	5.35	0.0626	0.51	None	log10	-0.33	-47	-0.31	0.081	-0.33	-22	-0.48	**0.0263**
		AEMP-07	Increasing	1.566E-08	-19.86	**0.0076**	0.87	None	None	0.44	56	0.41	**0.023**	0.42	22	0.55	**0.0142**
METALS																	
Aluminum	Dissolved	AEMP-04	Increasing	7.529E-11	-0.11	**0.0198**	0.86	None	None	0.002	19	0.68	**0.025**	---	---	---	---
		AEMP-12	Decreasing	-1.338E-10	0.23	**0.0379**	0.63	None	None	-0.005	-41	-0.34	0.071	-0.0040	-8	-0.2667	0.3222
	Total	AEMP-02	Decreasing	-8.236E-09	9.80	**0.0347**	0.63	N	log10	-0.01	-58	-0.38	**0.031**	0.00	-20	-0.43	**0.0444**
		AEMP-03	Decreasing	-9.953E-09	12.26	**0.0477**	0.57	N	log10	-0.01	-55	-0.36	**0.041**	0.00	-22	-0.48	**0.0263**
		AEMP-06	Increasing	1.374E-08	-20.06	0.0515	0.55	None	None	0.22	47	0.31	0.081	0.18	22	0.48	**0.0263**
		AEMP-07	Increasing	2.97E-08	-44.38	**0.0026**	0.95	None	None	0.90	66	0.49	**0.007**	0.74	28	0.70	**0.0016**
Arsenic	Dissolved	AEMP-01	Increasing	5.582E-13	-0.001	0.0788	0.46	None	None	0.00001	50	0.33	0.062	0.00003	21	0.51	**0.0215**
	Total	AEMP-06	Increasing	1.311E-11	-0.02	**0.0454**	0.58	None	None	0.0002	48	0.31	0.075	0.0002	20	0.43	**0.0444**
		AEMP-07	Increasing	2.95E-11	-0.04	**0.0087**	0.85	None	None	0.0008	58	0.43	**0.019**	0.0007	18	0.45	**0.0471**
Barium	Total	AEMP-05	Decreasing	-2.388E-10	0.51	**0.0417**	0.60	None	None	-0.0067	-43	-0.28	0.108	-0.0064	-13	-0.28	0.1895
		AEMP-06	Increasing	3.761E-10	-0.52	**0.0289**	0.67	None	None	0.0071	41	0.27	0.128	0.0065	15	0.33	0.1363
		AEMP-07	Increasing	6.758E-09	-13.06	**0.0254**	0.70	None	log10	0.02	55	0.40	**0.026**	0.02	20	0.50	**0.0265**
Cadmium	Total	AEMP-06	Increasing	7.777E-13	-0.001	**0.0449**	0.58	None	None	0.00001	35	0.23	0.197	0.00001	17	0.37	0.0887
		AEMP-07	Increasing	2.036E-12	-0.003	**0.0197**	0.74	None	None	0.00004	51	0.38	**0.039**	0.00005	20	0.50	**0.0265**
Copper	Dissolved	AEMP-01	Increasing	5.405E-09	-14.98	**0.0017**	0.97	None	log10	0.0003	79	0.58	**0.001**	0.0002	17	0.46	0.0552
		AEMP-02	Increasing	1.167E-11	-0.02	**0.0137**	0.81	L	None	0.0001	51	0.49	**0.013**	0.0002	21	0.68	**0.0063**
		AEMP-04	Increasing	1.941E-11	-0.03	**0.0207**	0.74	L	None	0.0001	22	0.18	0.344	0.0002	7	0.20	0.4448
		AEMP-06	Increasing	4.009E-09	-12.99	**0.0471**	0.57	N	log10	0.0002	57	0.37	**0.033**	0.0001	20	0.43	**0.0420**
		AEMP-07	Increasing	5.978E-12	-0.01	**0.0195**	0.74	None	None	0.0001	38	0.28	0.125	0.0001	17	0.43	0.0564
		AEMP-09	Increasing	1.249E-11	-0.02	**0.0088**	0.85	L	None	0.0002	67	0.49	**0.006**	0.0003	22	0.55	**0.0142**
		AEMP-10	Increasing	1.799E-11	-0.03	**0.0183**	0.78	None	None	0.0004	34	0.44	**0.043**	0.0003	10	0.45	0.1227
		AEMP-12	Increasing	1.072E-11	-0.02	**0.0247**	0.71	None	None	0.0002	41	0.39	**0.047**	0.0002	10	0.38	0.1547
	Total	AEMP-04	Increasing	8.451E-09	-20.51	**0.0492**	0.57	None	log10	0.0001	26	0.22	0.259	0.0001	7	0.19	0.4544
		AEMP-07	Increasing	6.617E-11	-0.10	**0.0080**	0.86	None	None	0.0019	60	0.44	**0.015**	0.0019	20	0.50	**0.0265**
Cobalt	Total	AEMP-07	Increasing	3.14E-11	-0.05	**0.0152**	0.78	None	None	0.0009	51	0.38	**0.039**	0.0007	17	0.43	0.0599
Selenium	Dissolved	AEMP-11	Increasing	1.201E-12	-0.0016	**0.0317**	0.71	None	None	3.5554E-05	23	0.42	0.085	0.00006	4	0.33	0.4712
	Total	AEMP-07	Increasing	2.425E-12	0.00	**0.0304**	0.68	None	None	3.8479E-05	28	0.27	0.181	0.00004	14	0.45	0.0732
Silicon	Dissolved	AEMP-07	Increasing	1.069E-09	-1.28	**0.0168**	0.76	N	log10	0.04	64	0.47	**0.006**	0.03	20	0.50	**0.0142**
	Total	AEMP-01	Increasing	1.609E-08	-21.32	0.0880	0.44	None	None	0.30	41	0.27	0.129	0.30	18	0.44	**0.0491**
		AEMP-06	Increasing	2.591E-08	-36.93	**0.0030**	0.94	None	None	0.63	68	0.44	**0.011**	0.56	20	0.43	**0.0444**
		AEMP-07	Increasing	3.656E-08	-53.14	**0.0033**	0.93	None	None	0.82	72	0.53	**0.003**	0.50	26	0.65	**0.0031**
		AEMP-08	Increasing	3.776E-09	-4.78	0.1003	0.41	None	log10	0.42	54	0.32	0.063	0.30	22	0.48	**0.0263**
		AEMP-12	Increasing	3.113E-09	-3.98	0.2251	0.24	N	log10	0.12	28	0.23	0.221	0.22	16	0.53	**0.0259**
Strontium	Total	AEMP-06	Decreasing	-1.722E-10	0.47	**0.0427**	0.59	None	None	-0.01	-58	-0.38	**0.029**	0.00	-16	-0.35	0.1044

Table 7

Surface Water: Screening Tool Temporal Trend Statistically Significant Results

PROJECT No.: 417085-42051-22200

Sample Type		Site	Direction	Linear Regression						Mann-Kendall Trend				Seasonal Kendall Trend			
				Slope	Intercept	p-value	Power	Violations	Transformation	Theil-Sen Slope	Kendall Stat	tau	p-value	Theil-Sen Slope	Kendall Stat	tau	p-value
Calcium	Total	AEMP-05	Decreasing	-7.377E-08	159.39	**0.0221**	0.71	None	None	-2.06	-63	-0.41	**0.018**	-1.53	-17	-0.37	0.0851
		AEMP-06	Increasing	3.501E-08	-21.40	**0.0290**	0.67	None	None	0.81	47	0.31	0.077	0.60	17	0.37	0.0803
		AEMP-07	Increasing	2.667E-09	-0.60	**0.0433**	0.59	N	log10	1.75899	50	0.37	**0.042**	1.71178	15	0.38	0.0997
Chromium	Total	AEMP-07	Increasing	4.799E-11	-0.07	**0.0126**	0.82	None	None	0.0014	47	0.45	**0.023**	0.0012	19	0.61	**0.0140**
		AEMP-10	Increasing	8.114E-09	-18.66	**0.0335**	0.69	N	log10	0.0006	23	0.42	0.085	0.0010	10	0.83	**0.0306**
Iron	Total	AEMP-02	Increasing	-6.038E-09	7.50	**0.0368**	0.62	None	log10	-0.01	-63	-0.41	**0.018**	-0.01	-23	-0.50	**0.0192**
		AEMP-06	Increasing	1.044E-08	-15.83	**0.0243**	0.70	None	log10	0.42	42	0.27	0.120	0.40	16	0.35	0.1125
		AEMP-07	Increasing	7.322E-08	-109.99	**0.0130**	0.80	None	None	1.52	62	0.46	**0.012**	1.69	22	0.55	**0.0142**
Lead	Total	AEMP-06	Increasing	1.506E-11	-0.02	**0.0491**	0.56	None	None	0.0002	43	0.28	0.111	0.0002	18	0.39	0.0721
		AEMP-07	Increasing	3.573E-11	-0.05	**0.0142**	0.79	None	None	0.0009	56	0.41	**0.023**	0.0009	22	0.55	**0.0142**
		AEMP-08	Increasing	1.306E-11	-0.02	**0.0482**	0.57	None	None	0.0002	33	0.22	0.225	0.0001	13	0.33	0.1583
Manganese	Total	AEMP-02	Decreasing	-3.477E-09	0.75	**0.0052**	0.90	None	log10	-0.0005	-92	-0.60	**0.001**	-0.0006	-31	-0.67	**0.0014**
		AEMP-03	Decreasing	-4.571E-09	2.32	**0.0315**	0.65	None	log10	-0.0008	-70	-0.46	**0.009**	-0.0006	-23	-0.50	**0.0192**
		AEMP-06	Increasing	5.786E-10	-0.85	**0.0480**	0.57	None	None	0.0081	37	0.24	0.171	0.0071	14	0.30	0.1642
		AEMP-07	Increasing	1.087E-08	-19.84	**0.0277**	0.68	None	log10	0.0276	48	0.35	0.052	0.0268	16	0.40	0.0798
Molybdenum	Total	AEMP-07	Increasing	5.831E-09	-15.86	**0.0197**	0.74	None	log10	0.0001	45	0.33	0.070	0.0001	15	0.38	0.0997
Nickel	Total	AEMP-07	Increasing	9.858E-11	-0.15	**0.0096**	0.84	None	None	0.0028	55	0.40	**0.026**	0.0026	18	0.45	**0.0471**
Titanium	Total	AEMP-06	Increasing	8.81E-09	-17.95	**0.0045**	0.91	None	log10	0.003	69	0.45	**0.010**	0.003	24	0.52	**0.0150**
		AEMP-07	Increasing	1.14E-08	-21.52	**0.0098**	0.84	None	log10	0.009	53	0.39	**0.032**	0.008	16	0.40	0.0798
		AEMP-08	Increasing	8.814E-09	-17.97	**0.0457**	0.58	None	log10	0.003	36	0.24	0.184	0.003	19	0.41	0.0527
Uranium	Total	AEMP-07	Increasing	4.041E-12	-0.01	**0.0139**	0.79	None	None	0.0001	41	0.30	0.099	0.0001	10	0.25	0.2933
Vanadium	Total	AEMP-06	Increasing	3.943E-11	-0.06	**0.0305**	0.66	None	None	0.001	57	0.37	**0.033**	0.0005	22	0.48	**0.0263**
		AEMP-07	Increasing	8.39E-11	-0.12	**0.0064**	0.89	None	None	0.003	58	0.48	**0.010**	0.0027	21	0.60	**0.0109**
Zinc	Total	AEMP-06	Increasing	4.195E-10	-0.63	**0.0118**	0.81	None	None	0.006	51	0.38	**0.039**	0.0038	18	0.45	**0.0471**
		AEMP-07	Increasing	6.652E-10	-1.01	**0.0042**	0.92	None	None	0.011	46	0.34	0.064	0.0066	12	0.30	0.1990
		AEMP-08	Increasing	3.114E-10	-0.47	**0.0209**	0.73	None	None	0.004	51	0.38	**0.039**	0.0024	17	0.49	**0.0416**
		AEMP-09	Increasing	4.27E-10	-0.64	**0.0178**	0.77	None	None	0.007	32	0.30	0.125	0.003	7	0.23	0.3914

Notes:

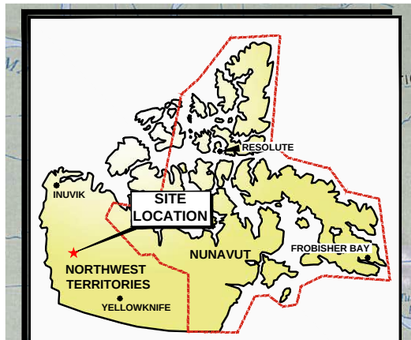
--- Insufficient data is available to complete the associated statistical test

1. Violations - Indicates whether significant linear regression results violate any assumptions of ordinary least squares regression based on formal shapiro-wilk test for normality and review of residuals plots. Violations are denoted by:
None = No assumption violations
L = violates assumption of linearity
N = violates assumption of normality of residuals
H = violates assumption of equal variance (homoscedasticity)
O = no assumption violation but regression may be influenced by outlier value(s)

2. Highlighting in site name and direction column indicates potential trends that are statistically significant based on all of the screening tools.

X 3. The p-value for the associated statistical test is less than or equal to 0.05 inidcating a statistically significant result.

Figures



KEY MAP OF
NORTHWEST TERRITORIES & NUNAVUT
NOT TO SCALE

SITE LOCATION

NORTHWEST TERRITORIES

GREAT BEAR LAKE

Smith Arm

Keith Arm

McTavish Arm

Leith Peninsula

Settlement Area

North Slave Region

FRANKLIN MOUNTAINS

MACKENZIE MOUNTAINS

CANYON RANGE

McCONNELL RANGE

CAMSELL RANGE

CARTAGE MOUNTAINS

Norman Wells

Tulita

Deline

Wrigley

Wha Ti

Rae-Edzo

Yellowknife

Rae Lakes

Wekweti

Cape MacDonnell

Eska Island

Ikanyo Island

Knife Point

Mackintosh Bay

Douglas Bay

Elache Point

Sayoyue and Ehdacho Historic Site (Ehdacho Unit)

Sayoyue and Ehdacho Historic Site (Sayoyue Unit)

Deline Fishery and Fort Franklin Historic Site

Fox Point

Manitou Island

Point Leith

Neiland Bay

Kokeragi Point

Deerpass Bay

Richardson Island

Sawmill Bay

Workman Island

Echo Bay

Dowdell Point

Perry Island

Judith Island

Ogilvie Island

Police Island

Winter Road

Heritage Trail

Camsell Bend

Ferry (Seasonal)

Christie Pass

Mt. Wilson 2276m

Mt. Pilka

Mt. Sk

Scanning source: MAPART PUBLISHING, 2002 EDITION

km 0 50 100 km

1:2000000

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

SITE LOCATION MAP

Date: 28-FEB-23	Drawn by: OTHERS	Edited by: KR	App'd by: N.T

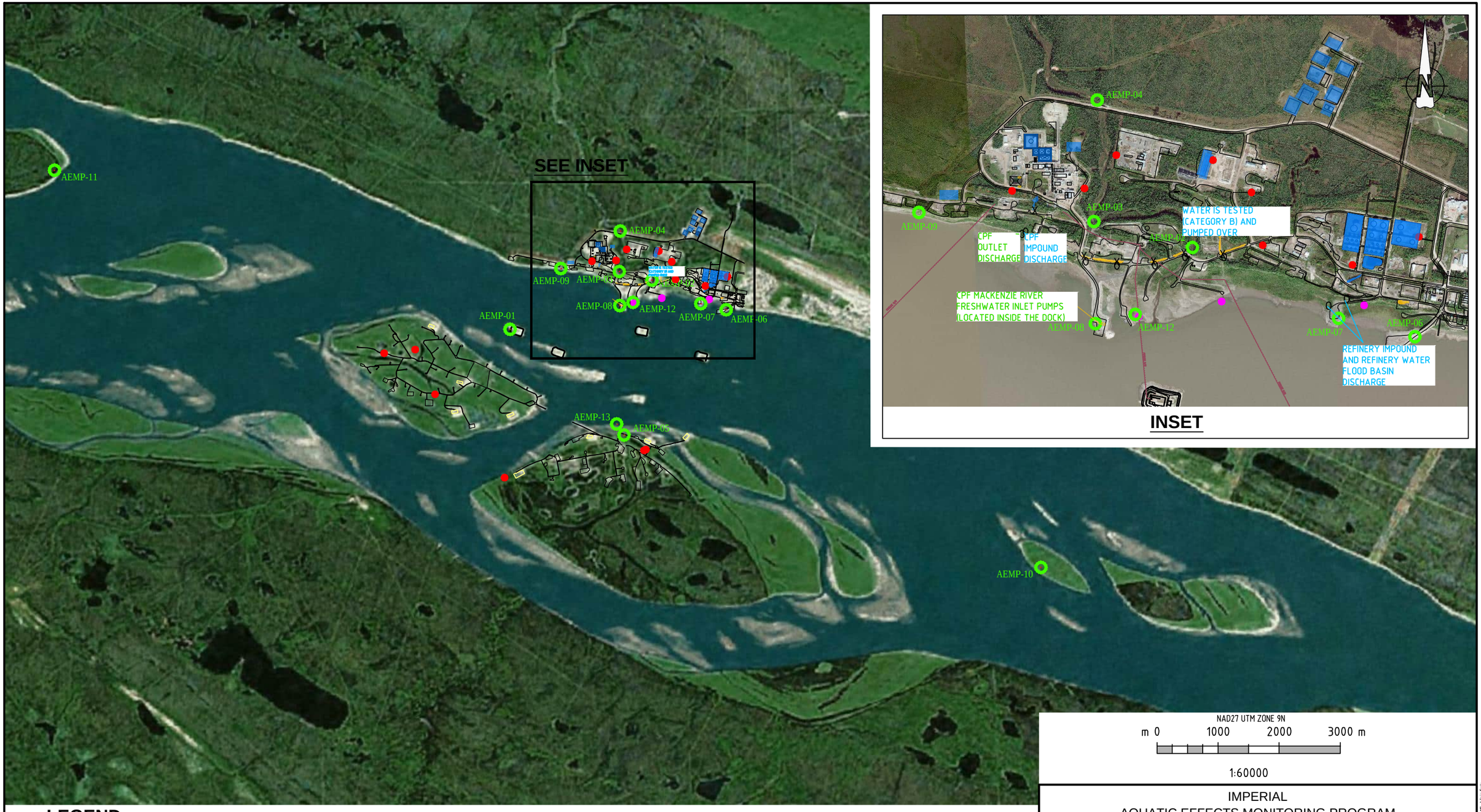
Project No. 417085-42051-22200

FIG No 1 | REV 0

"This drawing is prepared for the use of our customer as specified in the accompanying report.
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PLOT DATE & TIME: 28/2/2023 10:54:00 AM USER NAME: blair.finn
SAVE DATE & TIME: 14/4/2022 2:12:34 PM ISSUING OFFICE: CALGARY

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INSET

NAD27 UTM ZONE 9N

m 0 1000 2000 3000 m

1:60000

LEGEND

- SNP GROUNDWATER WELLS
- AEMP MONITORING LOCATIONS
- MOST ACTIVE NATURAL SEEPS
- X — CULVERT GATE/PUMP LOCATION
- O — END OF PIPE/CULVERT/PUMP DISCHARGE LOCATION
- CATEGORY A SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- CATEGORY B SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- UNDERWATER FLOW LINE

IMAGERY SOURCE:
1. MAIN PLAN - BING MAPS ©2020 MICROSOFT CORPORATION EARTHSTAR GEOGRAPHICS SIO.
2. INSET - PLANET LABS GEOMATICS CORPORATION, GEOTIFF 0.5m RESOLUTION, IMAGERY DATE AUGUST 6 AND 30, 2017.

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

SITE PLAN WITH SURFACE WATER MONITORING LOCATIONS

Date:	Drawn by:	Edited by:	App'd by:
28-FEB-23	OTHERS	KR	N.T

Project No. 417085-42051-22200

FIG No 2 | REV 0

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ISSUING OFFICE: ECAD

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LEGEND

- SNP GROUNDWATER WELLS
- AEMP MONITORING LOCATIONS
- MOST ACTIVE NATURAL SEEPS
- X — CULVERT GATE/PUMP LOCATION
- O — END OF PIPE/CULVERT/PUMP DISCHARGE LOCATION
- CATEGORY A SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- CATEGORY B SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- PIPELINE/UNDERWATER FLOW LINE

IMAGERY SOURCE:
1. PLANET LABS GEOMATICS CORPORATION, GEOTIFF 0.5m RESOLUTION, IMAGERY DATE AUGUST 6 AND 30, 2017.

NAD27 UTM ZONE 9N

m 0 50 100 250 m

1:5000

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

MAINLAND EAST DETAILED SITE PLAN

Date:	Drawn by:	Edited by:	App'd by:
28-FEB-23	OTHERS	KR	N.T

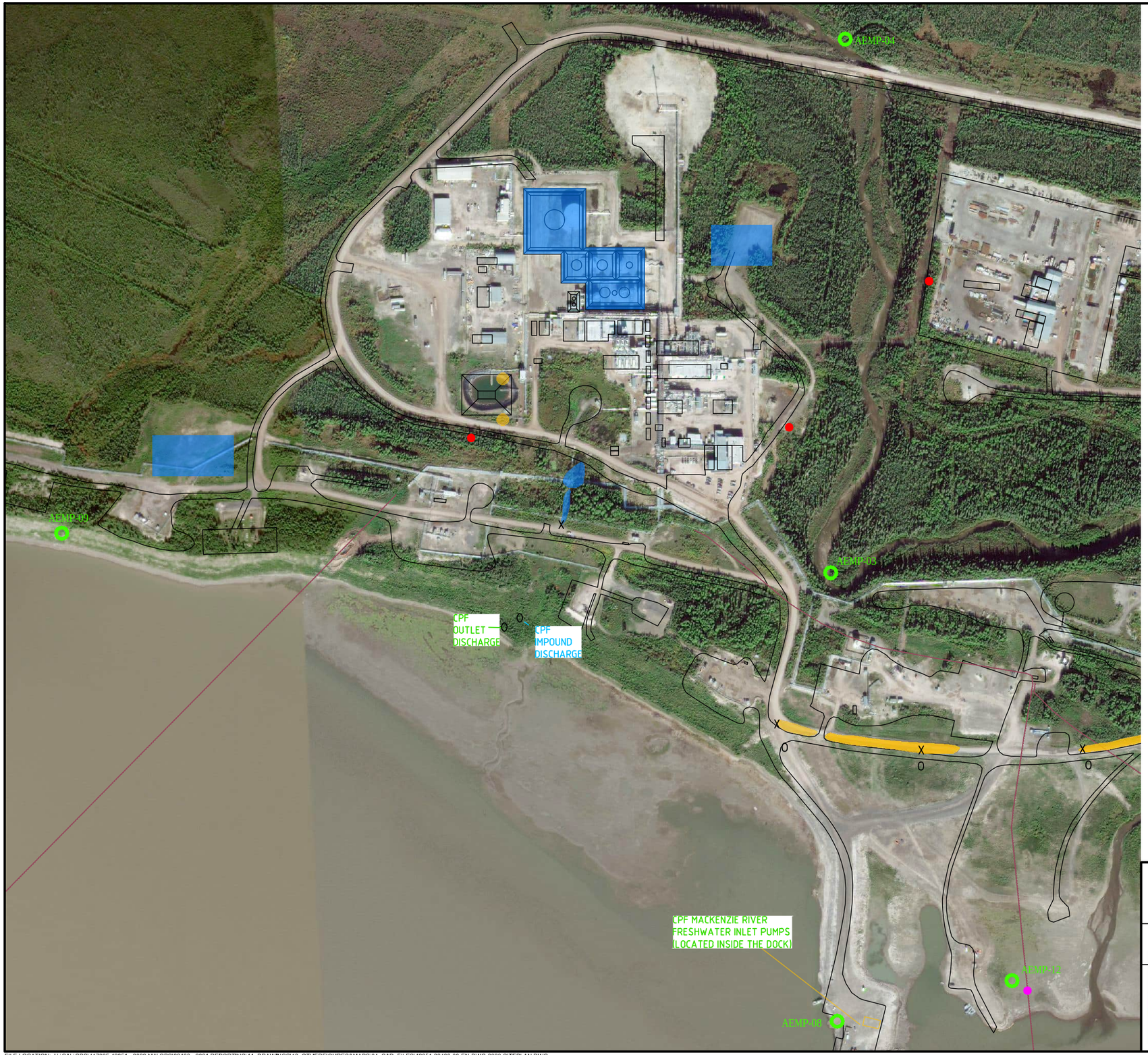
Project No. 417085-42051-22200

FIG No 3 | REV 0

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LEGEND

- SNP GROUNDWATER WELLS
- AEMP MONITORING LOCATIONS
- MOST ACTIVE NATURAL SEEPS
- X — CULVERT GATE/PUMP LOCATION
- O — END OF PIPE/CULVERT/PUMP DISCHARGE LOCATION
- CATEGORY A SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- CATEGORY B SURFACE WATER RUN-OFF COLLECTION LOCATIONS
- PIPELINE/UNDERWATER FLOW LINE

IMAGERY SOURCE:
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NAD27 UTM ZONE 9N

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1:5000

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

MAINLAND WEST DETAILED SITE PLAN

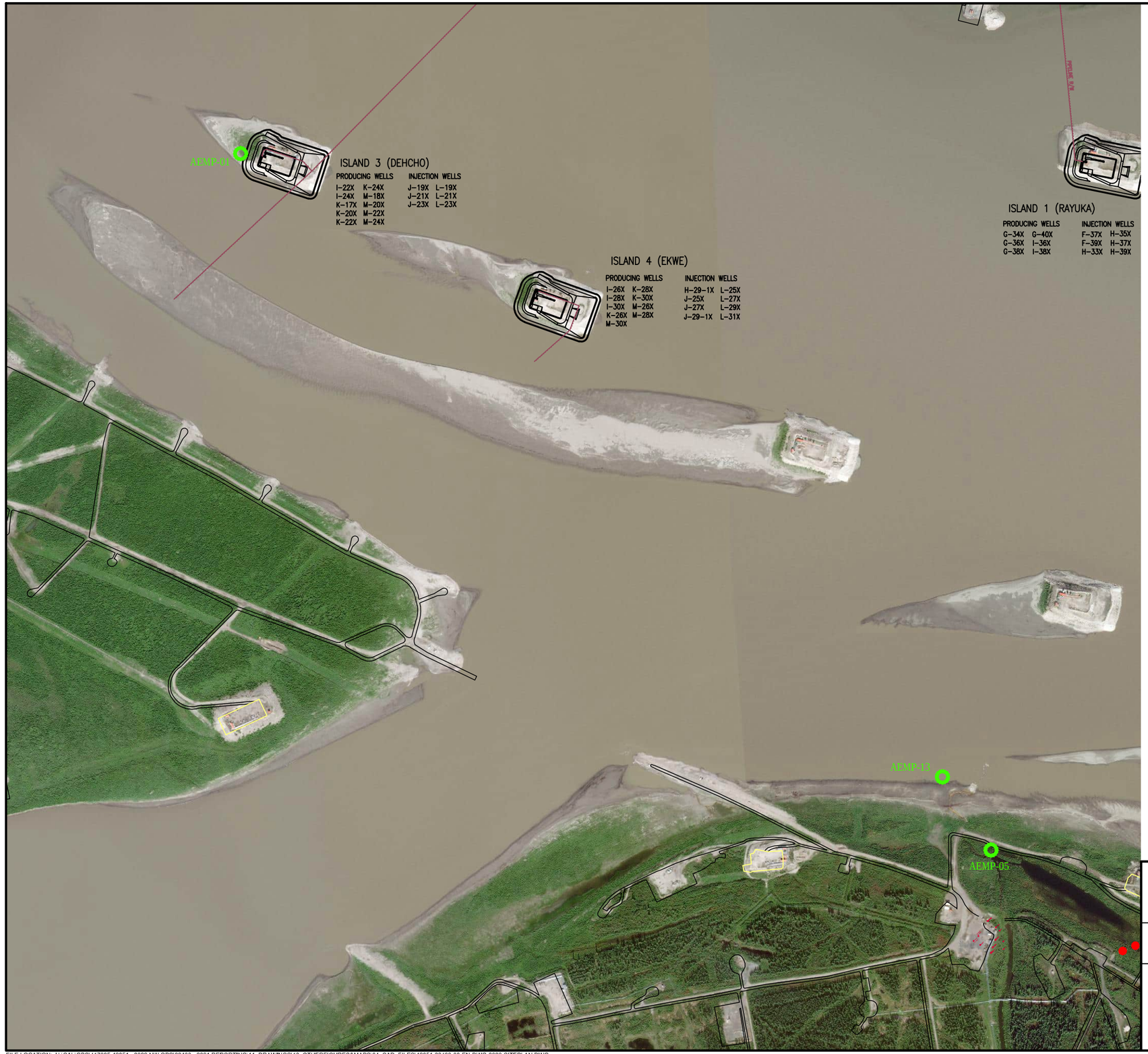
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28-FEB-23	OTHERS	KR	N.T

Project No. 417085-42051-22200

FIG No 4 | REV 0

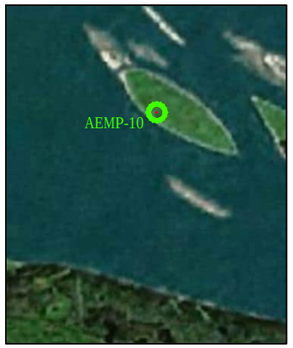
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AEMP-11 DETAIL



AEMP-10 DETAIL

LEGEND

- SNP GROUNDWATER WELLS
- AEMP MONITORING LOCATIONS
- MOST ACTIVE NATURAL SEEPS
- PIPELINE/UNDERWATER FLOW LINE

IMAGERY SOURCE:
1. DETAILS - BING MAPS ©2020 MICROSOFT CORPORATION EARTHSTAR GEOGRAPHICS SIO.
2. MAIN PLAN - PLANET LABS GEOMATICS CORPORATION, GEOTIFF 0.5m RESOLUTION, IMAGERY DATE AUGUST 6 AND 30, 2017.

NAD27 UTM ZONE 9N

m 0 100 200 300 400 500 m

1:10000

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

ISLANDS DETAILED SITE PLAN

Date:	Drawn by:	Edited by:	App'd by:
28-FEB-23	OTHERS	KR	N.T

Project No. 417085-42051-22200

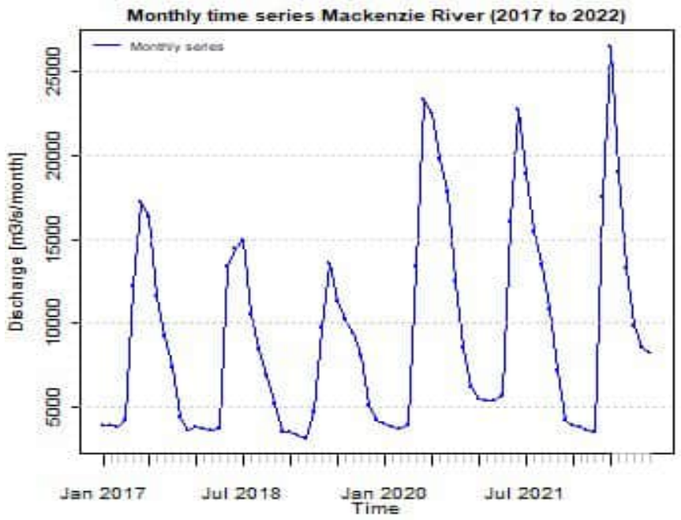
FIG No 5

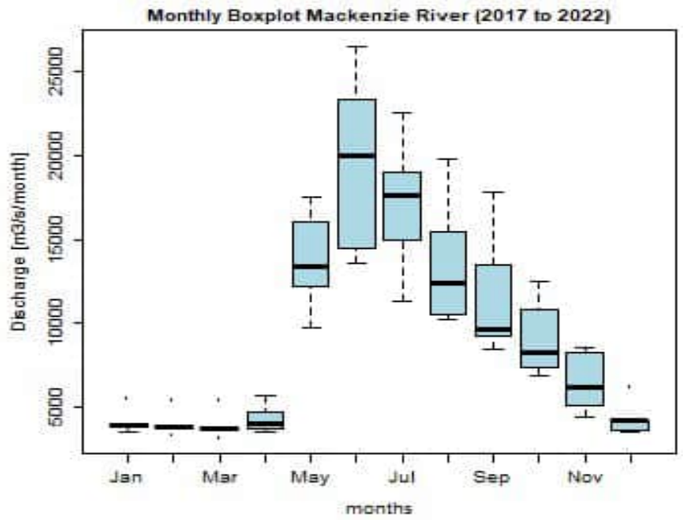
REV 0

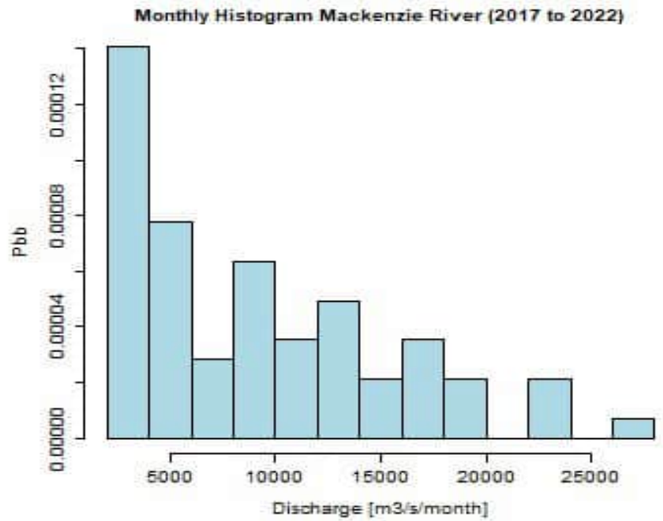
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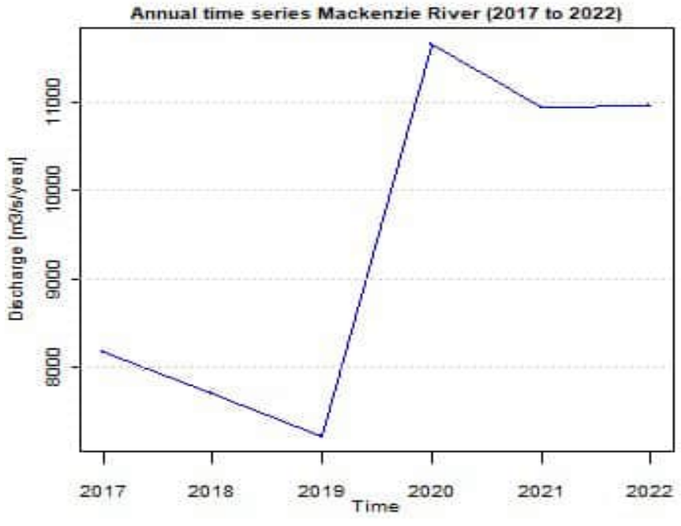
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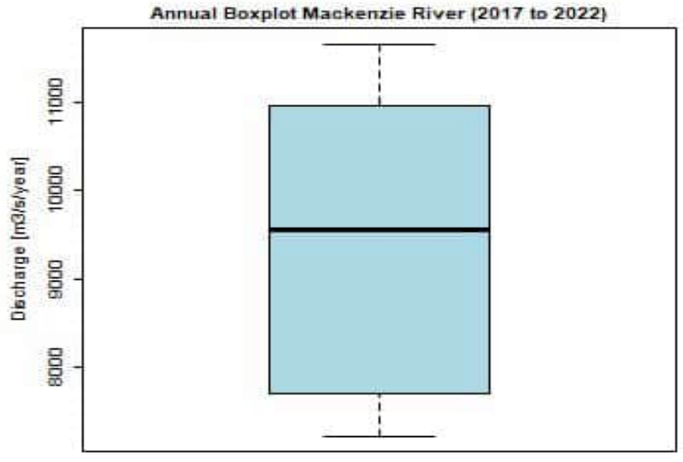
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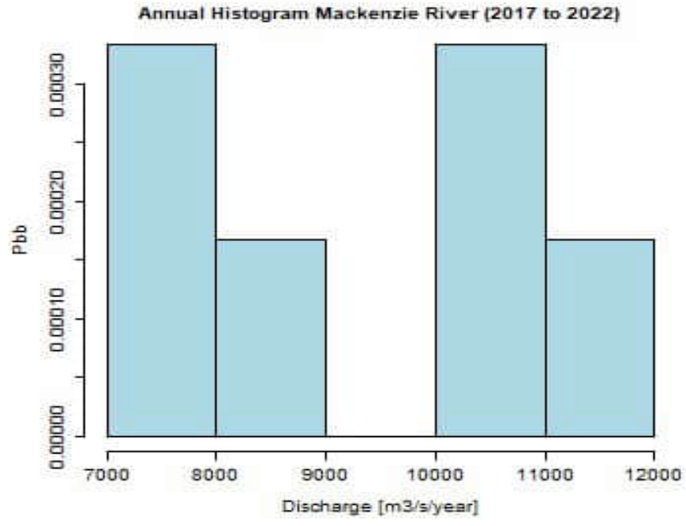












Notes:
Top row of figures summarize average daily flow characteristics between 2017 and 2022 and the bottom row summarizes monthly flow characteristics.
Box plots in the middle column provide the median discharge (thick horizontal line), upper and lower quantiles (limits of each box), and minimum/maximum discharges (error bars outside of each box) for each corresponding category.
Pbb = probability of measuring a given range of discharges at the site between 2017 and 2022.

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

MACKENZIE RIVER AT NORMAN WELLS (STATION 10KA001)
DISCHARGE SUMMARY (2017 TO 2022)

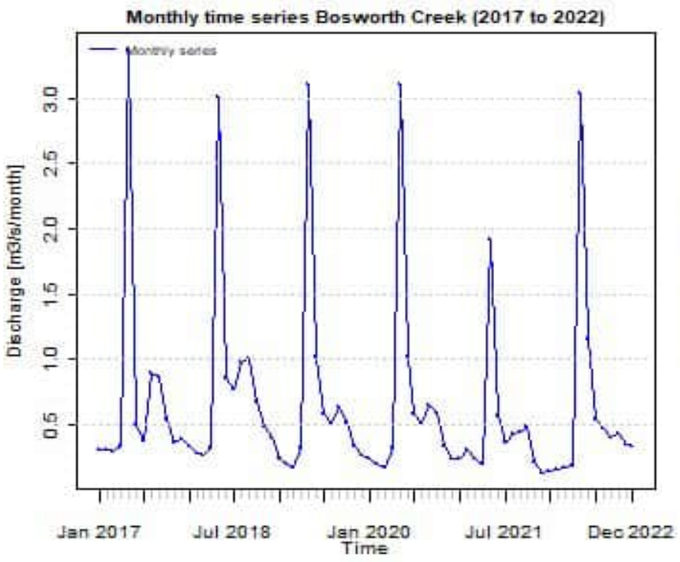
Date : 22-FEB-2023	Drawn by: GY	Edited by: NT	App'd by: CM

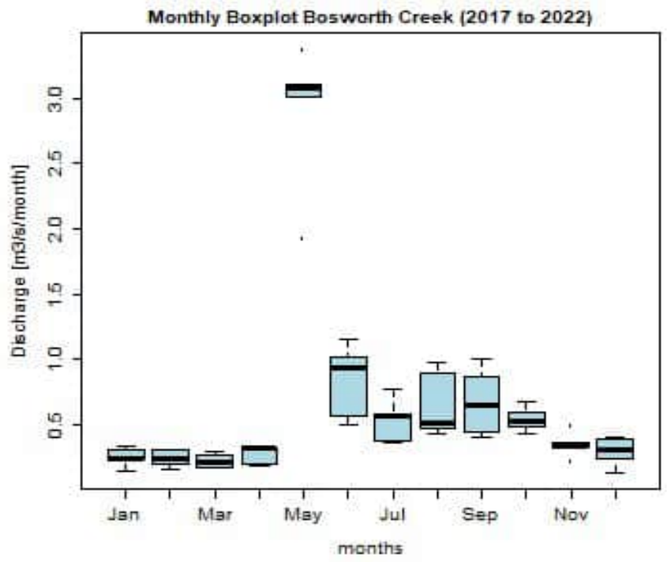
Worley Project No. 417085-42051-22200

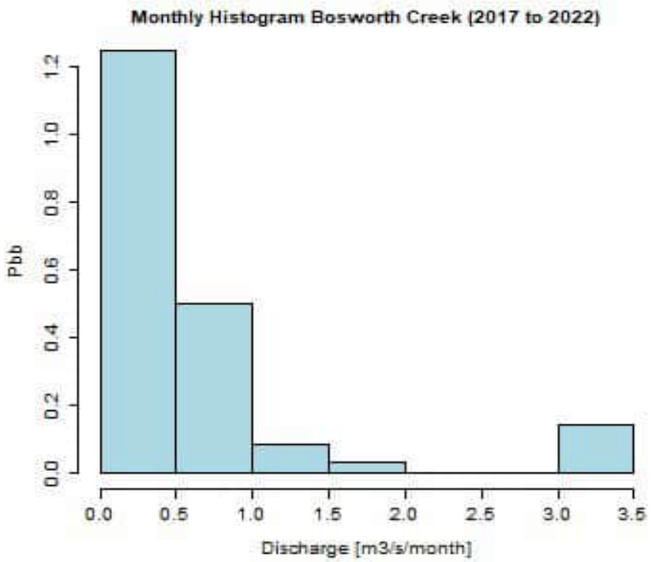
FIGURE: 6 REV 0

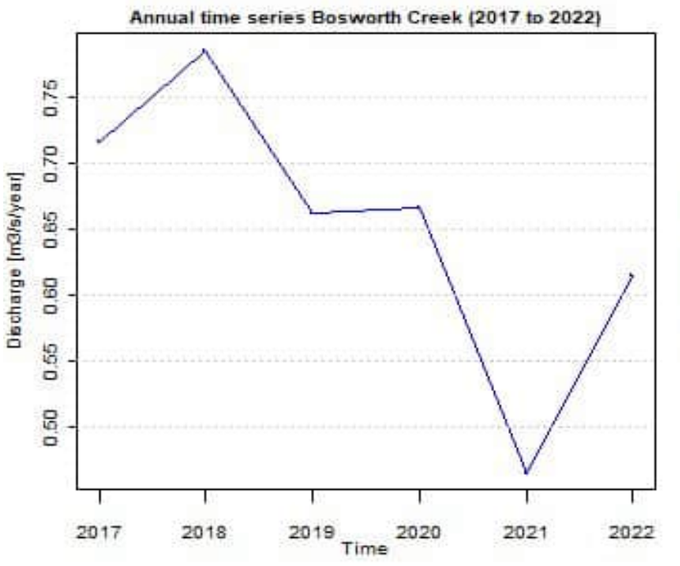
"This drawing is prepared for the use of our customer as specified in the accompanying report
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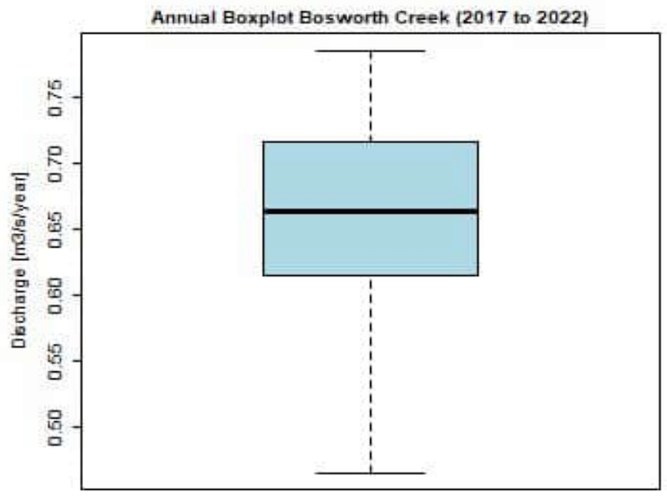
FILE LOCATION: U:\CAL\GBS\417011-00046\20100\12.0_Reports\12.3_Backend\417011-00046-20100 summary report figures.xlsx

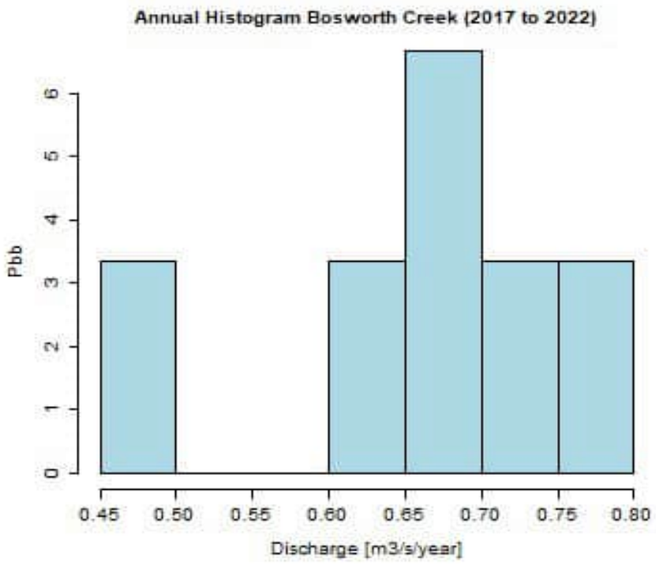












Notes:
Top row of figures summarize average daily flow characteristics between 2017 and 2022 and the bottom row summarizes monthly and annual flow characteristics.
Box plots in the middle column provide the median discharge (thick horizontal line), upper and lower quantiles (limits of each box), and minimum/maximum discharges (error bars outside of each box) for each corresponding category.
Pbb = probability of measuring a given range of discharges at the site between 2017 and 2022.

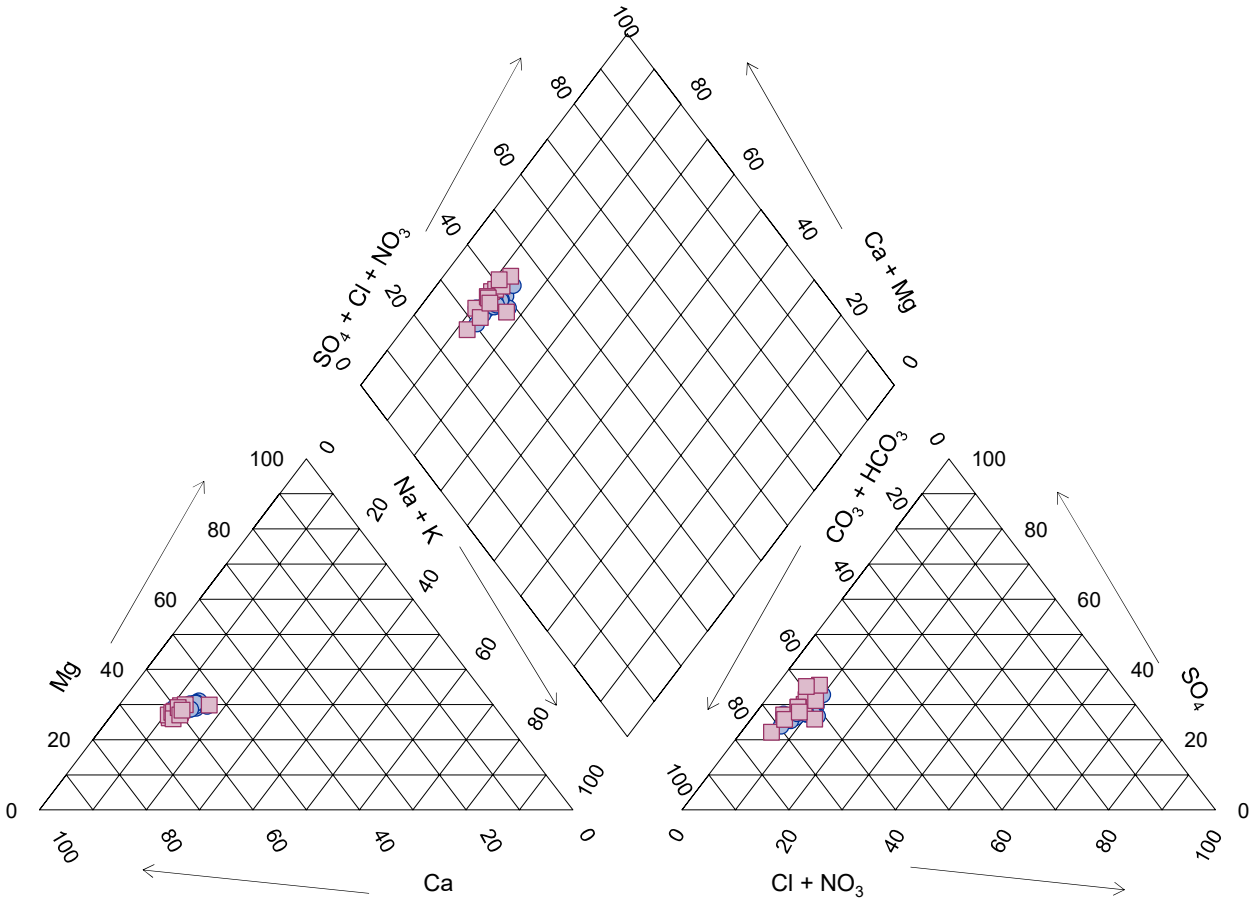
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

BOSWORTH CREEK NEAR NORMAN WELLS (STATION 10KA007)
DISCHARGE SUMMARY (2017 TO 2022

Date : 22-FEB-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: 7	REV 0

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FILE LOCATION: U:\CAL\GBS\417011-00046\20100\12.0_Reports\12.3_Backend\417011-00046-20100 summary report figures.xlsx



Legend:

AEMP-06 AEMP-10

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

PIPER PLOT
MACKENZIE RIVER - UPSTREAM SITES

Date:	Drawn by:	Edited by:	App'd by:
23-Feb-23	GY	NT	CM

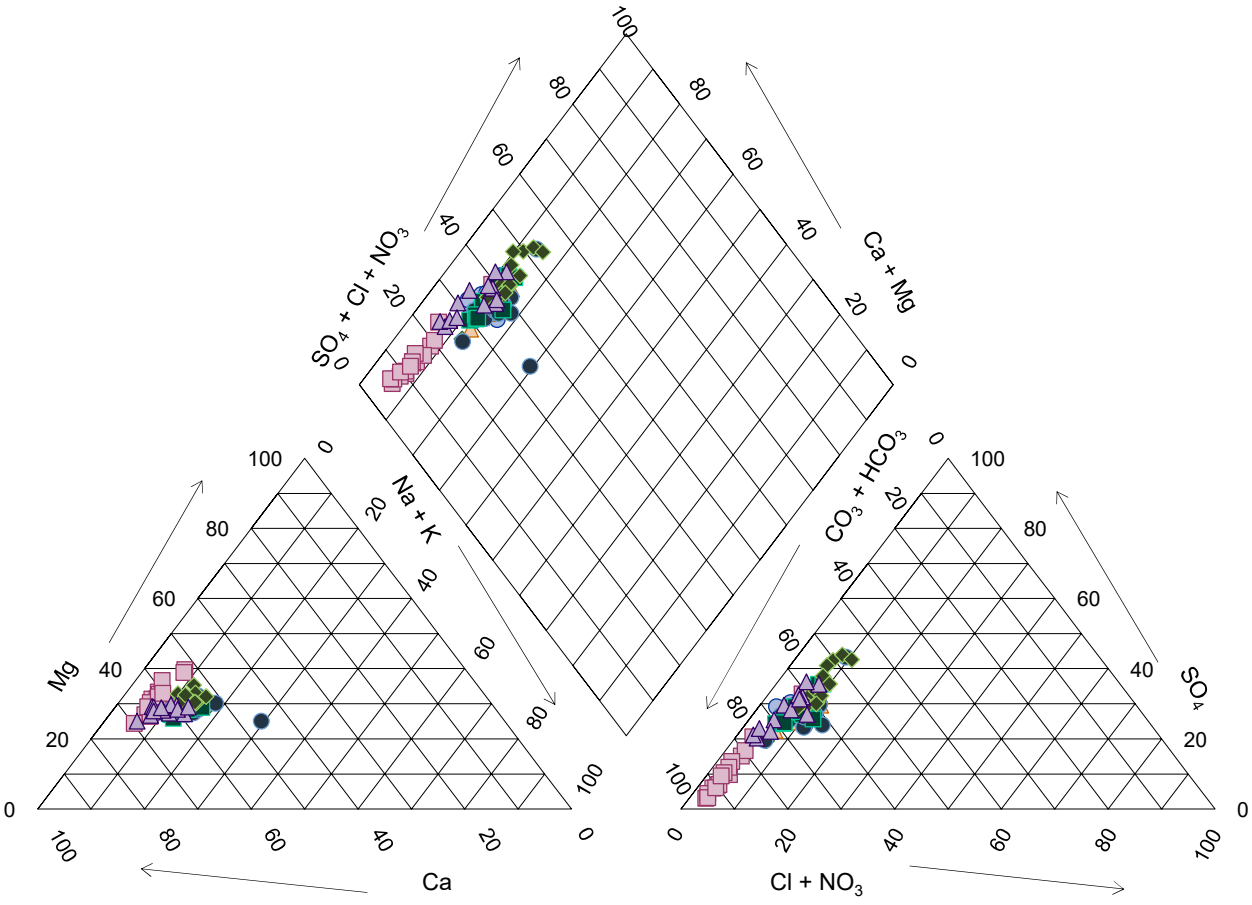
WorleyParsons Project No.
417085-42051-22200

FIG No. 8
REV 0

OneWay™ to zero harm

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FILE DIRECTORY: U:\CAL\GBS\417085-42051 - 2022 NW OPS\22200 - AEMP SW SAMPLING\02_RPTS\2022 AEMP REPORT\FIGURES\ FILE LOCATION:



Legend:

- AEMP-01
- AEMP-05
- AEMP-07
- AEMP-08
- AEMP-09
- AEMP-11
- AEMP-12
- AEMP-13

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

PIPER PLOT
MACKENZIE RIVER - DOWNSTREAM SITES

Date:	Drawn by:	Edited by:	App'd by:
23-Feb-23	GY	NT	CM

WorleyParsons Project No.
417085-42051-22200

FIG No. 9
REV 0

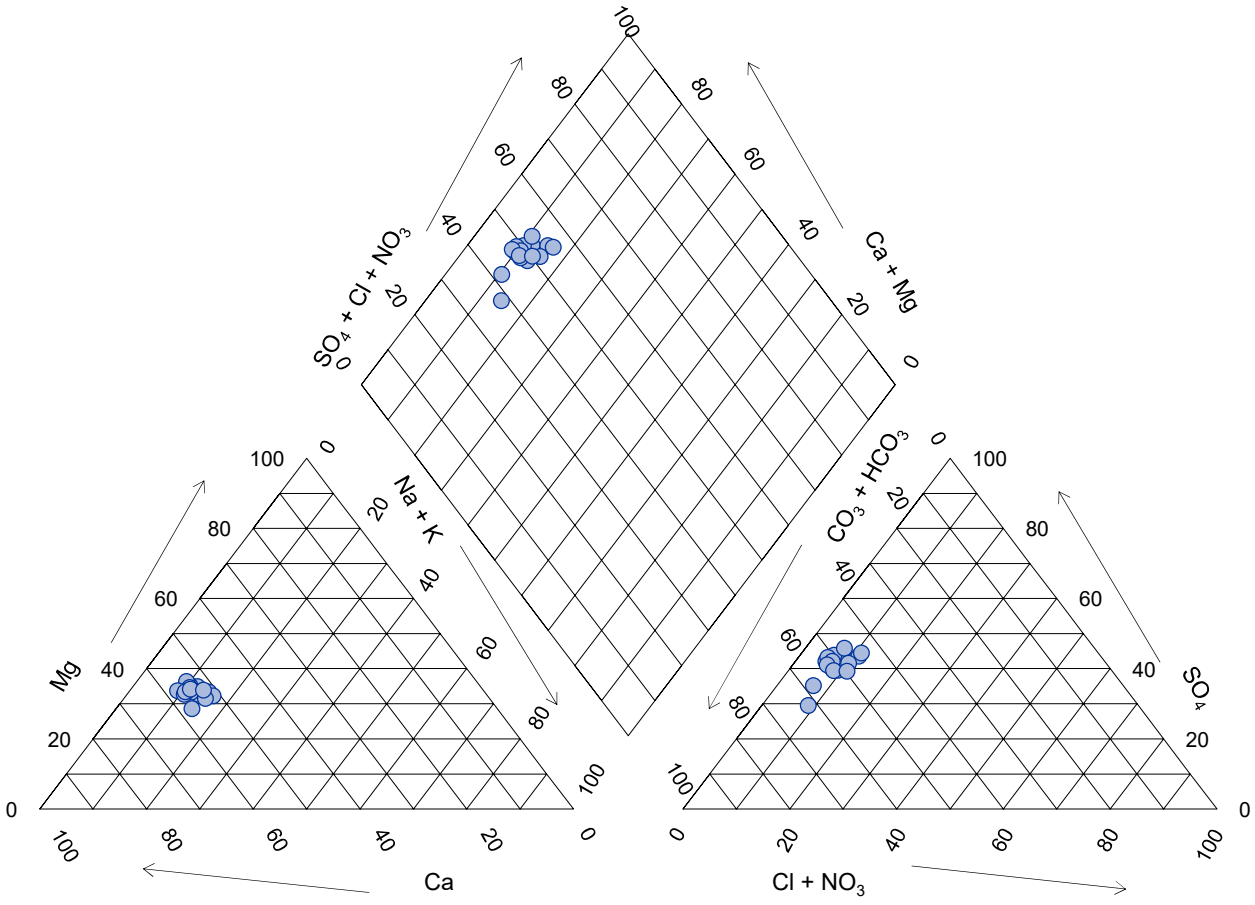
OneWay™ to zero harm

TRS Advisian

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FILE DIRECTORY: U:\CAL\GBS\417085-42051 - 2022 NW OPS\22200 - AEMP SW SAMPLING\02_RPTS\2022 AEMP REPORT\FIGURES\

FILE LOCATION:



Legend:

AEMP-04

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

PIPER PLOT
BOSWORTH CREEK - UPSTREAM

Date:	Drawn by:	Edited by:	App'd by:
23-Feb-23	GY	NT	CM

WorleyParsons Project No.
417085-42051-22200

FIG No. **10** REV **0**

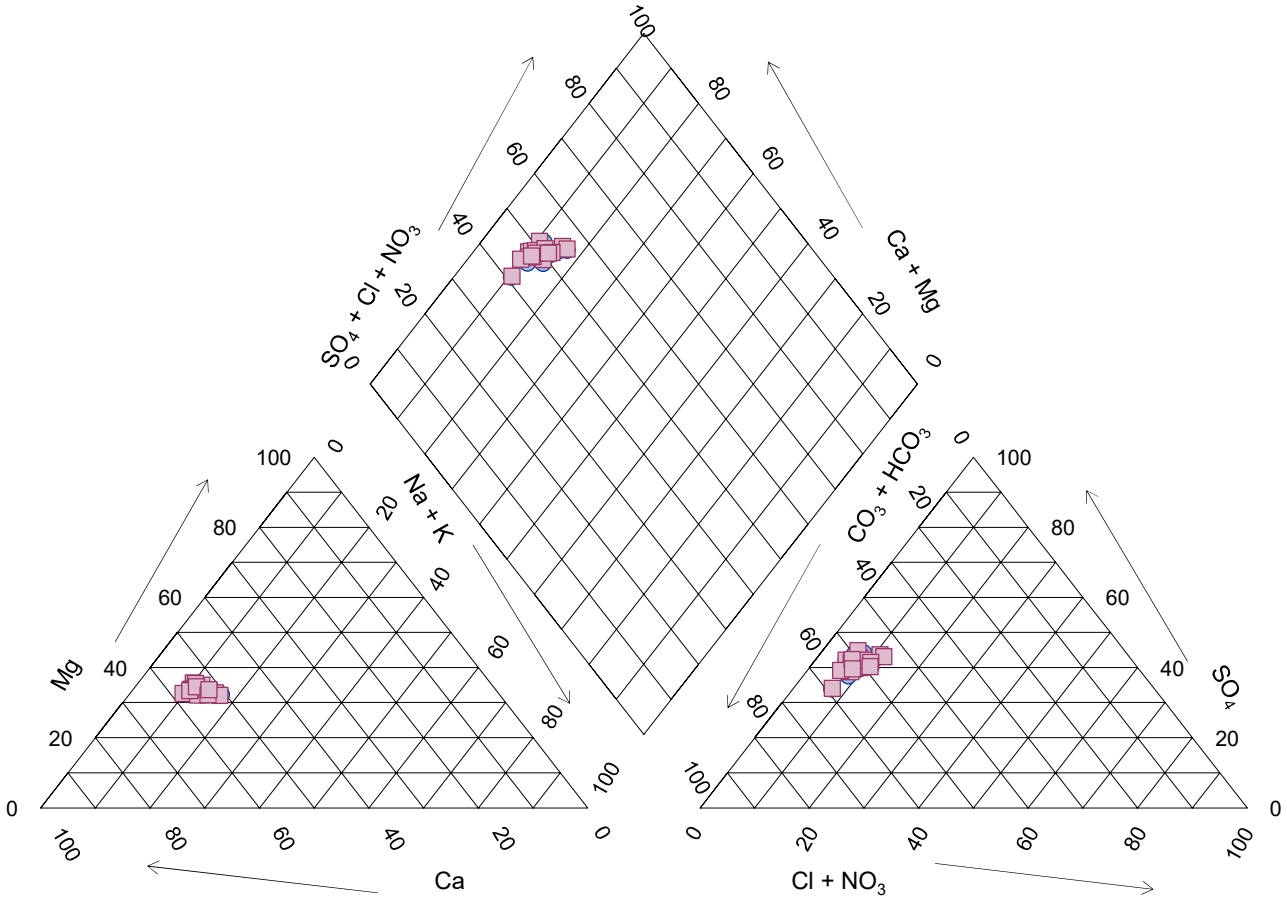
OneWay™ to zero harm

TRS Advisian

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FILE DIRECTORY: U:\CAL\GBS\417085-42051 - 2022 NW OPS\22200 - AEMP SW SAMPLING\02_RPTS\2022 AEMP REPORT\FIGURES\

FILE LOCATION:



Legend:

AEMP-02 AEMP-03

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

PIPER PLOT
BOSWORTH CREEK - DOWNSTREAM

Date:	Drawn by:	Edited by:	App'd by:
23-Feb-23	GY	NT	CM

WorleyParsons Project No.
417085-42051-22200

FIG No. 11 REV 0

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Appendix A
Limitation of Liability, Scope of Report and Third-Party Reliance

Limitation of Liability, Scope of Report, and Third Party Reliance

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The investigation undertaken by TRSA with respect to this report and any conclusions or recommendations made in this report reflect TRSA's judgment based on the site conditions observed at the time of the site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for the specific application to this site and it is based, in part, upon visual observation of the site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future site conditions, portions of the site which were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site, substances addressed by the investigation may exist in areas of the site not investigated and concentrations of substances addressed which are different than those reported may exist in areas other than the locations from which samples were taken.

If site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions, and recommendations in this report may be necessary.

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Appendix B
Field Procedures

Scope The following procedure is applicable for low-level mercury sampling in surface waters.

1. SAFETY CONSIDERATIONS

This Preferred Operating Procedure (POP) does not address all of the safety issues associated with this task or with other activities that may be undertaken in conjunction with this task. Refer to the WorleyParsons safety management system and the site-specific hazard assessment to identify the potential hazards, mitigations, and controls.

2. MATERIALS AND EQUIPMENT

The following equipment is required for the completion of this task:

- Disposable nitrile gloves (powder less) or non-talc gloves.
- Sample bottles provided by the accredited laboratory; should be glass or Teflon (confirm with laboratory).
- Syringe (used when dissolved mercury analysis is required).
- Syringe filter disks (used when dissolved mercury analysis is required).
- Preservative (provided by the laboratory).
- Mercury-free de-ionized water (provided by the laboratory).

3. PROCEDURES

1) Pre-label the outer bag, at a minimum identifying the sampling site; additional information can be added later.

2) Designate one individual as ‘dirty hands’ and the other individual as ‘clean hands’. Both individuals must wear nitrile or non-talc gloves. ‘Clean hands’ touches only the inner bag and the sample bottle from this point on. If dissolved low-level mercury is required, ‘clean hands’ will also touch the syringe and filter (see steps 8 to 11).

3) ‘Dirty hands’ opens the sample cooler, removes a doubly-bagged sample container, and opens the outer re-sealable plastic bag. ‘Clean hands’ reaches into the outer bag, opens the inner Ziploc bag, removes the sample container, and folds down the inner bag. ‘Dirty hands’ then re-seals the outer bag to prevent entry of any contaminant before inner bag is replaced with sample.

4) ‘Clean hands’ removes the lid from the sample container and holds the lid in one hand. With the other hand ‘clean hands’ obtains the sample by submerging the sample container approximately 30 cm, or mid-column, of the water. Care should be taken to ensure hands are downstream from the inlet of the sample container. The sample container should be filled to capacity, leaving only a small headspace. ‘Clean hands’ will secure the lid tightly. If the sample is to be persevered in the field, ‘dirty hands’ will pour the preservative into the sample container, which is held by ‘clean hands’, being careful not to touch the sample container with any part of the vial holding the preservative; ‘clean hands’ will secure the lid tightly and mix the sample by inverting the sample container several times.

5) ‘Dirty hands’ retrieves the Ziploc bags and opens the outer bag.

6) ‘Clean hands’ reaches inside and places the sample container inside tine inner bag. The inner bag is sealed.

7) ‘Dirty hands’ seals the outer bags and places the bagged sample into the shipping cooler.

8) Repeat steps 2 to 8 for each sample site.

9) If dissolved low-level mercury concentration is required, follow the syringe procedure as outlined in the Field Filtration POP.

10) ‘Dirty hands’ opens the package container the syringe and filter disk. ‘Clean hands’ removes the syringe and filter disk. The filter disk is twisted onto the syringe tip.

11) Fill syringe with sample water and push volume through syringe filter to rinse.

12) ‘Clean hands’ opens sample bottle, fills the syringe with sample, and filters into sample container. Replace lid on bottle after each syringe is filtered. Repeat until sample container is full or filter becomes clogged. If filter becomes clogged, replace the filter with a clean filter and repeat. ‘Clean hands’ will secure the lid tightly. If the sample is to be persevered in the field, ‘dirty hands’ will pour the preservative into the sample container, which is held by ‘clean

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hands', being careful not to touch the sample container with any part of the vial holding the preservative; 'clean hands' will secure the lid tightly and mix the sample by inverting the sample container several times.

4. TECHNICAL CONSIDERATIONS

- Two individuals are required to collect low-level mercury samples. One individual will be considered the 'dirty hands', and the second individual will be the 'clean hands'. The "clean hands" individual will be responsible for handling the sample container and filling the sample container from the sample source (river, ditch, lake, wetland, spigot, pump outlet, scooper, etc.). The "dirty hands" individual will be responsible for handling equipment and any other activities which do not involve direct contact with the sample or sample container.
- All sampling equipment and sample containers must be non-metallic and free of any material which might contain trace metals. Low-level mercury sample containers often are made of glass or Teflon. Other plastic bottles (other than Teflon or other fluoropolymers) are unacceptable as mercury may diffuse through, adhere to, or leach from the plastic surfaces.
- Sampling personnel will wear nitrile or non-talc disposable gloves. Gloves will be worn at all times when handling sample bottles or sampling equipment. Gloves will be removed when sample collection is complete, and new gloves will be used when a sample is collected from next the site.
- To prepare the field blank, the mercury-free water (which is provided by the laboratory) should contact all of the sampling equipment to be used for collecting normal samples (e.g. syringe barrel and plunger).
- Low-level mercury samples can be preserved at the laboratory or in the field. If preservation is to occur in the field, the laboratory will provide the proper preservatives.
- If samples are not field preserved, they must be express shipped to the laboratory so that they are received within 24 hours of sampling. If samples are field preserved, express shipping is not required.
- At least 200 ml of sample must be collected. Samples must be placed into double Ziploc bags immediately after collection following the 'Clean hands-Dirty hands' procedure, and only the outside bag should be labelled.
- Be careful not to breathe onto samples as detectible amounts of mercury can be emitted from certain tooth fillings.

5. ADDITIONAL REFERENCES

U.S. EPA., 1996. Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels. 42 pp.

6. CONTROL

This POP has been prepared and reviewed for use in the WorleyParsons Infrastructure & Environment Division. Any inquiries regarding this POP should be directed to the undersigned.

Prepared By:

Patrick Chahil, M.E.S.

Reviewed By:

Michael Vander Meulen, Ph.D. P.Biol.

Lucie Sliva, M.Sc. P.Biol.

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Scope The following procedure is applicable for surface water grab sampling.

1. SAFETY CONSIDERATIONS

This Preferred Operating Procedure (POP) does not address all of the safety issues associated with this task or with other activities that may be undertaken in conjunction with this task. Refer to the WorleyParsons safety management system and the site-specific hazard assessment to identify the potential hazards, mitigations, and controls.

2. MATERIALS AND EQUIPMENT

The following equipment is required for the completion of this task:

- Labels, pen, and Sharpie® permanent marker.
- Analytical schedule.
- Sample and QA/QC bottles (provided by the accredited laboratory).
- Field data sheets or log books.
- Meters for in situ measurement of field parameters.
- GPS unit.
- Disposable nitrile gloves.
- Coolers.
- Zip-lock bags.
- Ice in zip-lock bags/ice packs (for sampling at outside temperatures above freezing).
- Tinfoil.
- Bubble wrap.

3. PROCEDURES

1) Label sample bottles before sampling. At a minimum, include the site identifier. The date is also useful to include on the label, but not necessary.

2) Grab samples should be collected in a particular order. Preferably start with field blanks. These should be followed by ultra-clean samples (mercury or bacteria). For ultra-clean protocols (e.g. “clean-hands dirty-hands”) follow instructions provided by laboratory. Any remaining samples (nutrients, metals, PAHs, BTEX, etc.) and associated replicates can be sampled in any order.

3) It is best to have one person collect the grab samples, and the other person handing the bottles to the sampler. Both should wear clean gloves which need to be changed between stations. The person handing the bottles can ensure that the contents on the sample bottle label are correct, add the preservative to the sample, if applicable, and ensure that the lid is tightened securely on the sample container.

4) For watercourses (flowing water), the sampler will wade in and choose a suitable sampling location, preferably near the middle of the watercourse. Ensure that the sample location is away from any obstacles, such as rocks, debris, and sediment deposits. Once at the sampling location, minimize movement to prevent the agitation of substrate sediments. For waterbodies (standing water), carefully wade to the sample location, if possible. If sampling from a boat or canoe, lower the anchors and ensure that the boat does not drift. Sample on one side of the boat, away from the anchors, as that area was disturbed. Ensure that the other person is on the other side boat/canoe to provide balance.

5) Lower the sampling bottle to a depth of 30 cm, or mid-column if the depth is less than 30 cm, until it is completely submerged. For watercourses, ensure that the sample is taken upstream from the sampler to avoid sampling water that may have been disturbed while wading to the sampling location.

6) Triple rinse all plastic sample containers. Ensure that the sample container is filled to approximately 20% of capacity, the lid is tightened securely, and the water is shaken inside such that it comes in contact with the entire inside surface

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of the sample container. Discard rinsate downstream if in flowing waters, or on the opposite side of the boat/canoe in lakes or wetlands. Repeat three times. Amber glass bottles do not need to be rinsed.

7) Lower the sample bottle to a depth of 30 cm, or mid-column if the depth is less than 30 cm, until it is completely submerged. Allow the bottle to fill with water sample until there are no air bubbles remaining. Samples requiring preservation must have some head space and do not need to be filled completely. Some sample bottles come pre-charged with a preservative capsule; ensure that the preservative is still in the sample bottle after sampling.

8) If a preservative is required, add it to the sample and tighten the cap securely. Otherwise, samples bottles can be capped underwater. Filter and/or add preservatives to appropriate bottles, immediately, or as soon as possible after sample collection. If samples are to be laboratory-filtered, ship them as soon as possible and ensure they arrive in the laboratory well within the specified hold time for un-filtered and un-preserved samples. Unfiltered chlorophyll a samples should be stored in dark amber bottles or plastic bottles wrapped in tinfoil to minimize light exposure.

9) Hold sample bottle caps lid-down while filling sample bottle and cap bottles immediately before and after filling and preserving. Avoid touching lids and mouths of bottles.

10) Place sampling bottles upright in cooler for transport. Ensure that glass bottles are wrapped in bubble wrap and do not contact each other directly.

11) During warmer seasons (e.g. summer), place ice bags in the cooler or shipping container immediately. As general guideline, the volume of sealed ice in a cooler should be equivalent to the volume of sampled water and greater during hot summer days or samples which require longer transport distances. In the winter, use bubble wrap to surround the samples bottles. The bubble wrap will act as an insulator and keep the temperature inside the cooler, warmer than the ambient air temperature.

4. TECHNICAL CONSIDERATIONS

1) BTEX and PAH samples require no head space. This can be achieved by capping the sample bottles under water.

2) Grab water samples can be taken by wading into the water, from a boat, bridge or dock, and from the floats on an airplane/helicopter during the open-water season. During the winter, samples may be taken through the ice.

3) Stream and ditch samples should be collected at mid-stream, unless otherwise specified in the study design. Specific sampling locations will be determined from site reconnaissance.

4) For multi-year/season programs, samples should be taken from the same location. GPS unit or marker can be used to identify the sampling location. If it is not possible for a sample to be taken at the original sampling location, document the change in location and the reason for the change.

5) Samples must arrive at the laboratory as close to 4°C as possible and within 48 hours of sampling.

6) It is a sampler's responsibility to collect samples as directed in the program/study design, note any unusual conditions at a site, and minimize field error by adhering to relevant POPs.

5. ADDITIONAL REFERENCES

AENV (Alberta Environment). 2006. Aquatic Ecosystems Field Sampling Protocols. Prepared by Alberta Environment. March 2006. W0605

CCME (Canadian Council of Ministers of the Environment). 2011. Protocols Manual for Water Quality Sampling in Canada. PN 1461, ISBN 978-1-896997- 7-0. 186 pp.

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6. CONTROL

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Prepared By:

Patrick Chahil, M.E.S.

Reviewed By:

Michael B. Vander Meulen, Ph.D. P.Biol.

Lucie Sliva, M.Sc. P.Biol.

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Scope The following procedure is applicable for field filtration of surface water quality samples.

1. SAFETY CONSIDERATIONS

This Preferred Operating Procedure (POP) does not address all of the safety issues associated with this task or with other activities that may be undertaken in conjunction with this task. Refer to the WorleyParsons safety management system and the site-specific hazard assessment to identify the potential hazards, mitigations, and controls.

2. MATERIALS AND EQUIPMENT

The following equipment is needed to complete this task:

- Disposable nitrile gloves.
- Sample containers.

Syringe Filtering

- Disposable filter disk (0.45 µm pore size).
- Disposable syringe compatible with filter disk.

Disposable Bailer Filtering

- Disposable capsule filters (0.45 µm pore size).
- Disposable bailer and spigot.
- Clean flexible tubing which fits inside the outlet of bailer or funnel.
- Waterra cutters.

3. PROCEDURES

Syringe Filtering

1) Put on clean nitrile gloves before handling sampling equipment.
2) Remove the syringe from packaging and rinse the barrel of the syringe three times with ambient surface water.
3) Fill the barrel of the syringe with sample water, and then screw the disposal filter disk firmly to the syringe tip.
4) Using the plunger of the syringe, force the sample water through the filter disk and into the sample container. Ensure that the sample container is filled to approximately 20% of capacity and the lid tightened securely. Shake the filtered sample water so that it comes in contact with the entire inside surface of the sample container. Discard filtered sample water rinsate downstream if in flowing waters, or on the opposite side of the boat/canoe in lakes or wetlands. Repeat three times.
5) Remove the filter disk and plunger, fill the barrel of the syringe with sample water, and use the plunger of the syringe to force sample water through the filter disk into the rinsed sample container. Repeat as needed until the sample container is filled. Ensure that the sample container lid is secured tightly, and that the container is labelled.
6) If required, preserve samples using laboratory-supplied preservatives according to laboratory instructions.

Disposable Bailer Filtering

1) Put on clean nitrile gloves before handling sampling equipment.
2) Use Watera cutters to cut the top half (approximately 50 cm) from the bailer to create a device that can be used as a funnel. Ensure that the portion with the ball, which prevents water from leaking from the bailer, is intact.
3) Rinse the bailer three times with sample water and discard rinsate downstream in flowing waters, or on the opposite side of the boat/canoe in lakes or wetlands.
4) Use Watera cutters to cut an appropriate length (5-10 cm) of clean PVC tubing. Attach one end of the PVC tubing to the extrusion on the curved end of the capsule filter. Place the other end firmly inside the spigot that accompanies the bailer. The open end of the spigot will be placed inside the outlet from the bailer.
5) Fill the bailer with sample water and run through filter apparatus once to rinse and ensure proper filter function. Water should be run through the filter apparatus for approximately 20 seconds.
6) Ensure that water discharging from the flat end of the capsule filter is used to fill the sample container.

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7) Rinse the sample container three times with filtered sample water. Each time, ensure that the sample container is filled to approximately 20% capacity and the lid is tightened securely. Shake the filtered sample water so that it comes in contact with the entire inside surface of the sample container. Discard filtered sample water rinsate downstream if in flowing waters, or on the opposite side of the boat/canoe in lakes or wetlands.

8) Fill the bailer with sample water as many times as needed to fill the sample container using the surface water grab sampling POP. Ensure that the sample container lid is secured tightly and that the container is labelled.

9) If required, preserve samples using laboratory-supplied preservatives according to laboratory instructions.

4. TECHNICAL CONSIDERATIONS

- Ensure new clean equipment (e.g. bailer, tubing, and filter) is used for each new station. Keep PVC tubing in clean Ziploc bags.
- To avoid sample contamination, designate one crew member to handle and prepare the filter apparatus and bottles, and the other to collect the surface water samples and filter them.
- If using filter disks, ensure that plenty are available as several (i.e. more than five) may be required when filtering highly turbid samples.

5. ADDITIONAL REFERENCES

CCME (Canadian Council of Ministers of the Environment). 2011. Protocols Manual for Water Quality Sampling in Canada. PN 1461, ISBN 978-1-896997- 7-0. Section 5.0, pp 36–37.

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Prepared By:

Patrick Chahil, M.E.S.

Reviewed By:



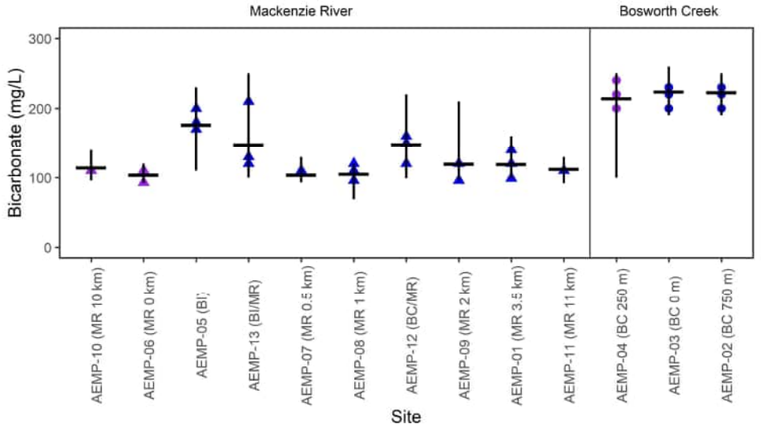
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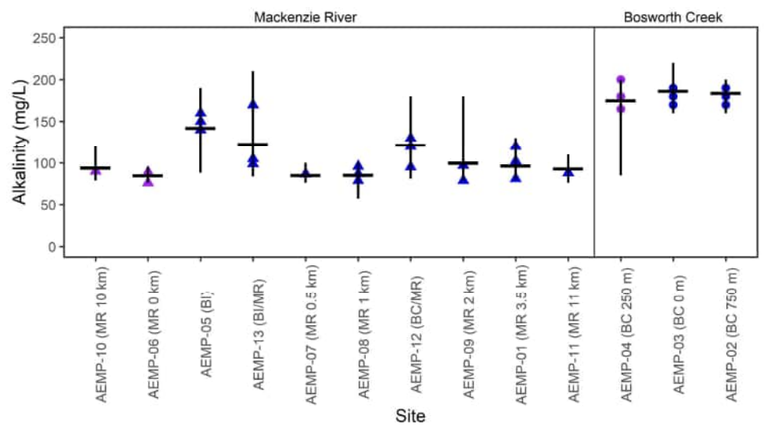


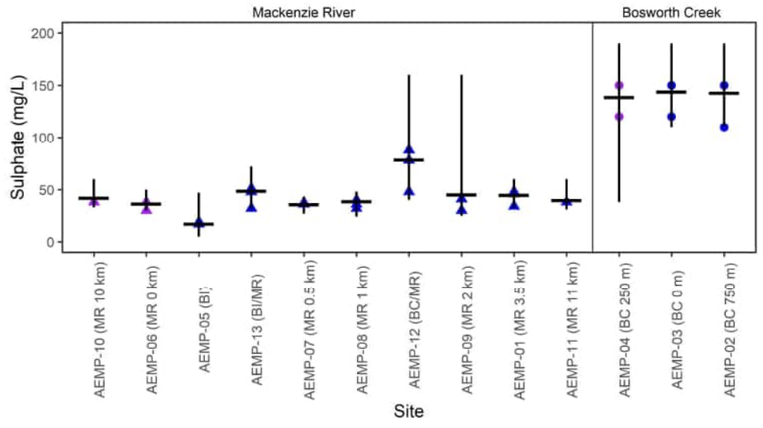
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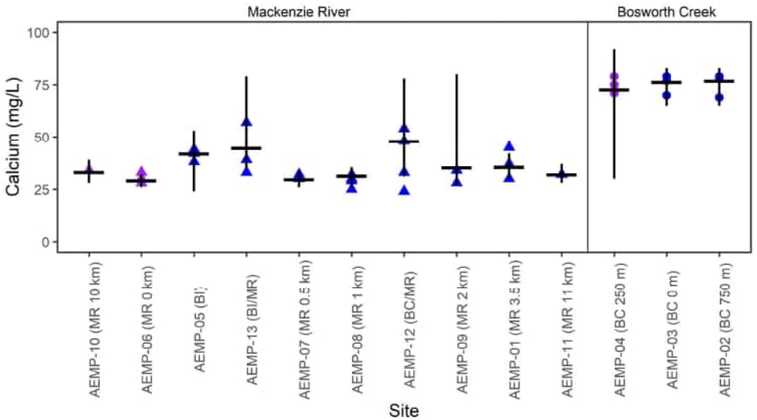
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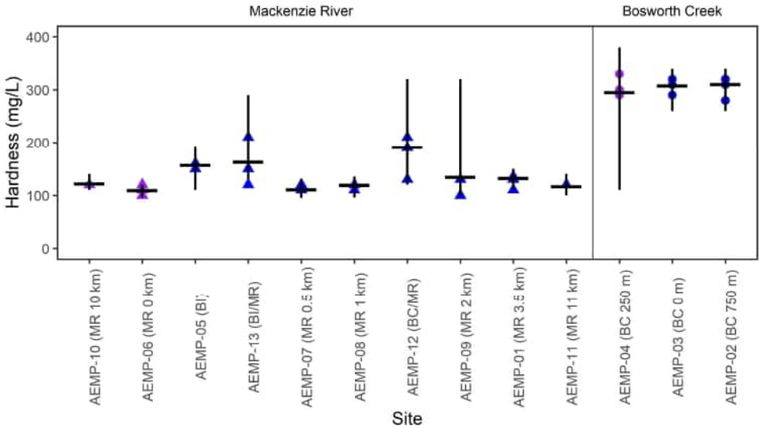
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Normal Range and Guideline Control Charts

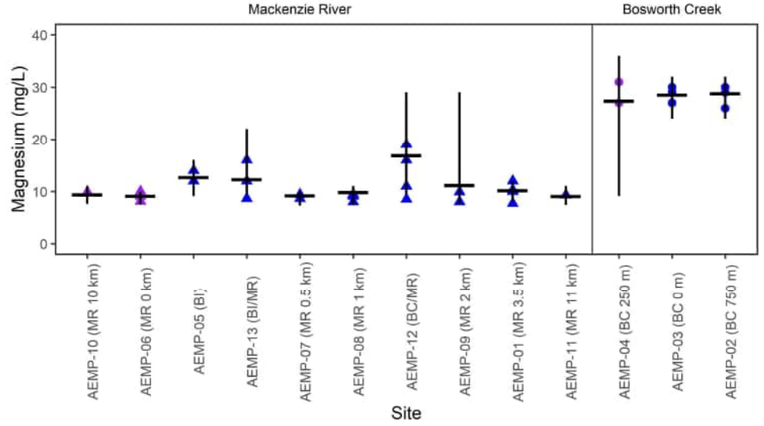












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

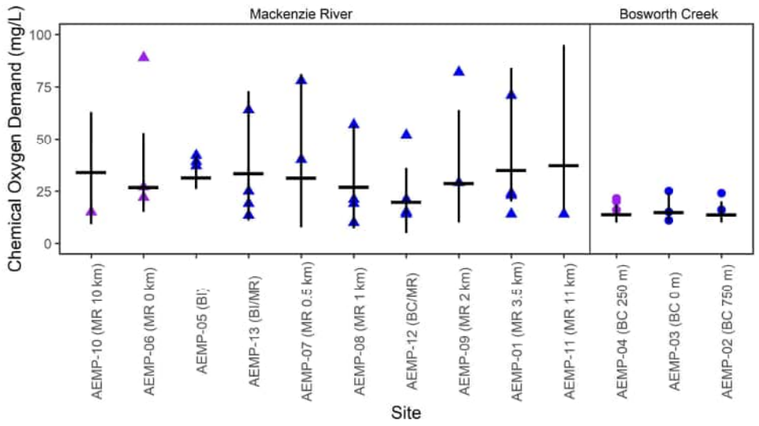
Notes:
1. Surface water measurements of indicator parameters with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
2. Black vertical bars for each sampling location provide the historical range based on the maximum and minimum values measured from 2017 to 2021 for each respective parameter. Horizontal line provides the historical mean of each respective parameter at each sampling location.
3. Measurements below detection are presented as the detection limit value for comparison with historical ranges and water quality guidelines.
4. Measurements collected during the 2022 AEMP are provided as individual points categorized by location relative to Norman Wells operations and watercourse.

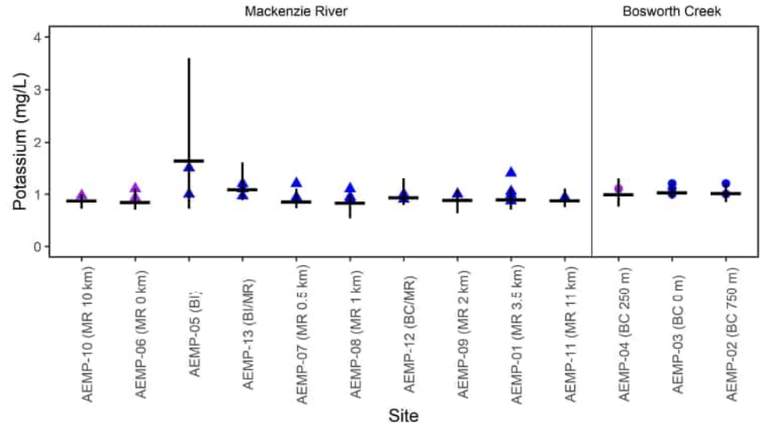
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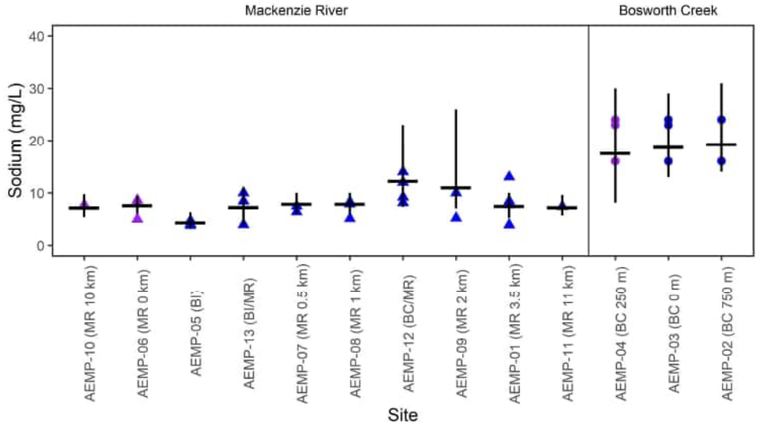
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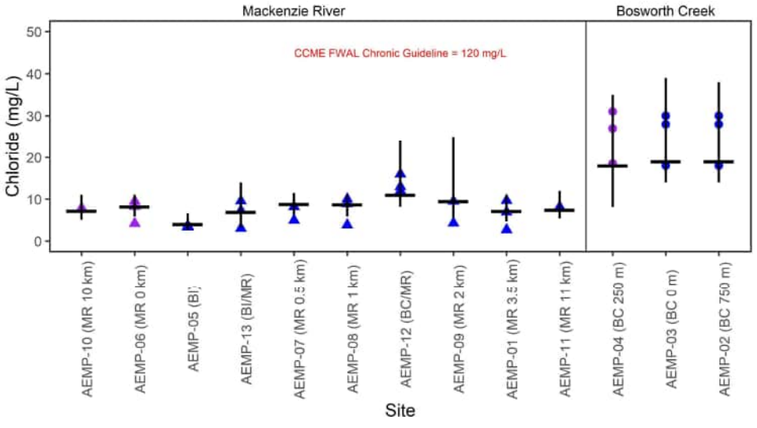
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AC-1	REV A

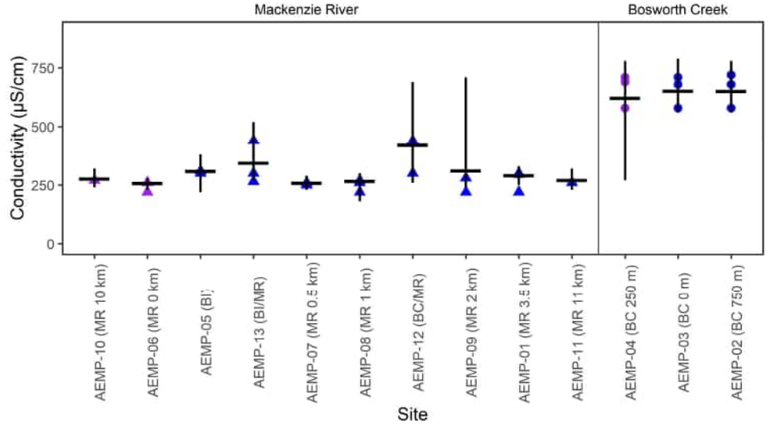
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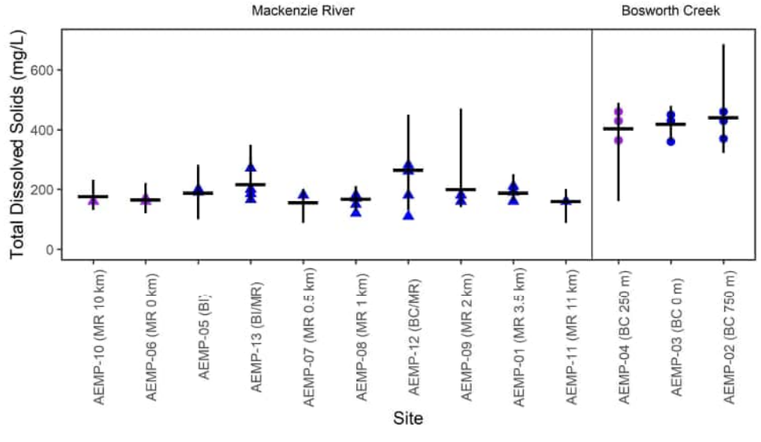












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
1. Surface water measurements of indicator parameters with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
2. Black vertical bars for each sampling location provide the historical range based on the maximum and minimum values measured from 2017 to 2021 for each respective parameter. Horizontal line provides the historical mean of each respective parameter at each sampling location.
3. Measurements below detection are presented as the detection limit value for comparison with historical ranges and water quality guidelines.
4. Dashed red lines respresent the value of Canadian Water Quality Guidelines (CWQG) for the protection of freshwater aquatic life (FWAL) established by the Canadian Council of Ministers of the Environment (CCME) where applicable.
5. Measurements collected during the 2022 AEMP are provided as individual points categorized by location relative to Norman Wells operations and watercourse.
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NORMAN WELLS, NT

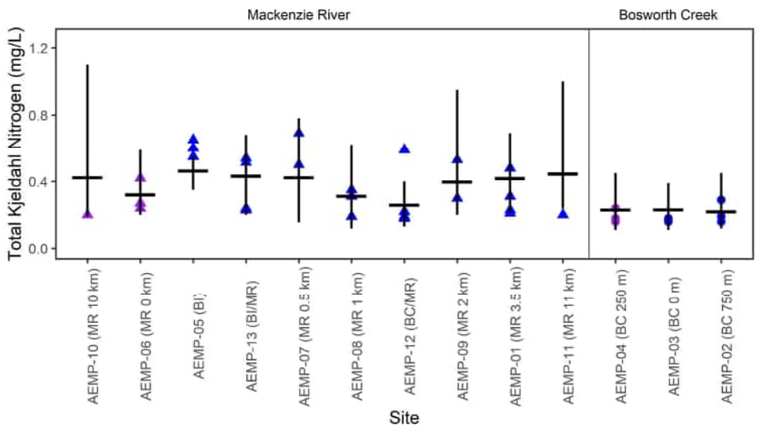
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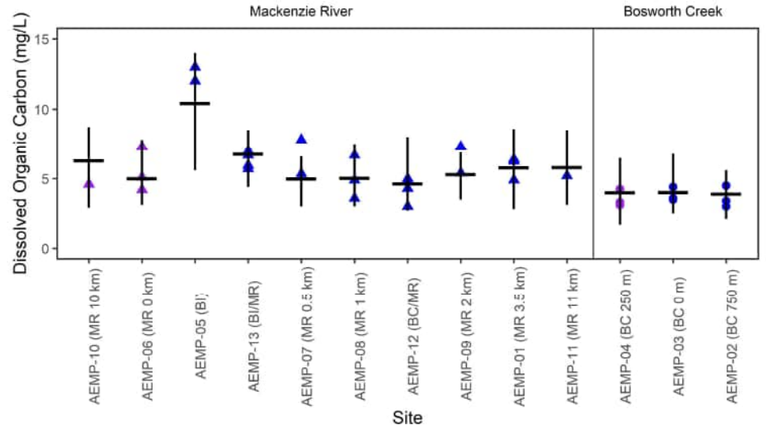
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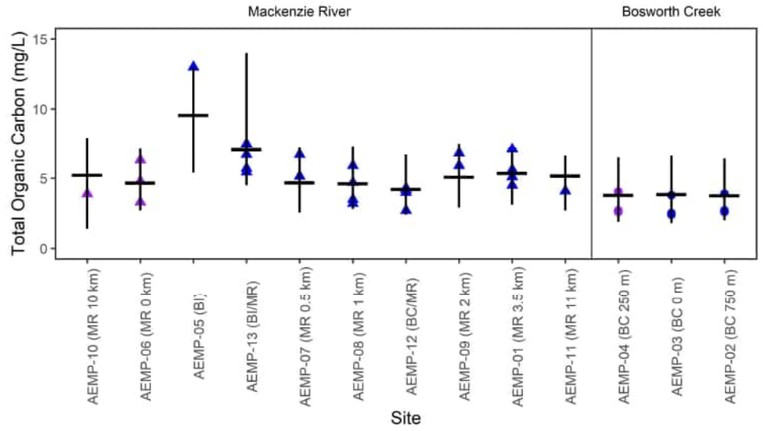
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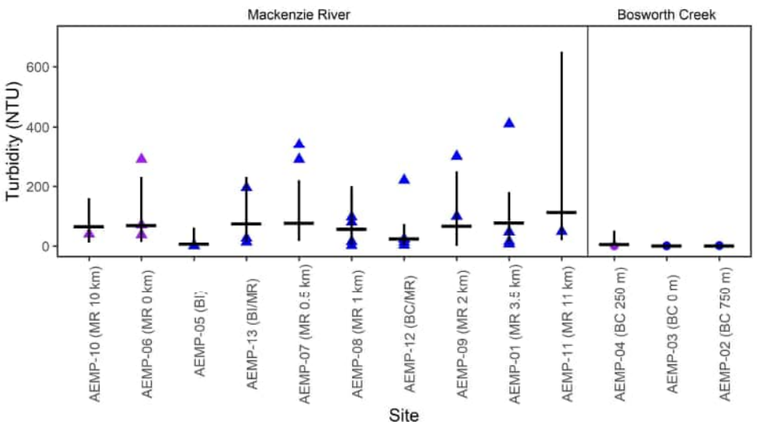
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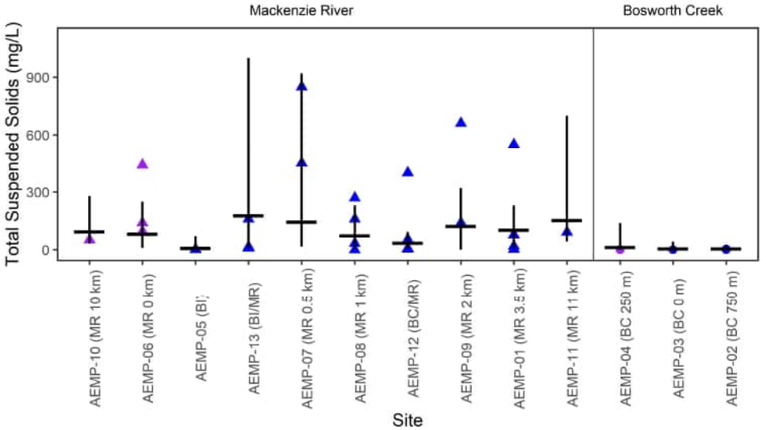
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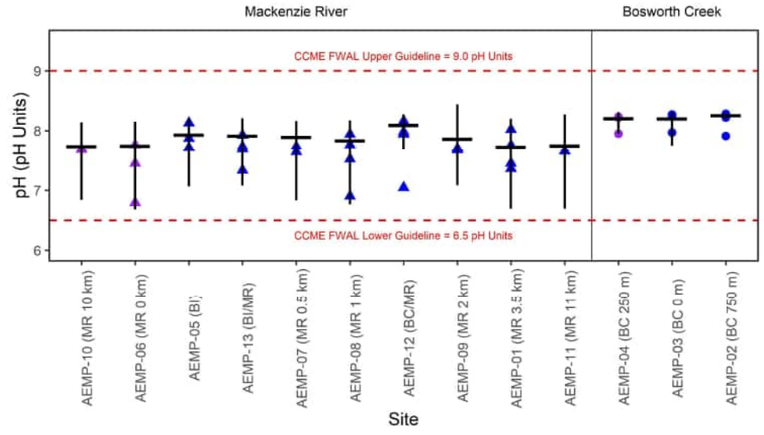












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
1. Surface water measurements of indicator parameters with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
2. Black vertical bars for each sampling location provide the historical range based on the maximum and minimum values measured from 2017 to 2021 for each respective parameter. Horizontal line provides the historical mean of each respective parameter at each sampling location.
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5. Measurements collected during the 2022 AEMP are provided as individual points categorized by location relative to Norman Wells operations and watercourse.

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NORMAN WELLS, NT

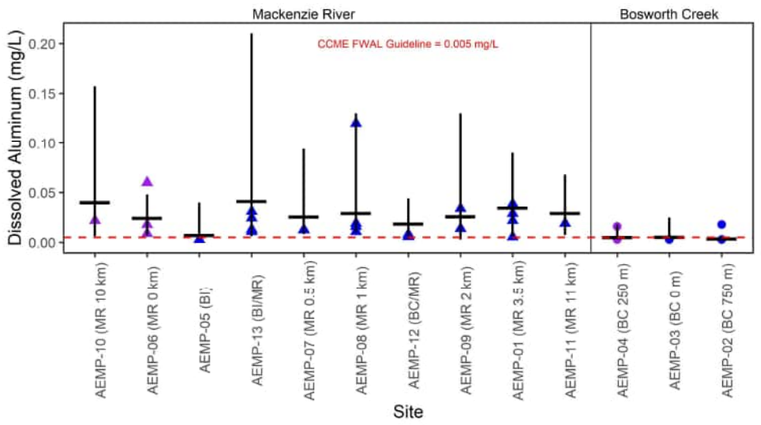
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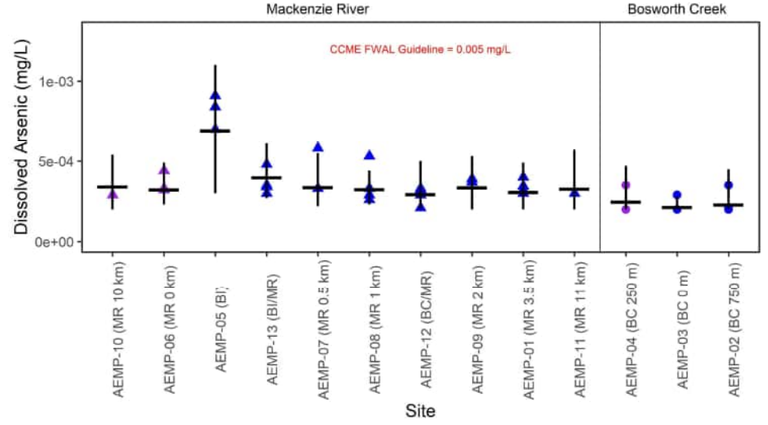
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: AH

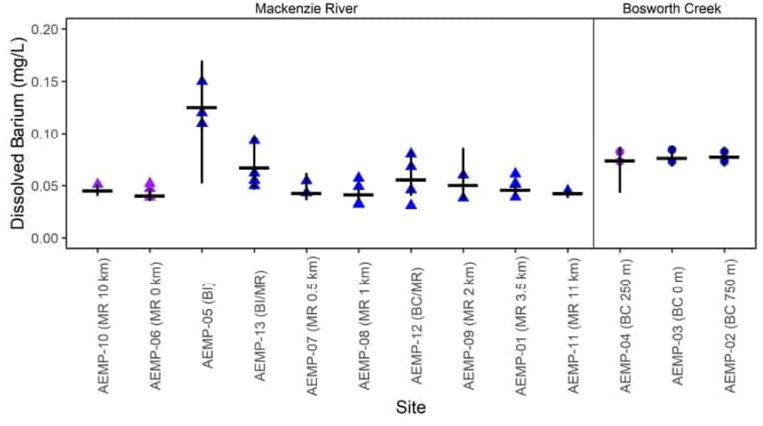
Worley Project No. 417085-42051-22200

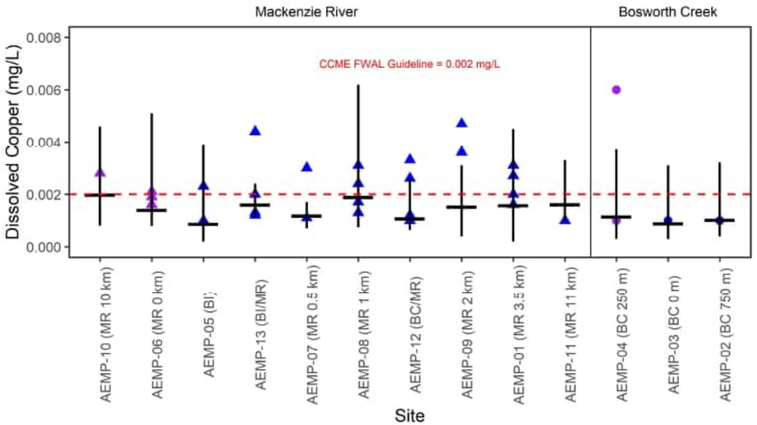
FIGURE: **AC-3** REV **A**

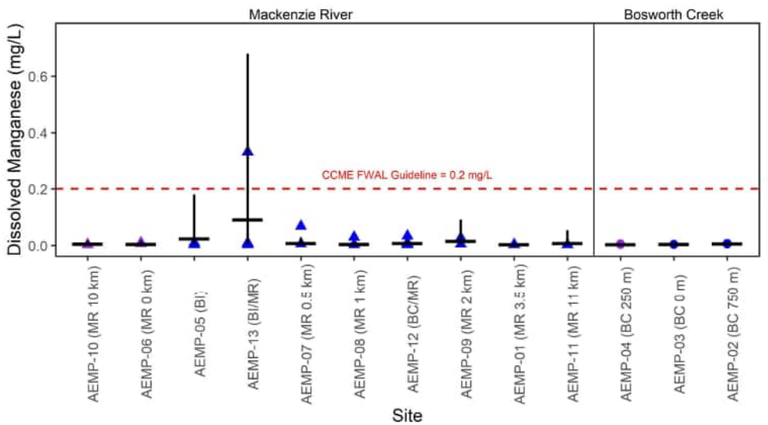
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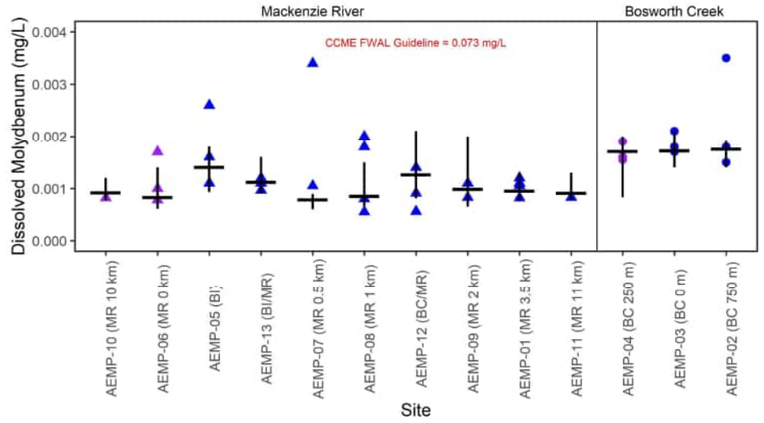












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

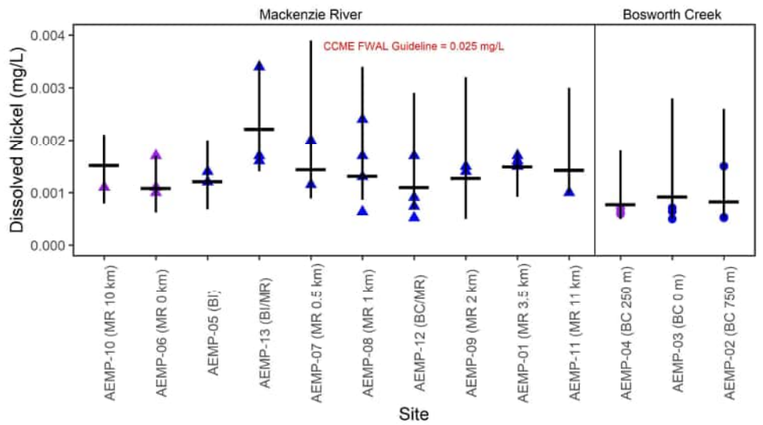
Notes:
1. Surface water measurements of dissolved metals with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
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5. Measurements collected during the 2022 AEMP are provided as individual points categorized by location relative to Norman Wells operations and watercourse.

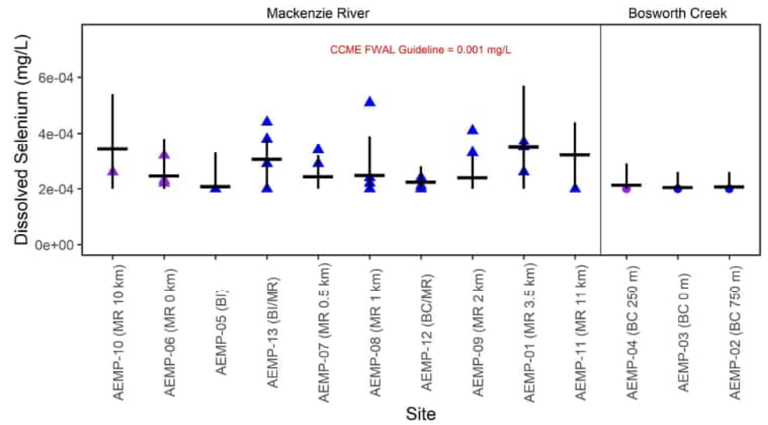
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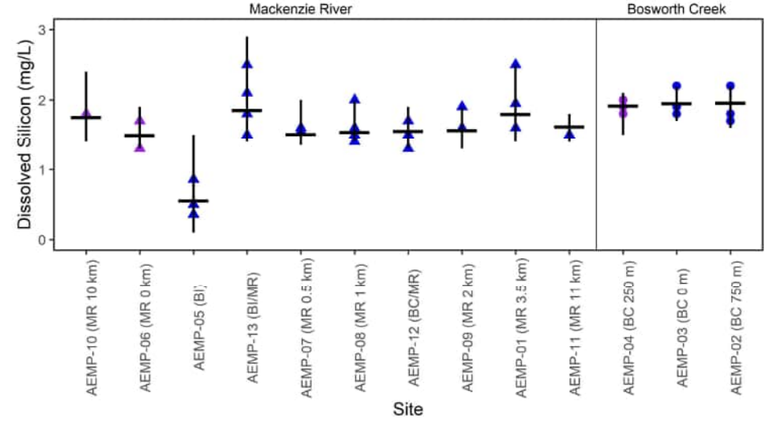
NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (DISSOLVED METALS 1 OF 2)

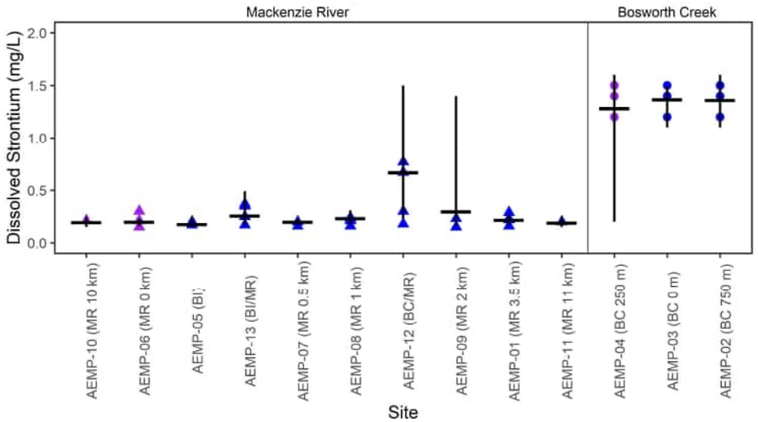
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AC-4	REV A

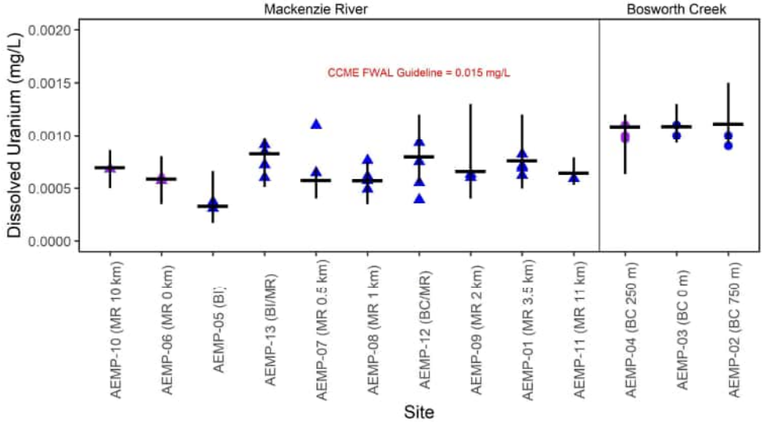
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Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
1. Surface water measurements of dissolved metals with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
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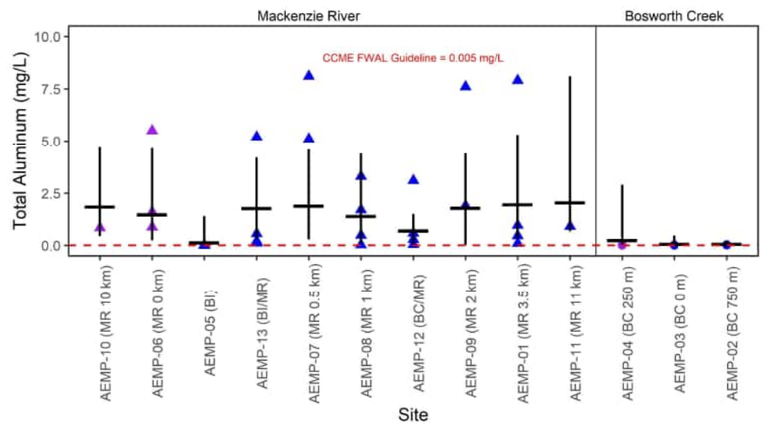
NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (DISSOLVED METALS 2 OF 2)

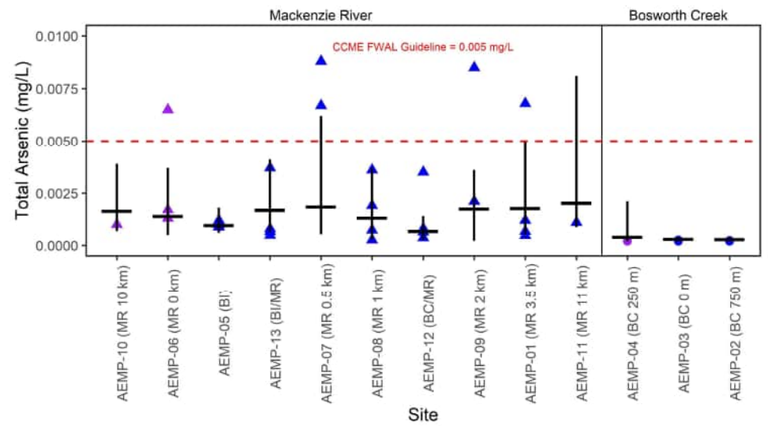
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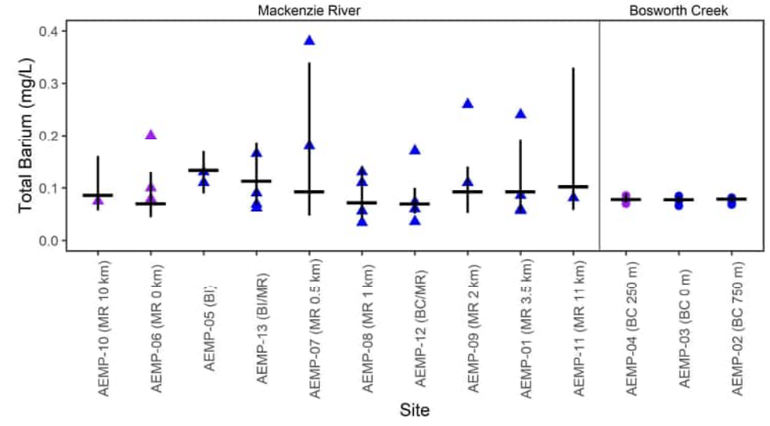
Worley Project No. 417085-42051-22200

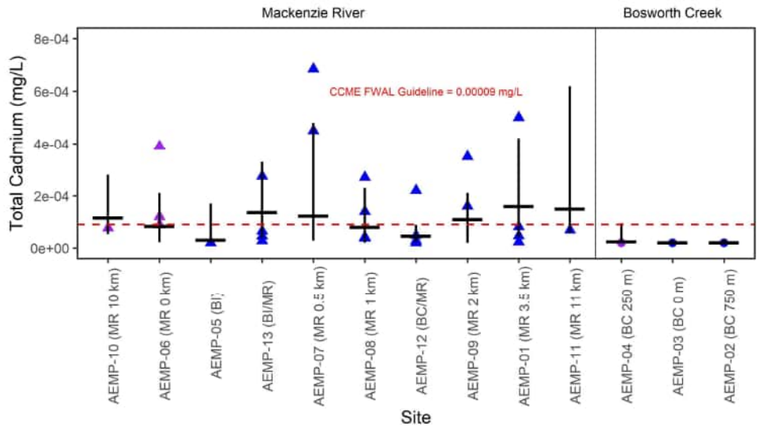
FIGURE: **AC-5** REV **A**

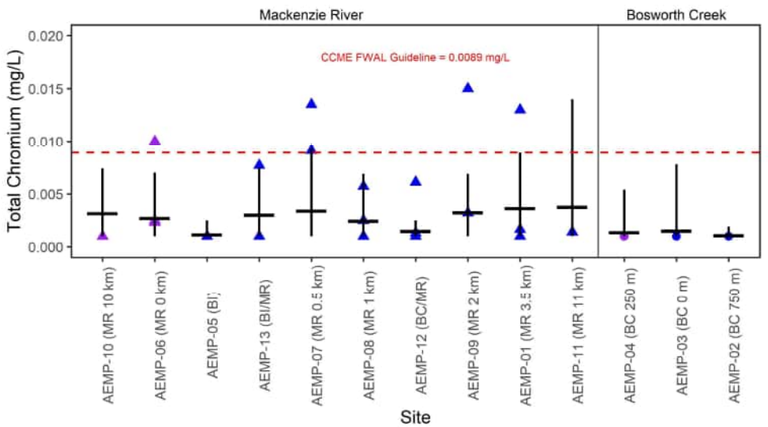
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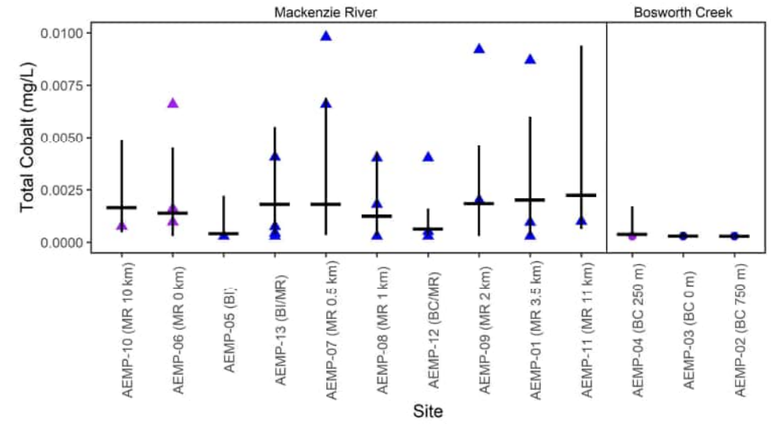












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
1. Surface water measurements of total metals with more than 50% detection from the Mackenzie River and Bosworth Creek collected during the 2022 Aquatic Effects Monitoring Program (AEMP) in comparison with historical ranges for each parameter at each sampling location.
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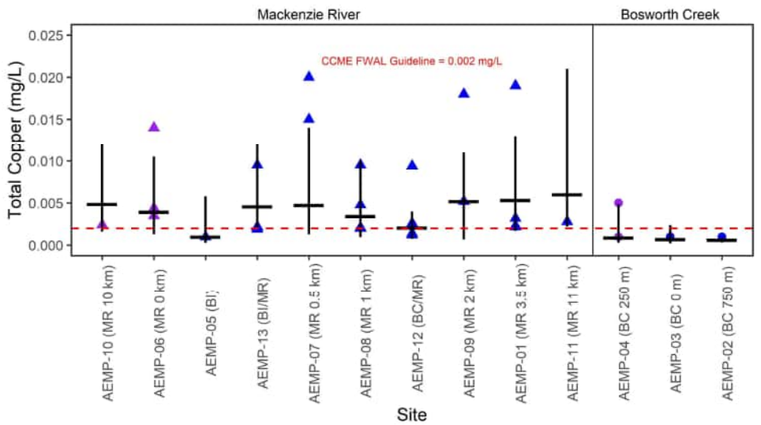
NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (TOTAL METALS 1 OF 4)

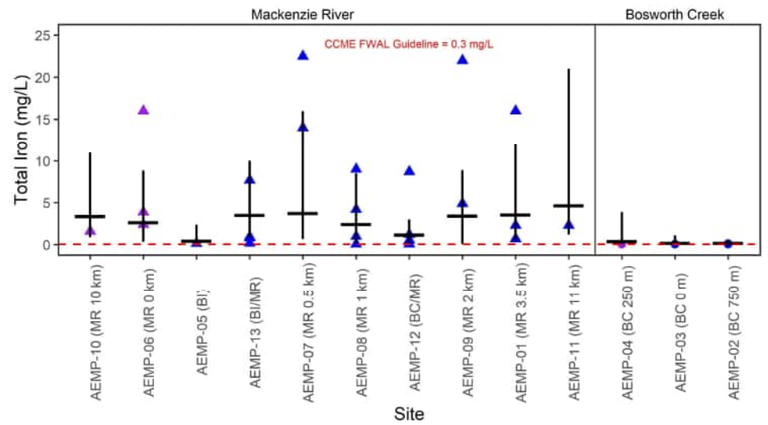
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

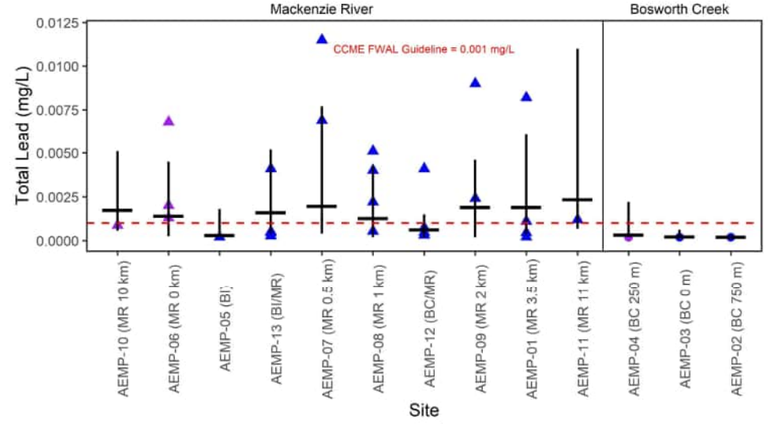
Worley Project No. 417085-42051-22200

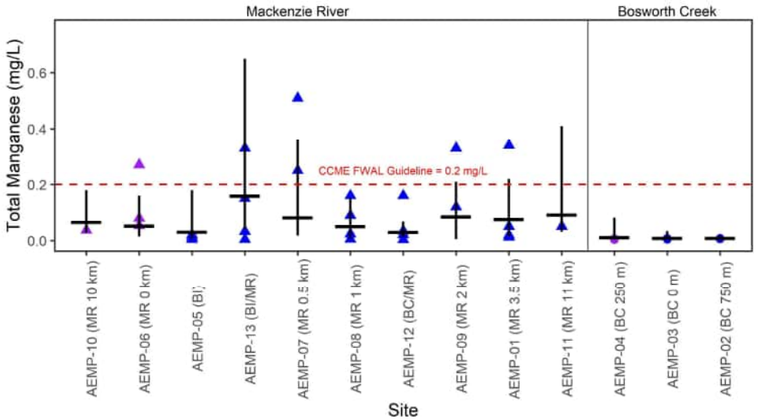
FIGURE: **AC-6** REV **A**

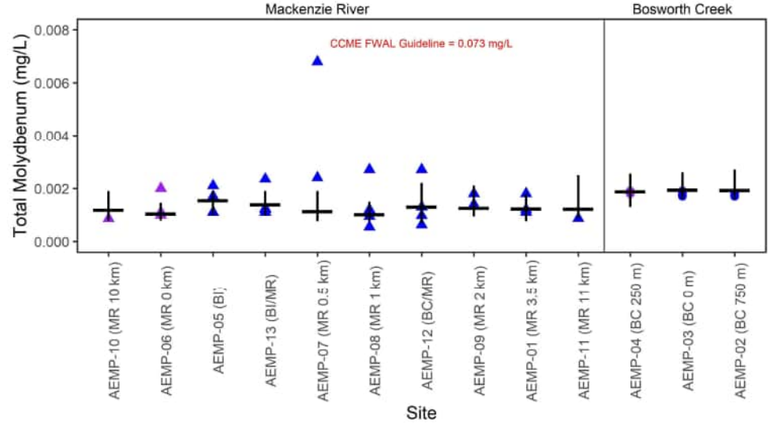
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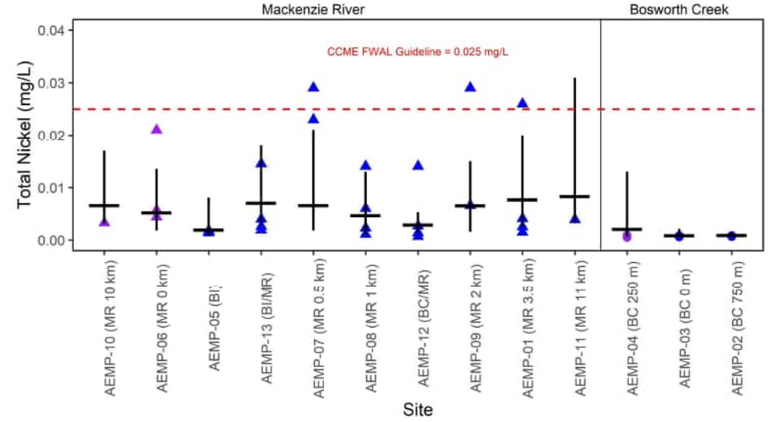












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
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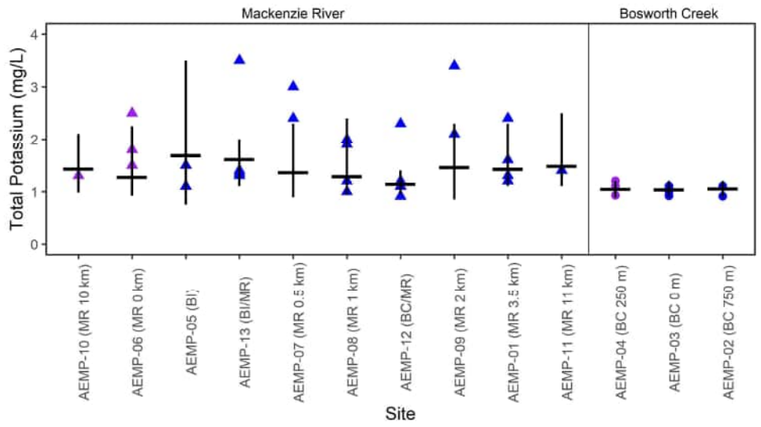
NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (TOTAL METALS 2 OF 4)

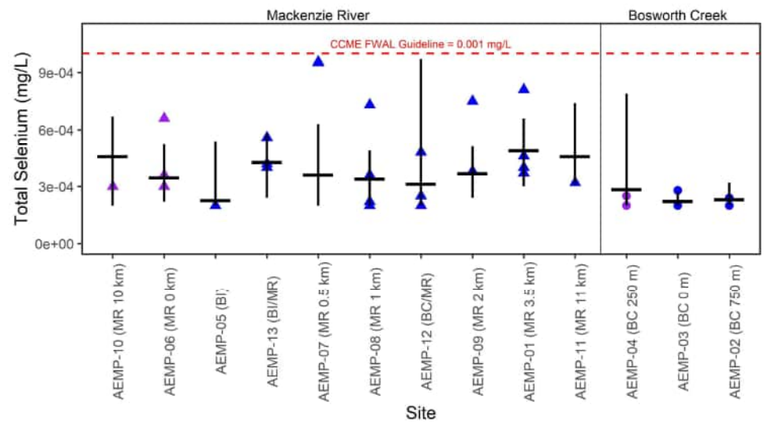
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

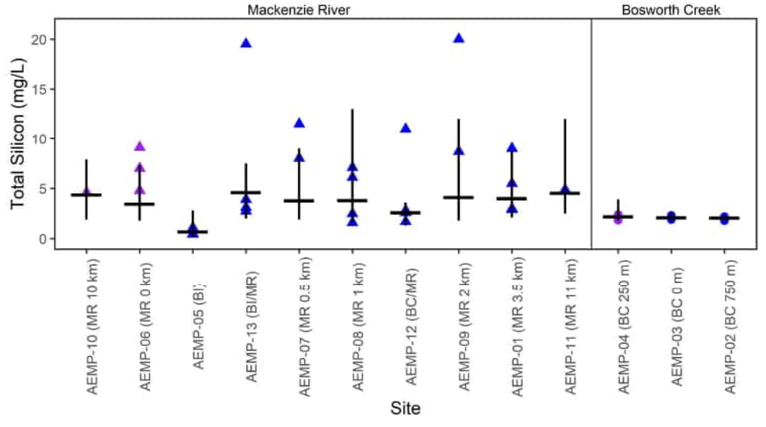
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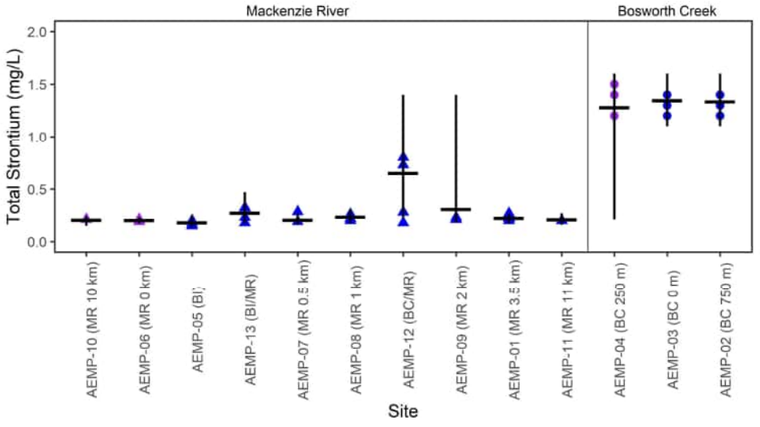
FIGURE: **AC-7** REV **A**

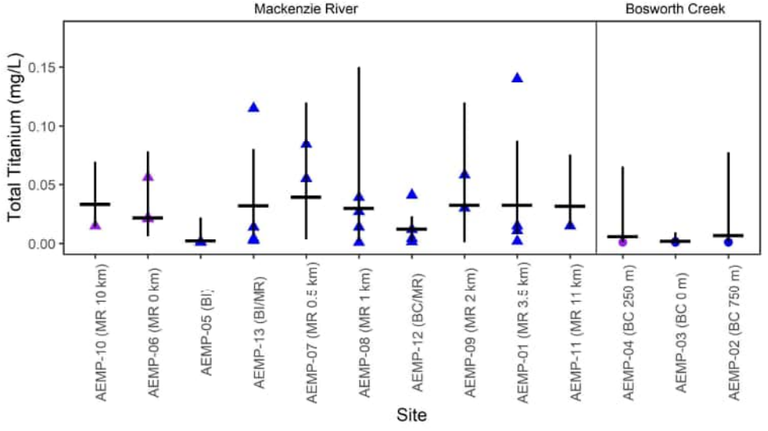
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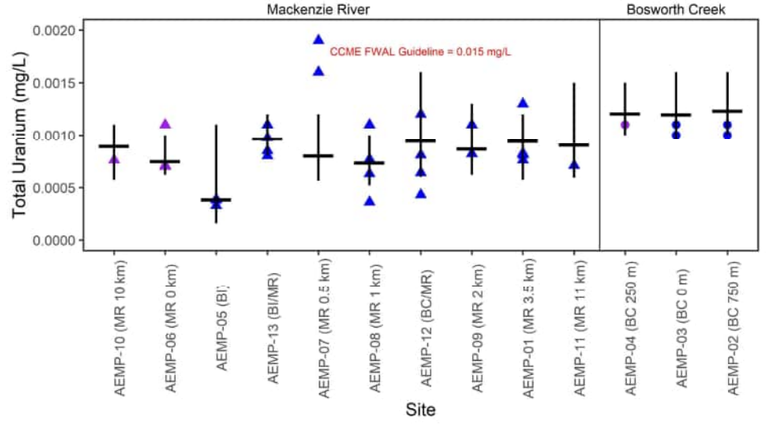












Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

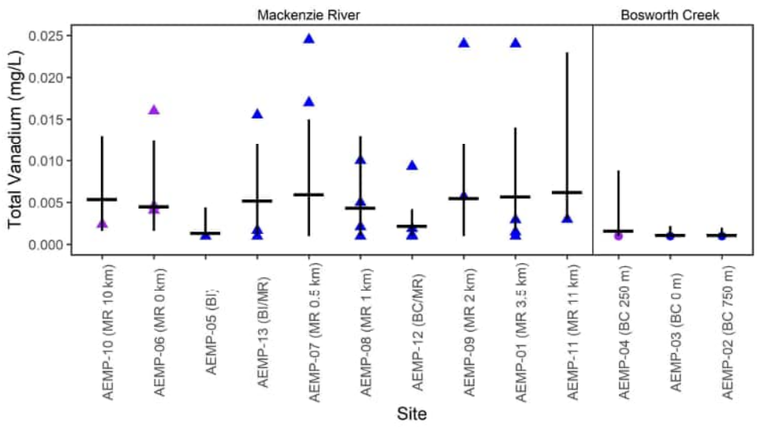
Notes:
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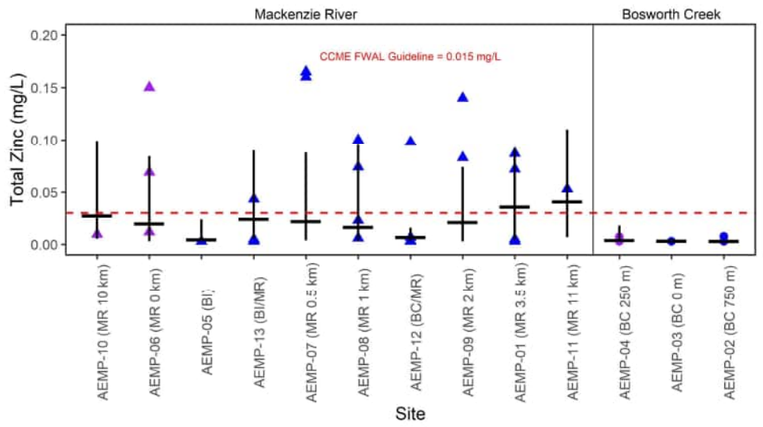
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NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (TOTAL METALS 3 OF 4)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AC-8	REV A

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Location ● Downstream ● Upstream **Watercourse** ● Bosworth Creek ▲ Mackenzie River

Notes:
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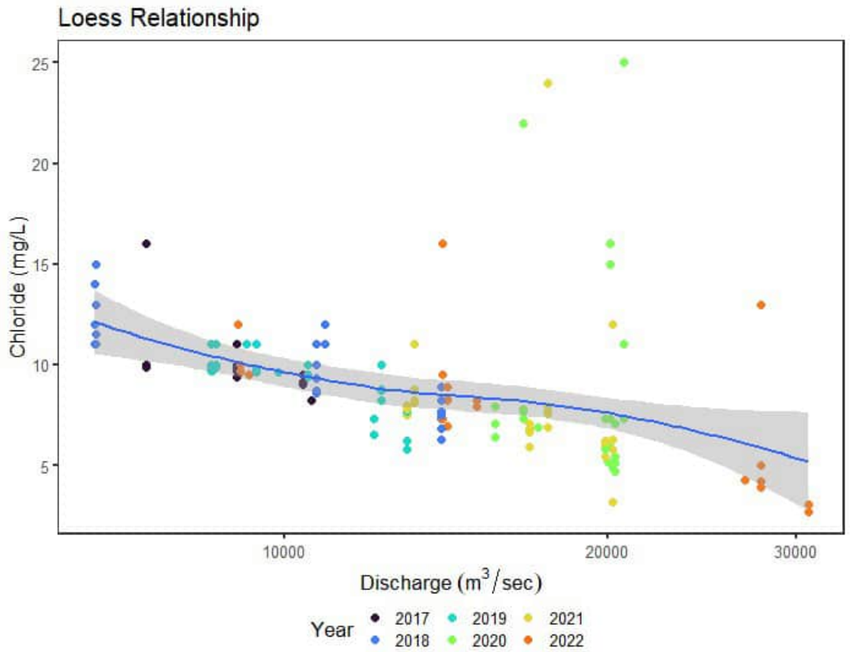
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NORMAN WELLS, NT

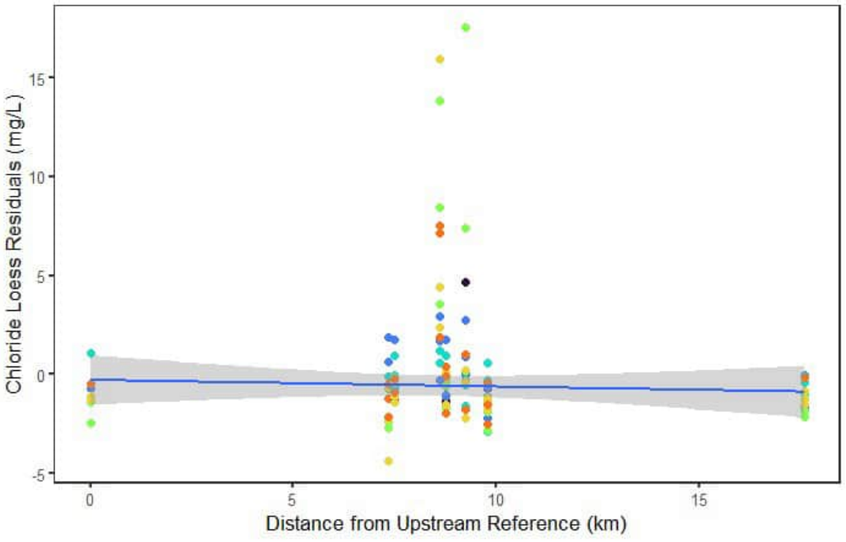
NORMAL RANGE COMPARISON WITH 2022 SURFACE WATER QUALITY (TOTAL METALS 4 OF 4)

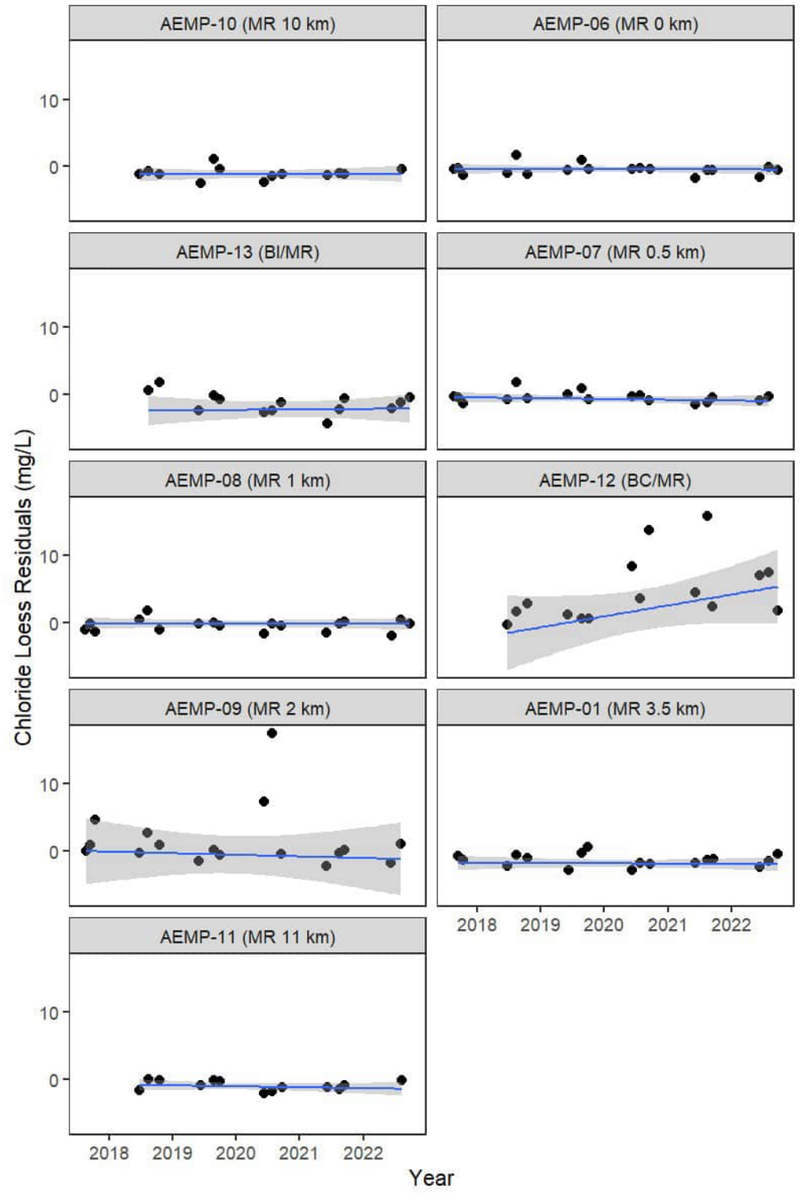
Imperial	Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
			Worley Project No. 417085-42051-22200	
			FIGURE: AC-9	REV A

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Appendix D
Flow-Weighted Spatial and Trend Analyses







Notes:
Top Left - Local regression (Loess) plot of chloride concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of chloride (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of chloride (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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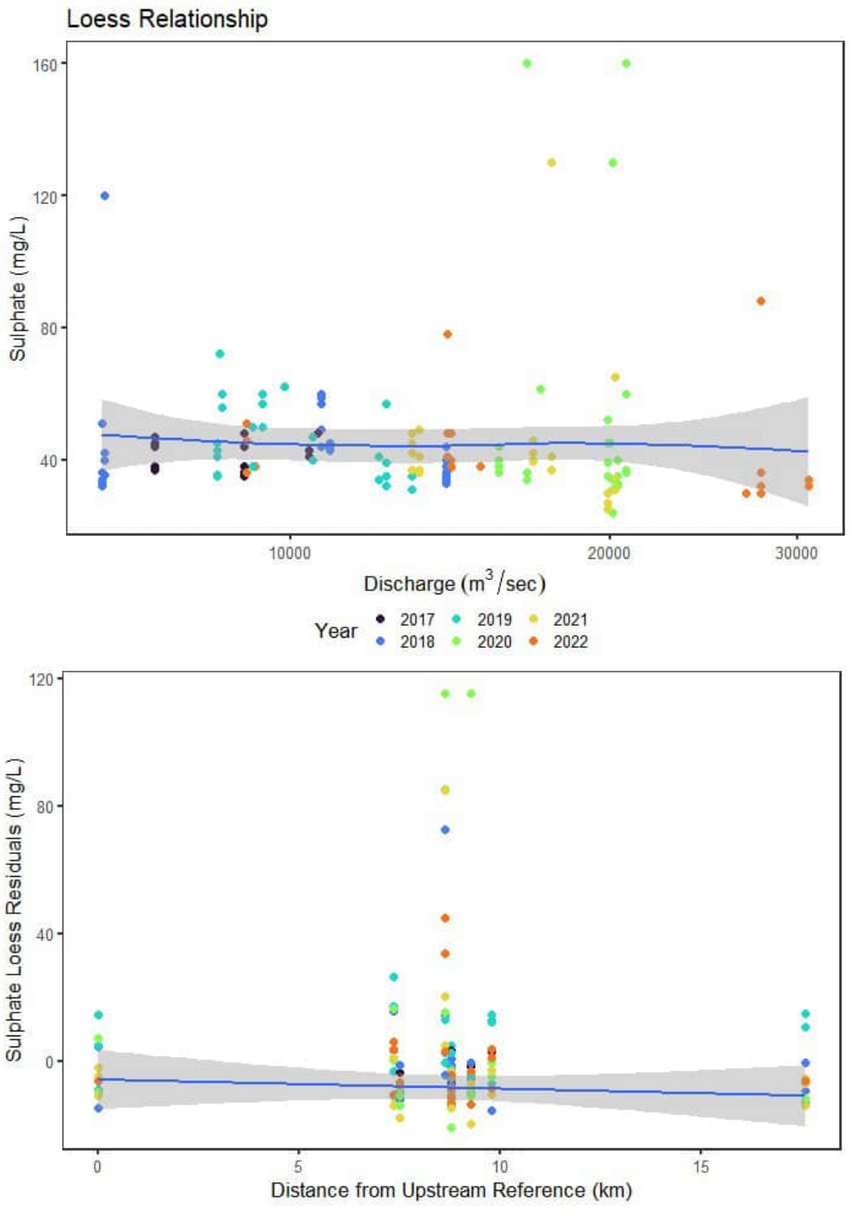
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
CHLORIDE

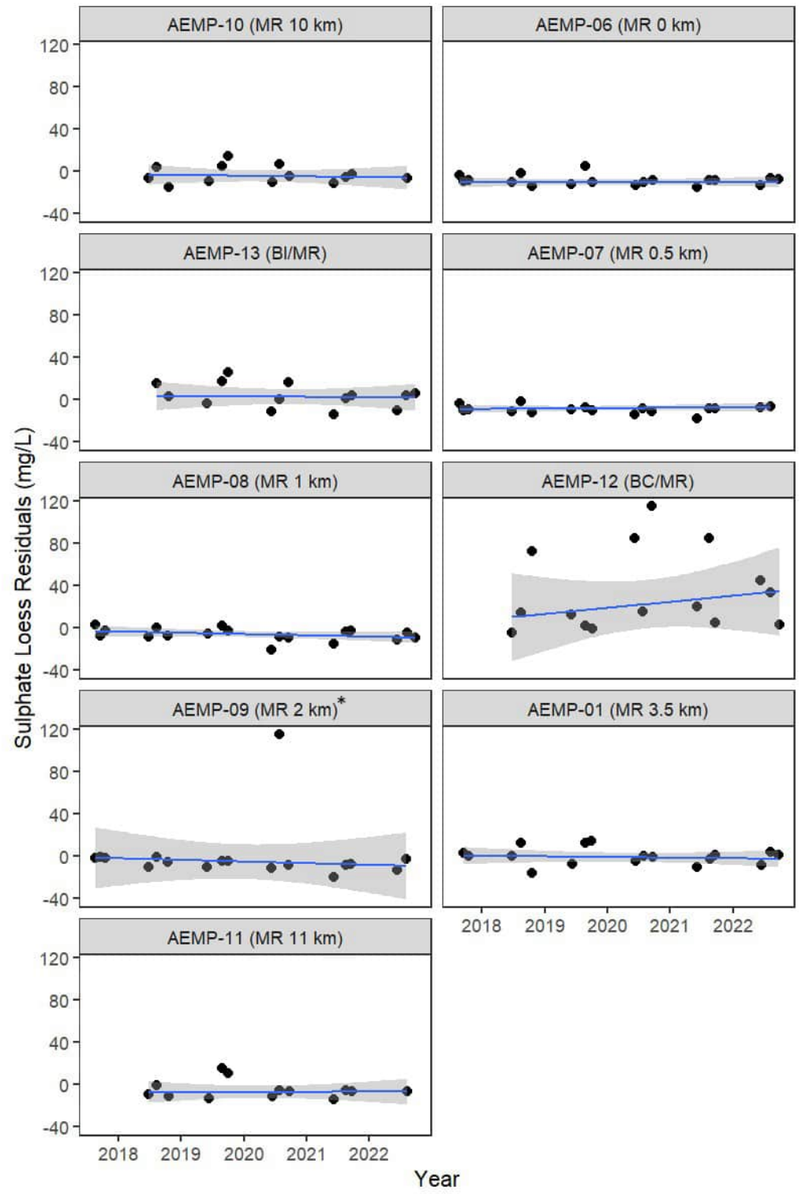
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No.
417085-42051-22200

FIGURE: **AD-1** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of sulphate concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of sulphate (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of sulphate (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

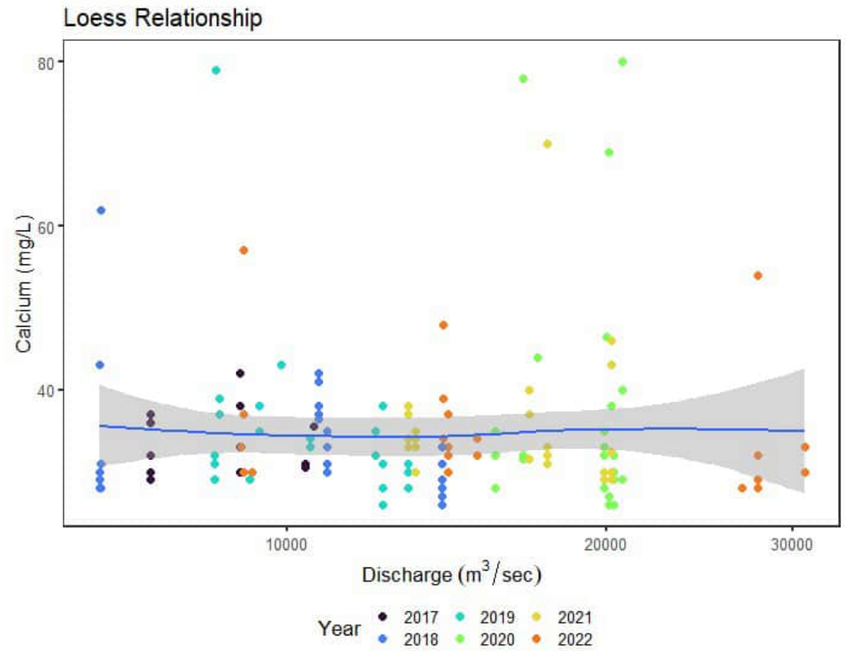
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
SULPHATE

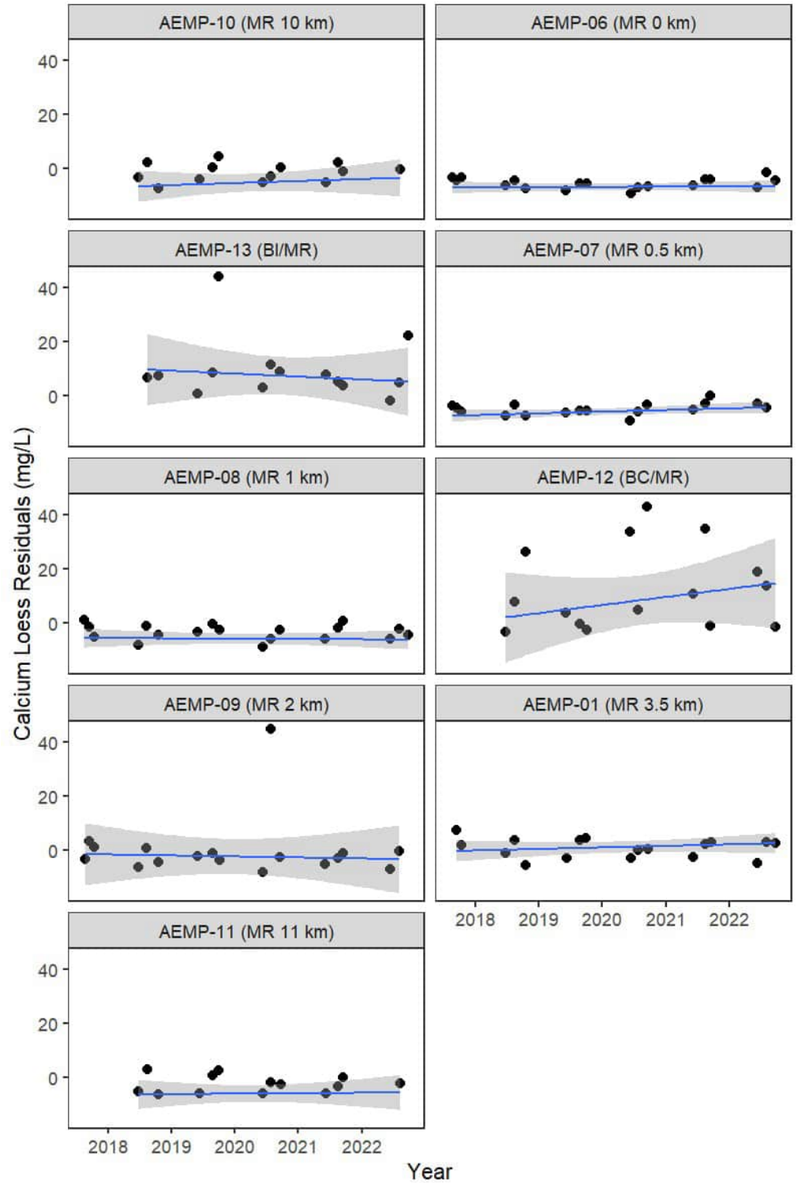
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No.
417085-42051-22200

FIGURE: **AD-2** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of calcium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of calcium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of calcium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

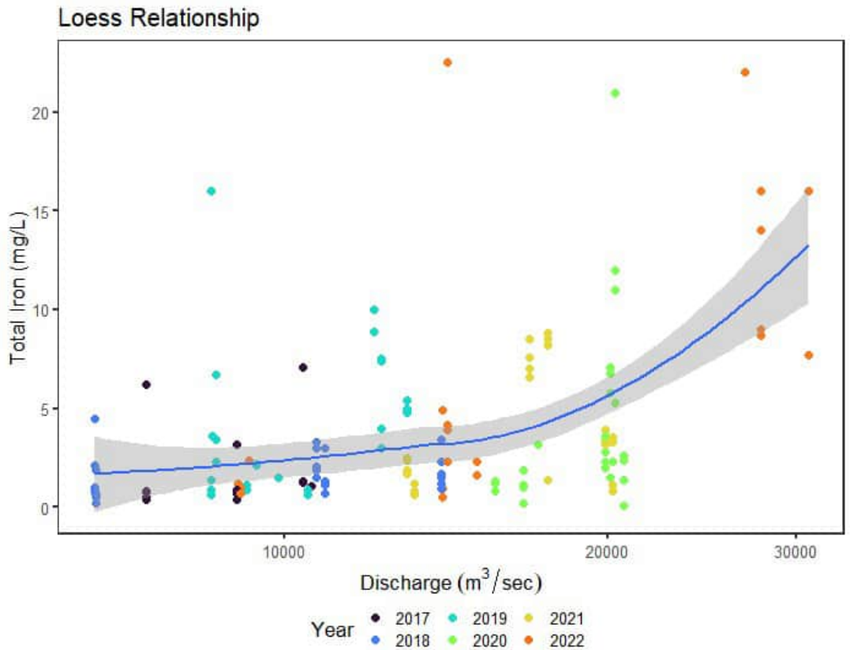
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
CALCIUM

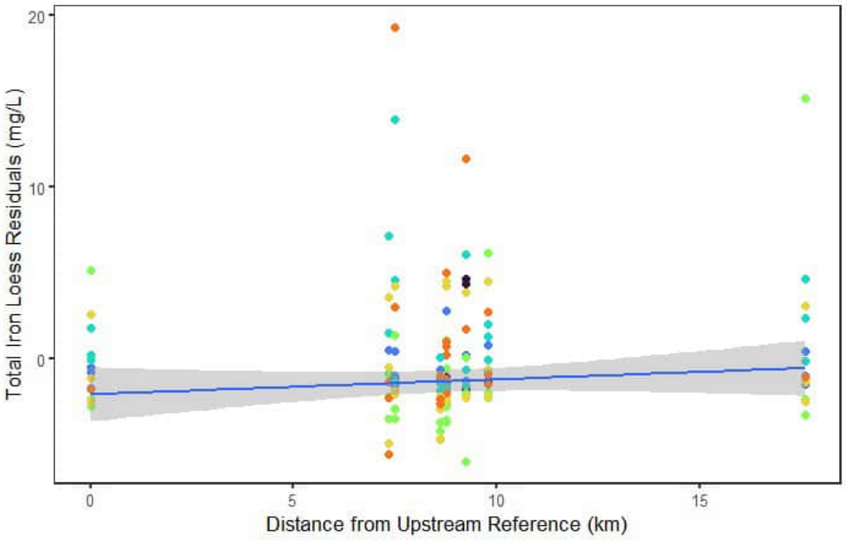
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

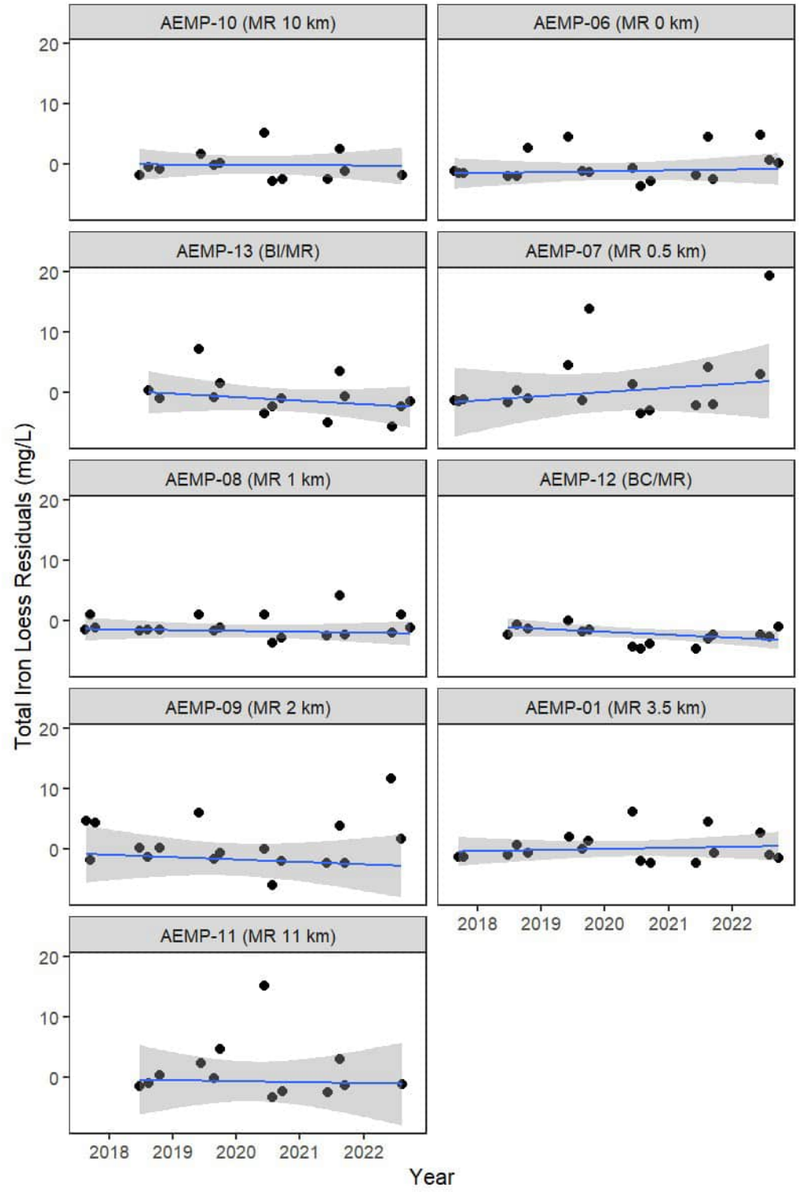
Worley Project No.
417085-42051-22200

FIGURE: **AD-3** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of iron concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of iron (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of iron (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

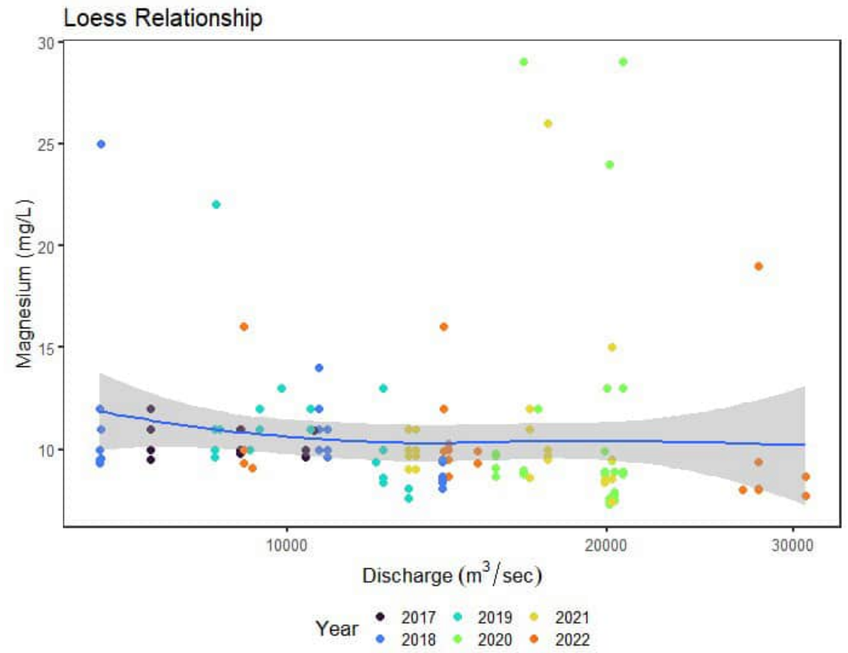
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
IRON

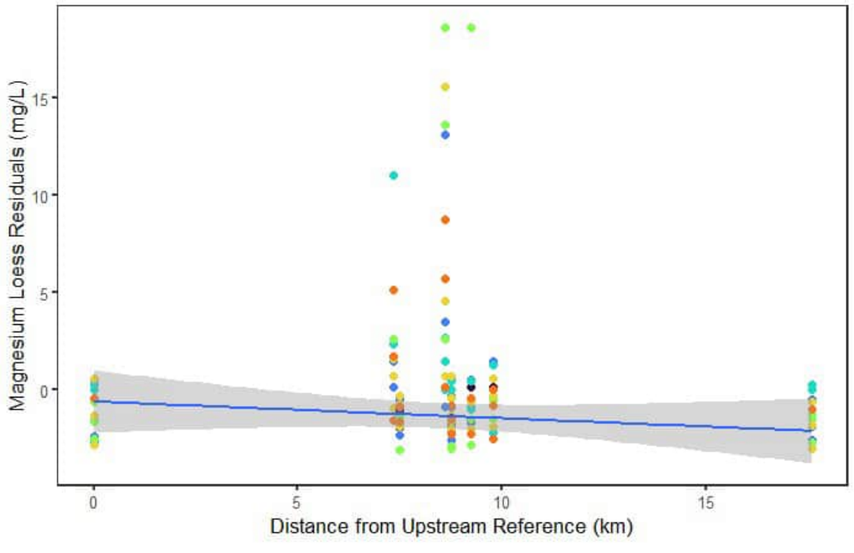
Date: 21-IEB-2023	Drawn by: GY	Edited by: CM	App'd by: AH

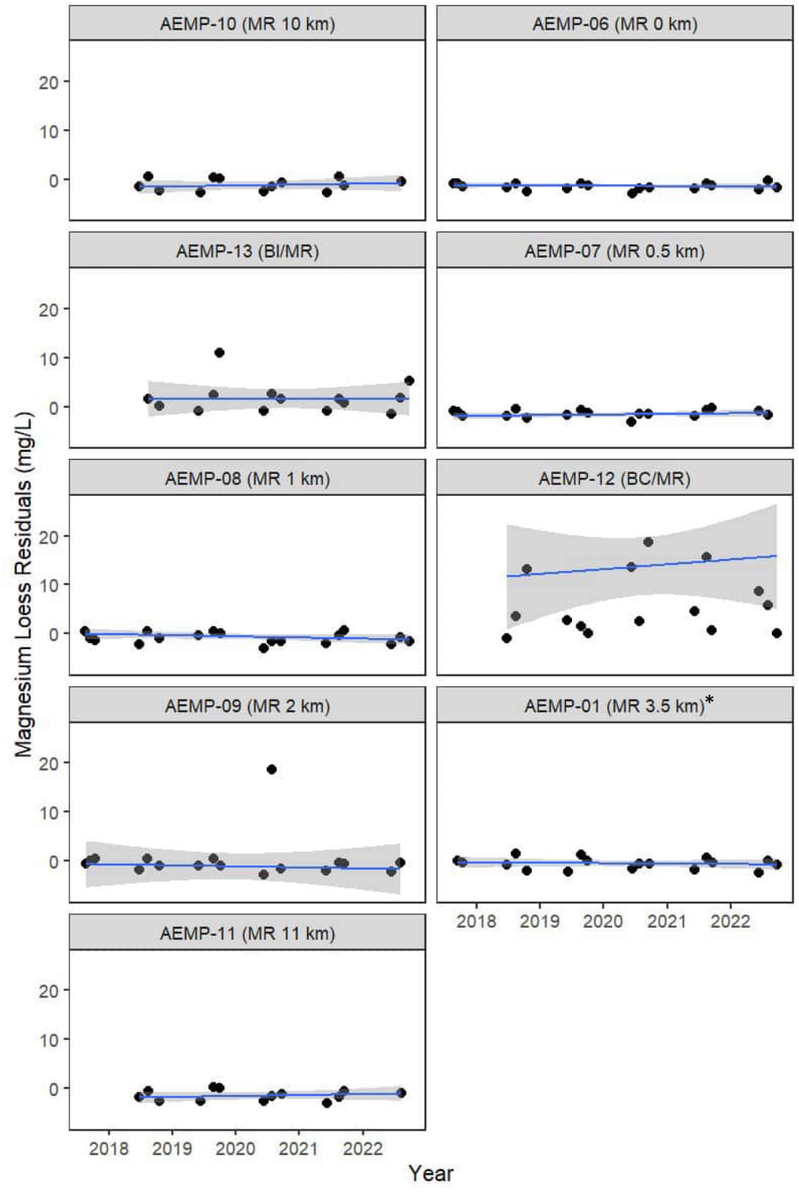
Worley Project No.
417085-42051-22200

FIGURE: **AD-4** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of magnesium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of magnesium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of magnesium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

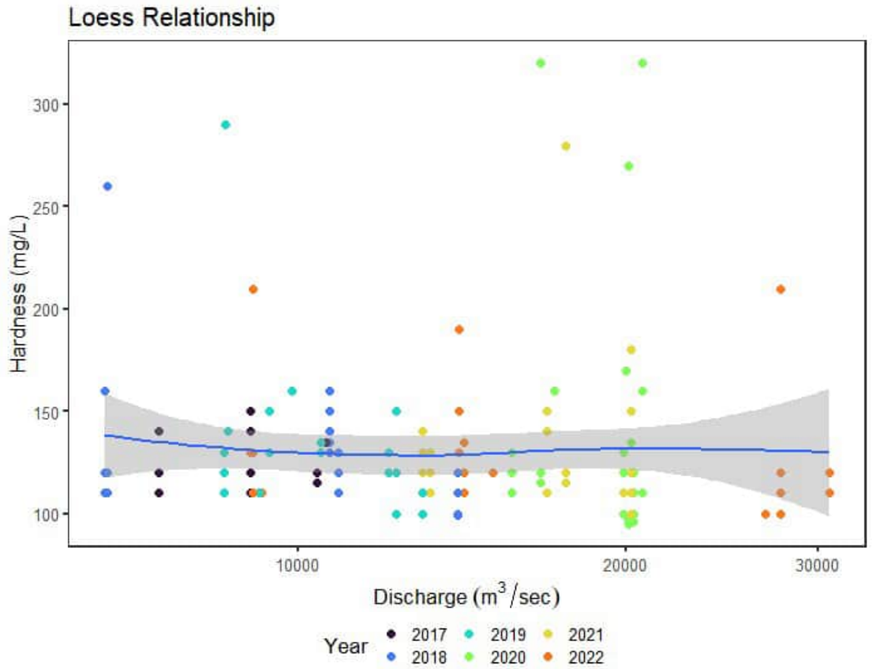
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
MAGNESIUM

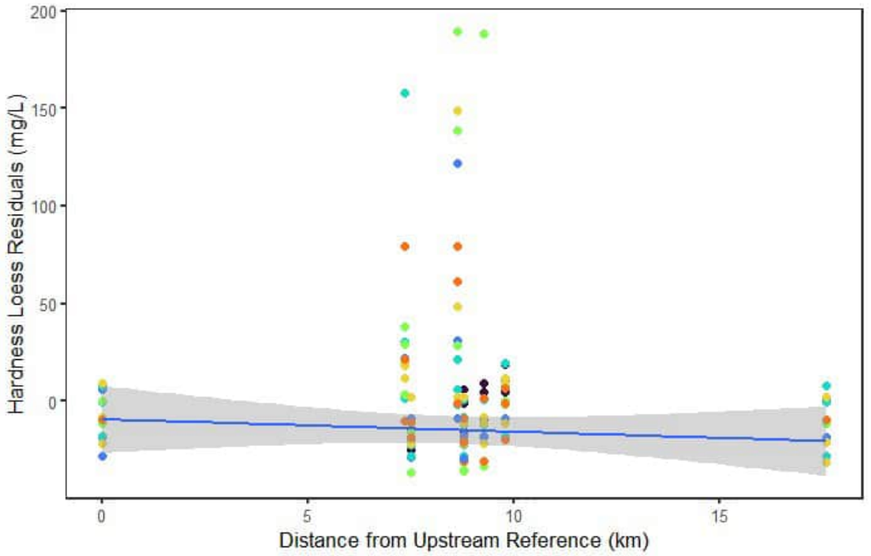
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

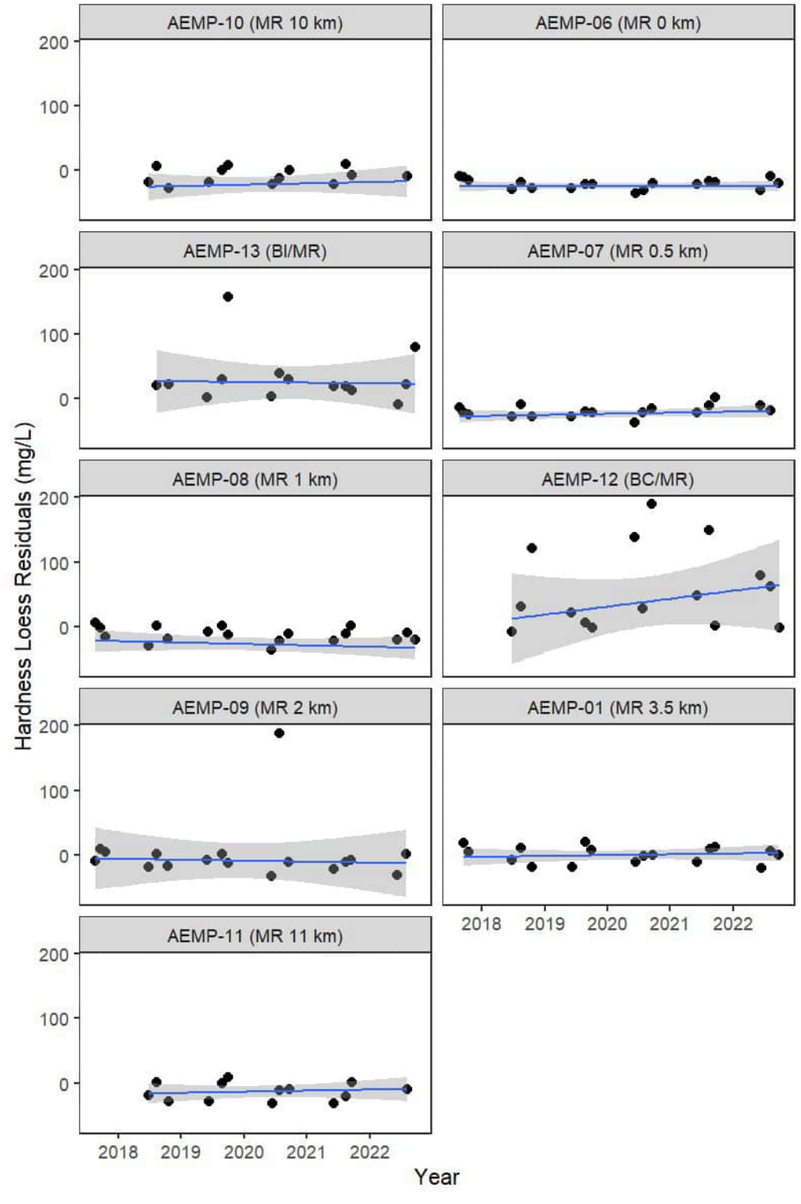
Worley Project No.
417085-42051-22200

FIGURE: **AD-5** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of hardness concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of hardness (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of hardness (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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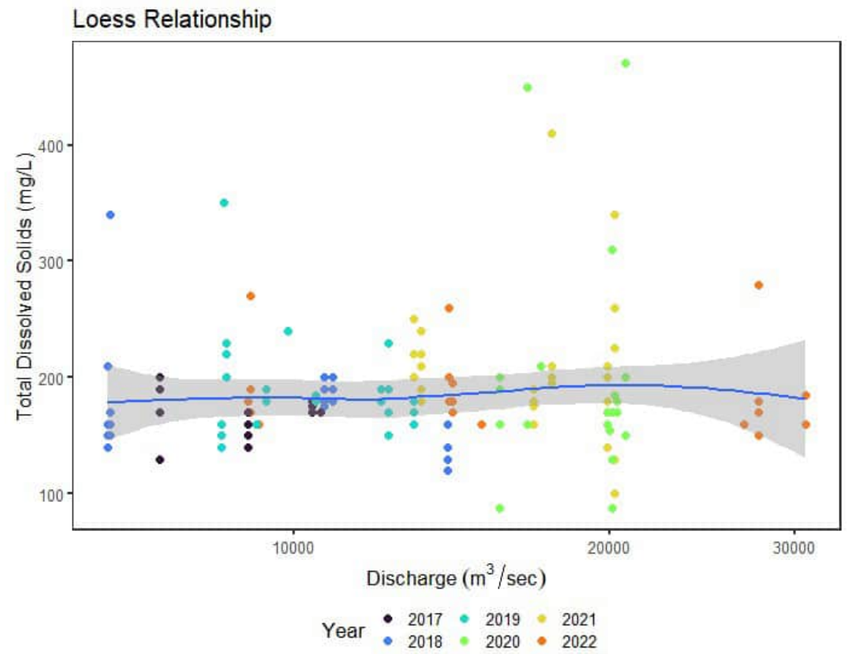
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
HARDNESS

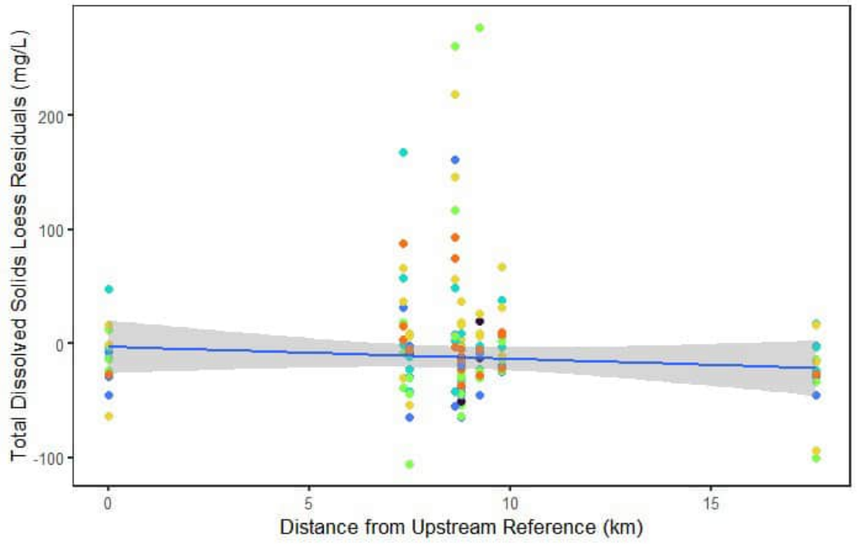
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

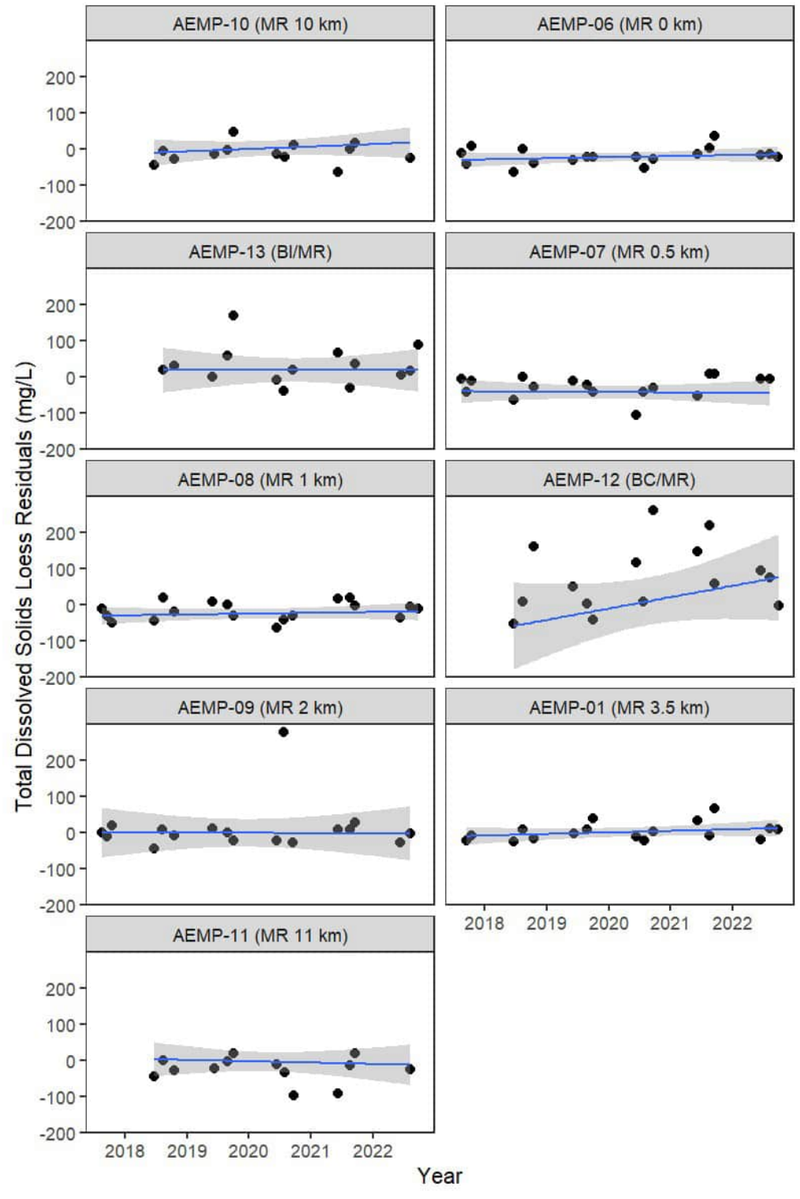
Worley Project No.
417085-42051-22200

FIGURE: **AD-6** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total dissolved solids (TDS) concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of TDS (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of TDS (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
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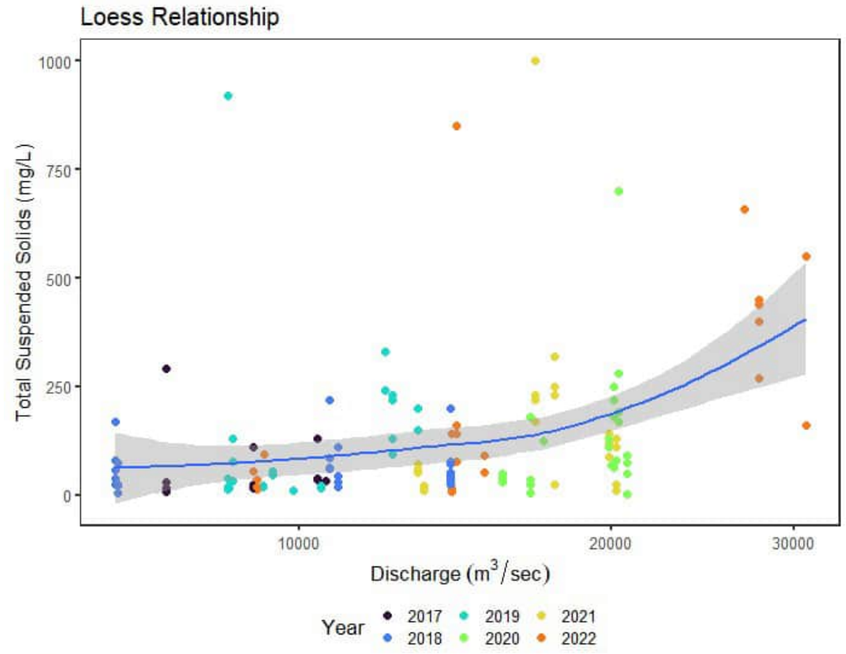
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL DISSOLVED SOLIDS

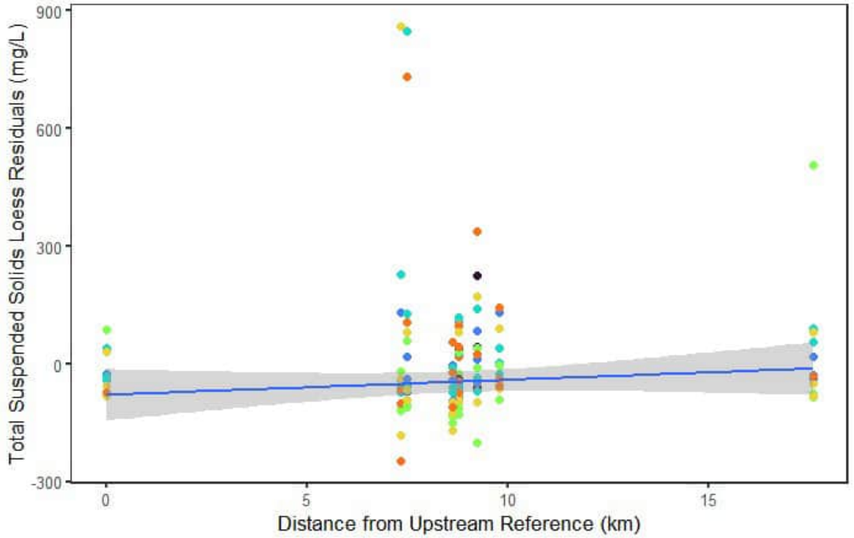
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

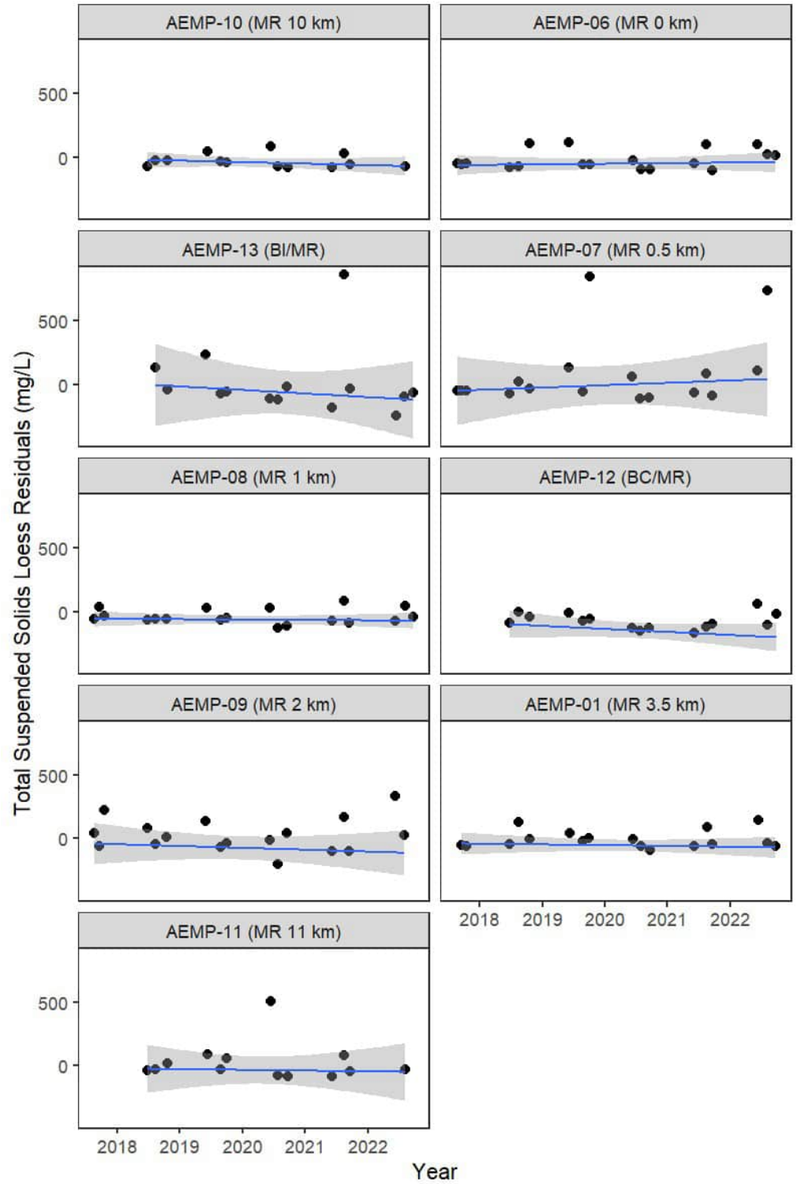
Worley Project No.
417085-42051-22200

FIGURE: **AD-7** REV **A**

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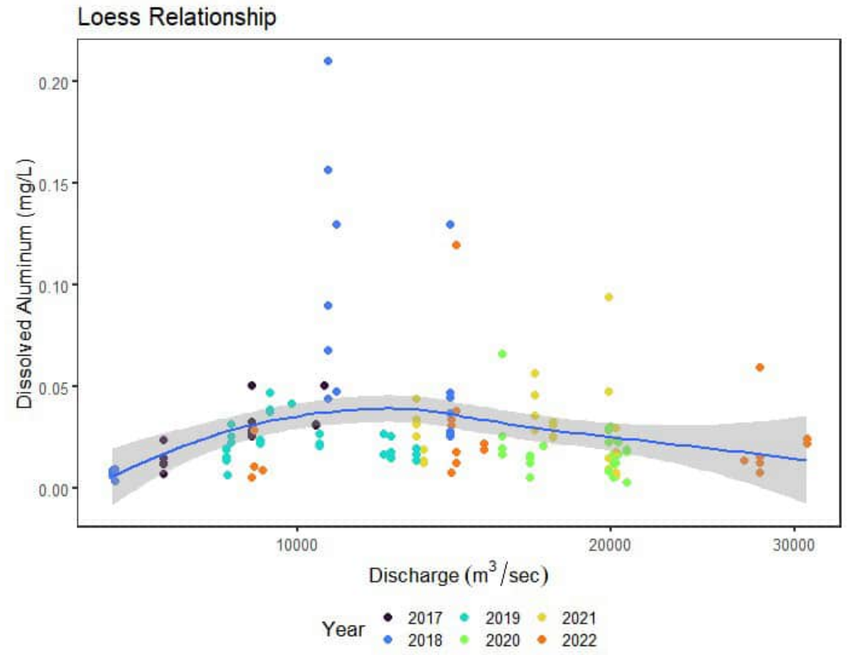
Notes:
Top Left - Local regression (Loess) plot of total suspended solids (TSS) concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of TSS (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of TSS (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

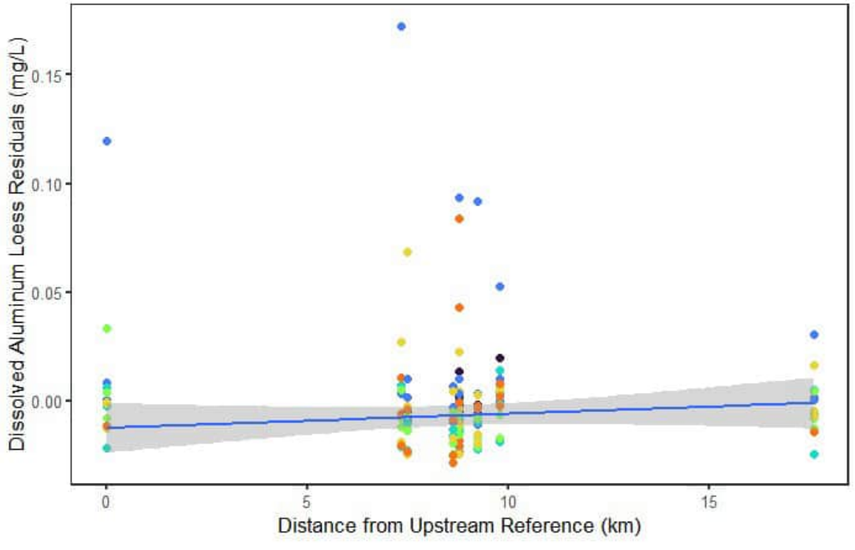
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

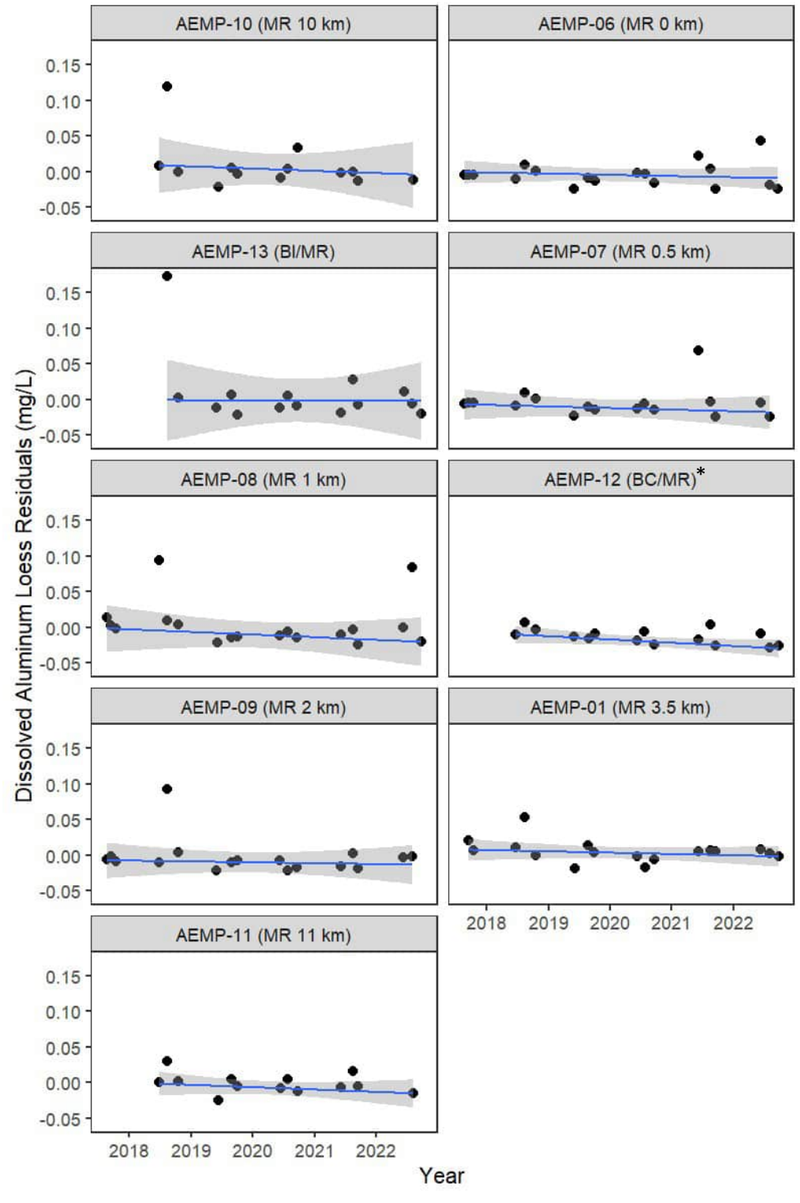
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL SUSPENDED SOLIDS

Date: April 26, 2022	Drawn by: GY	Edited by: CM	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AD-8	REV A

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Notes:
Top Left - Local regression (Loess) plot of dissolved aluminum concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved aluminum (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved aluminum (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

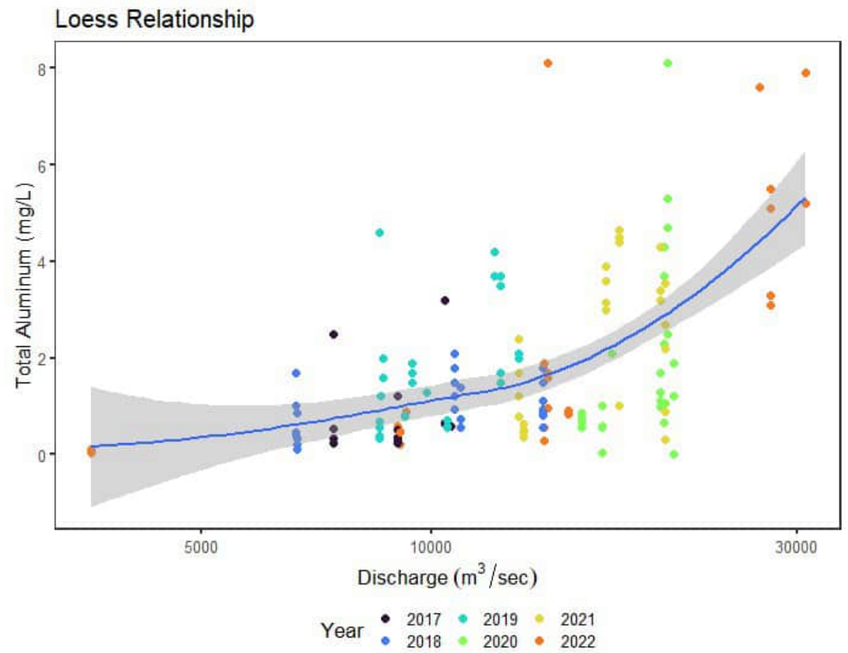
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED ALUMINUM

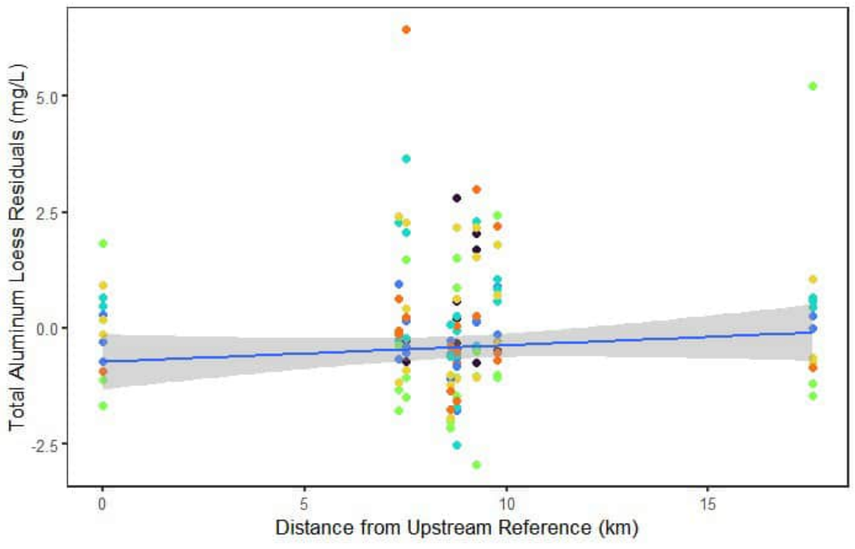
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

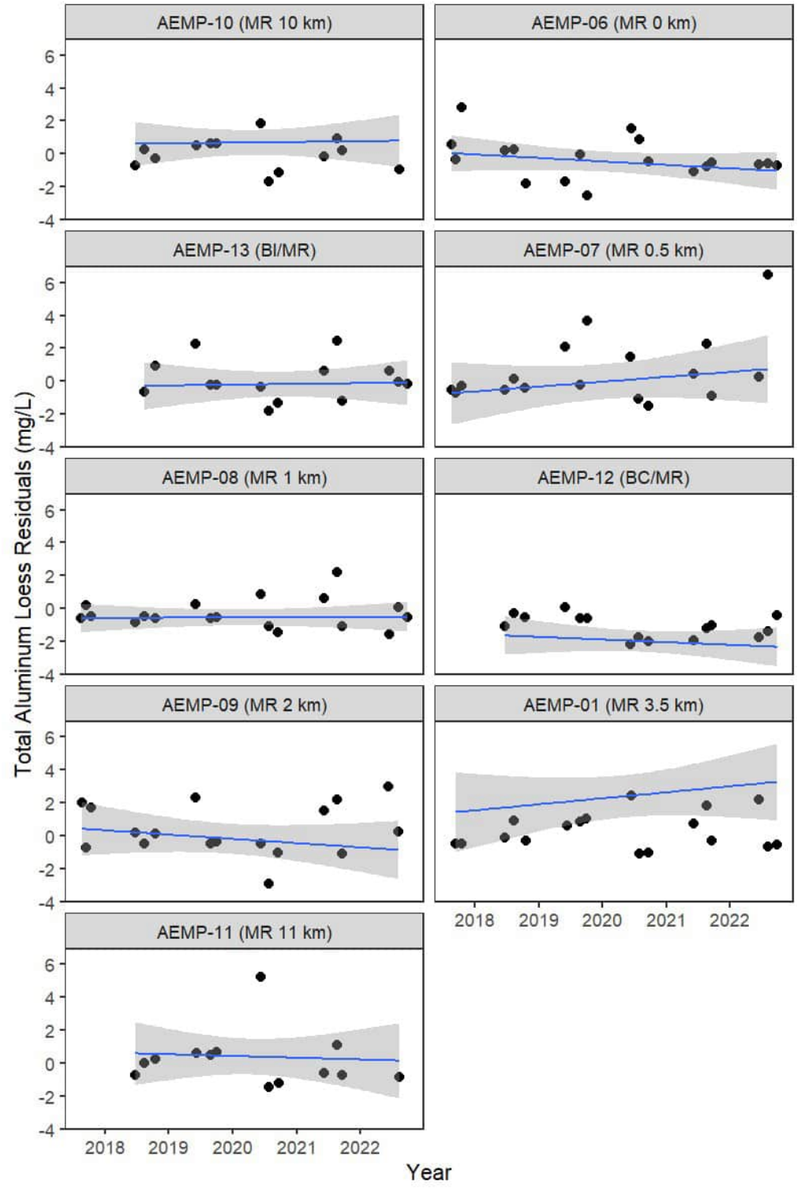
Worley Project No. 417085-42051-22200

FIGURE: **AD-9** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total aluminum concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total aluminum (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total aluminum (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

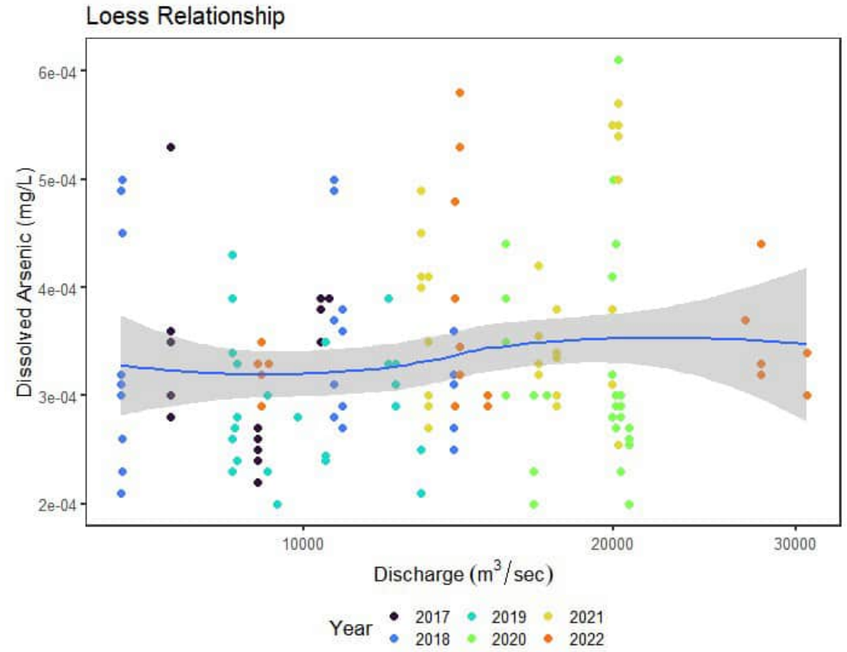
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL ALUMINUM

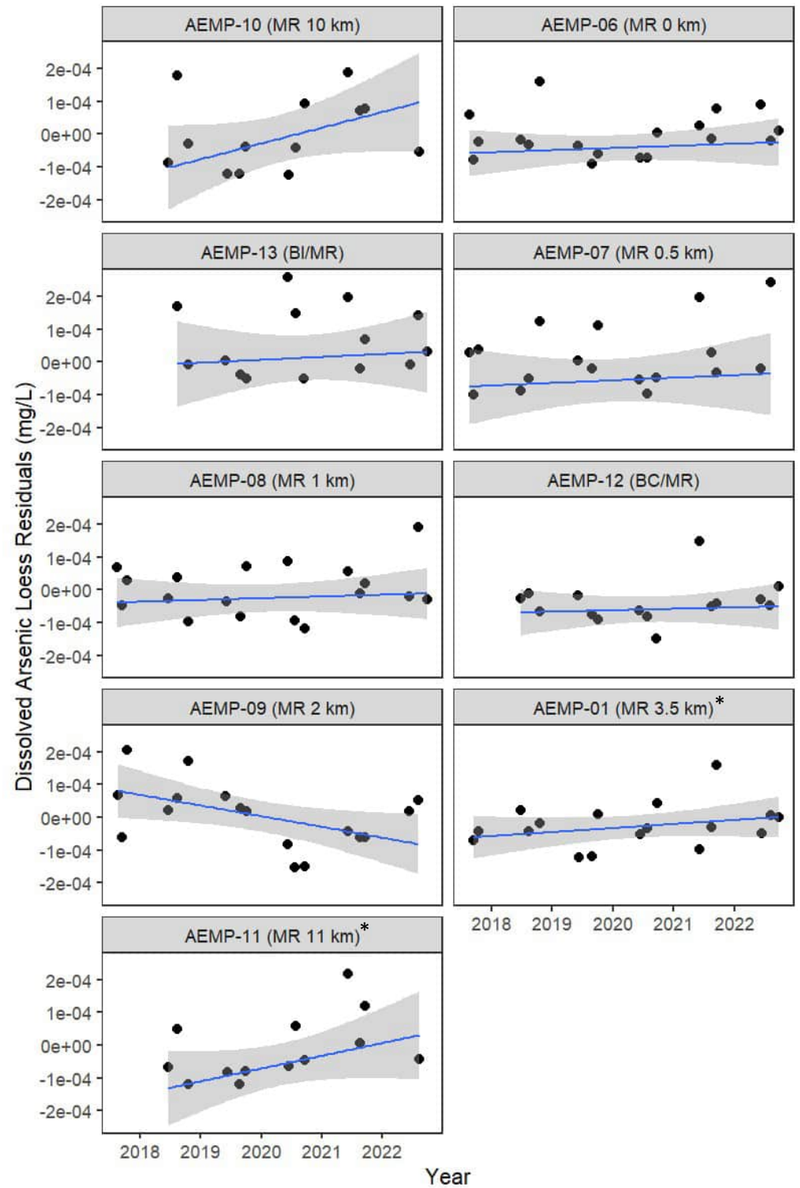
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

Worley Project No. 417085-42051-22200

FIGURE: **AD-10** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of dissolved arsenic concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved arsenic (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved arsenic (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

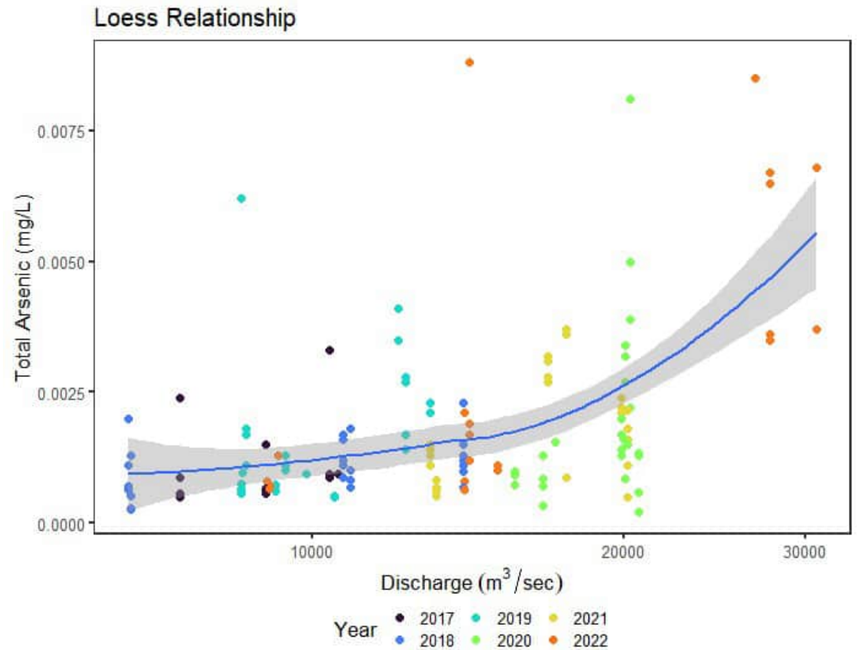
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED ARSENIC

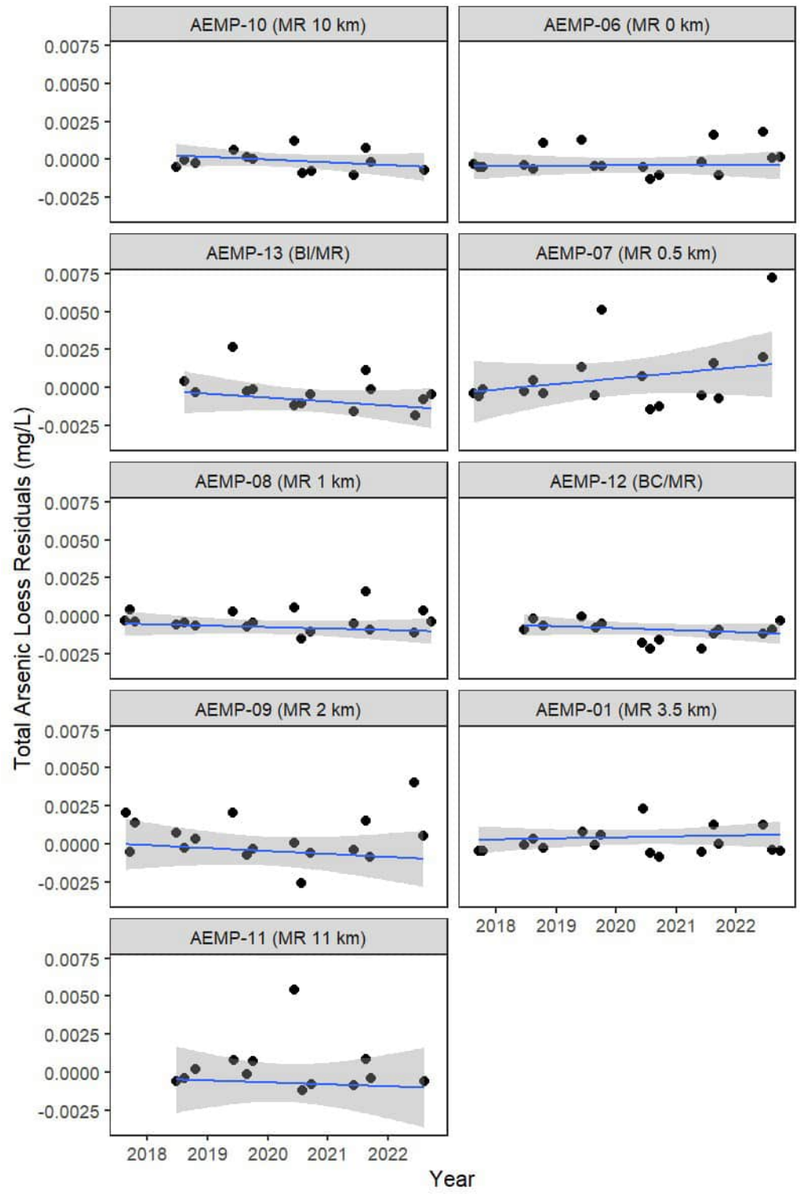
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

Worley Project No. 417085-42051-22200

FIGURE: **AD-11** REV **A**

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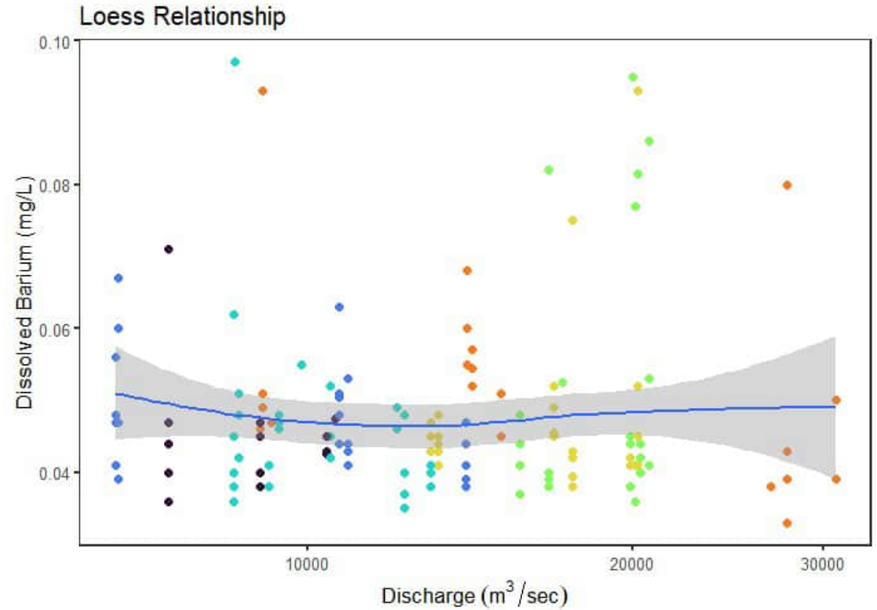
Notes:
Top Left - Local regression (Loess) plot of total arsenic concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total arsenic (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total arsenic (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

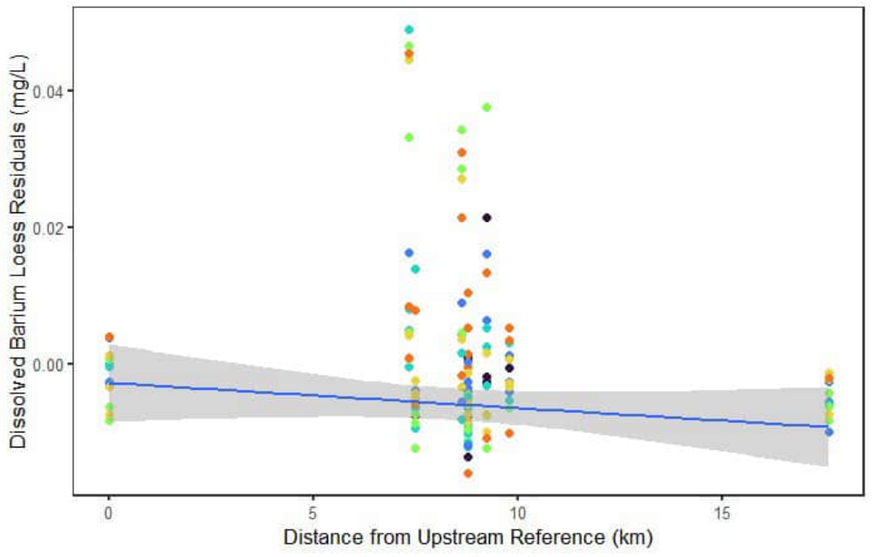
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NORMAN WELLS, NT

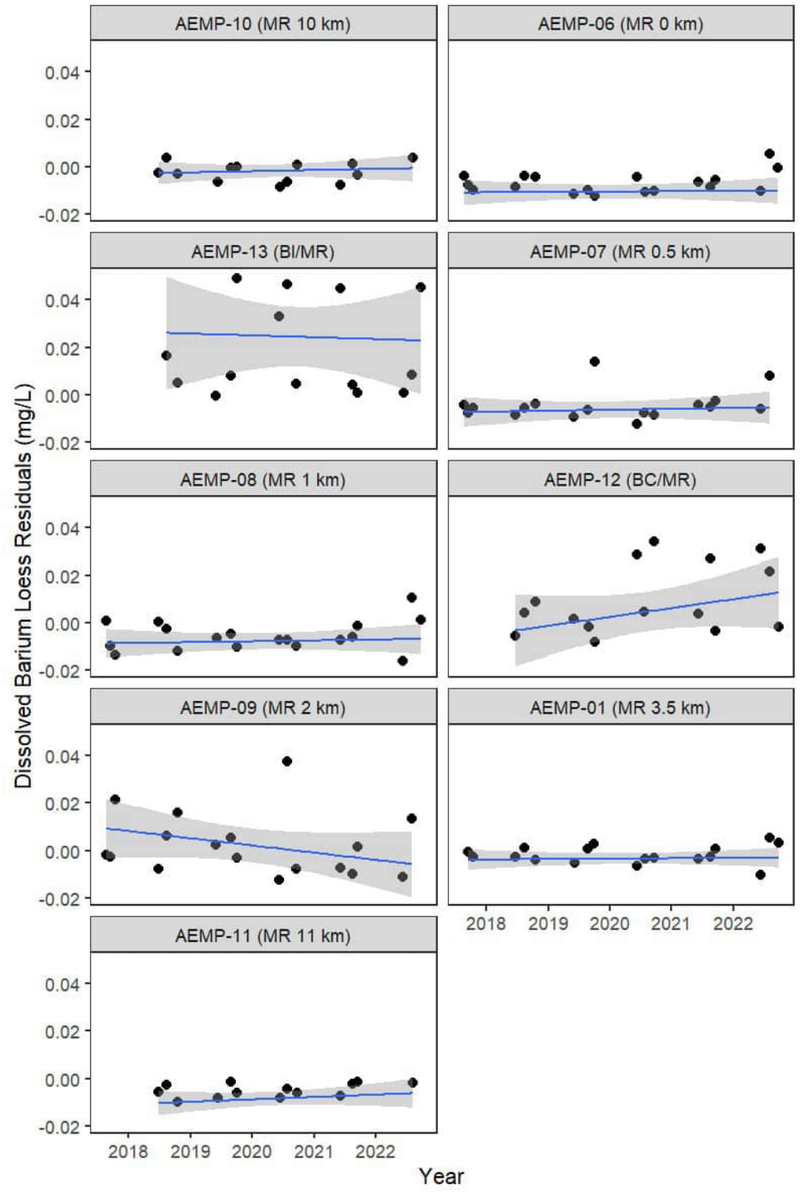
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL ARSENIC

Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AD-12	REV A

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Notes:
Top Left - Local regression (Loess) plot of dissolved barium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved barium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved barium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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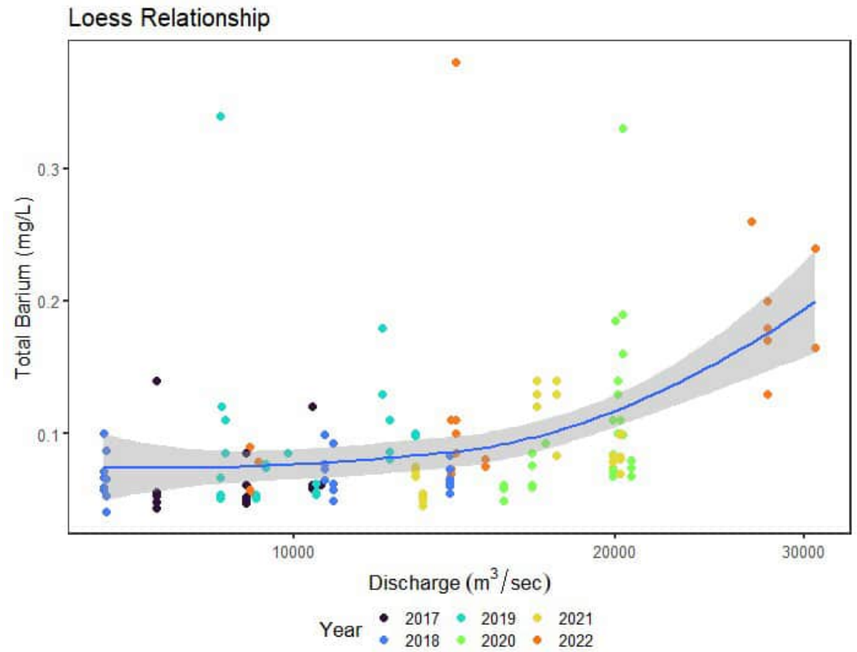
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED BARIUM

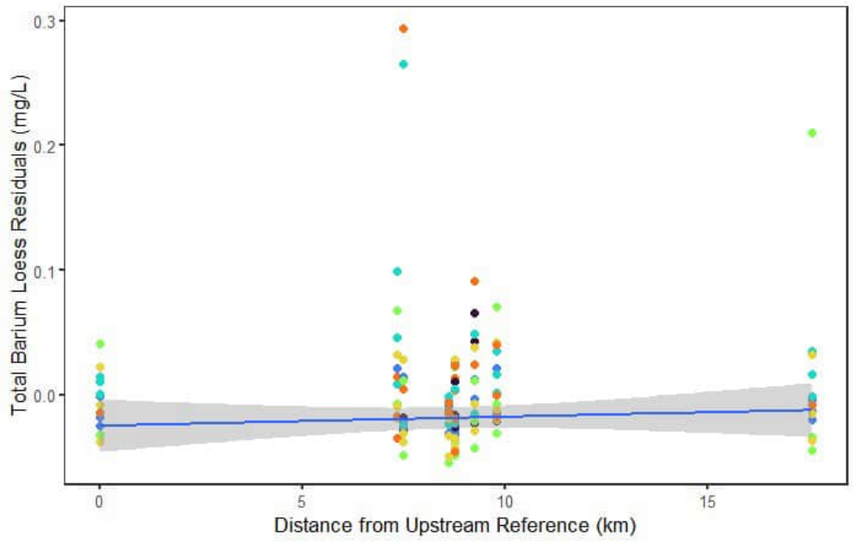
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

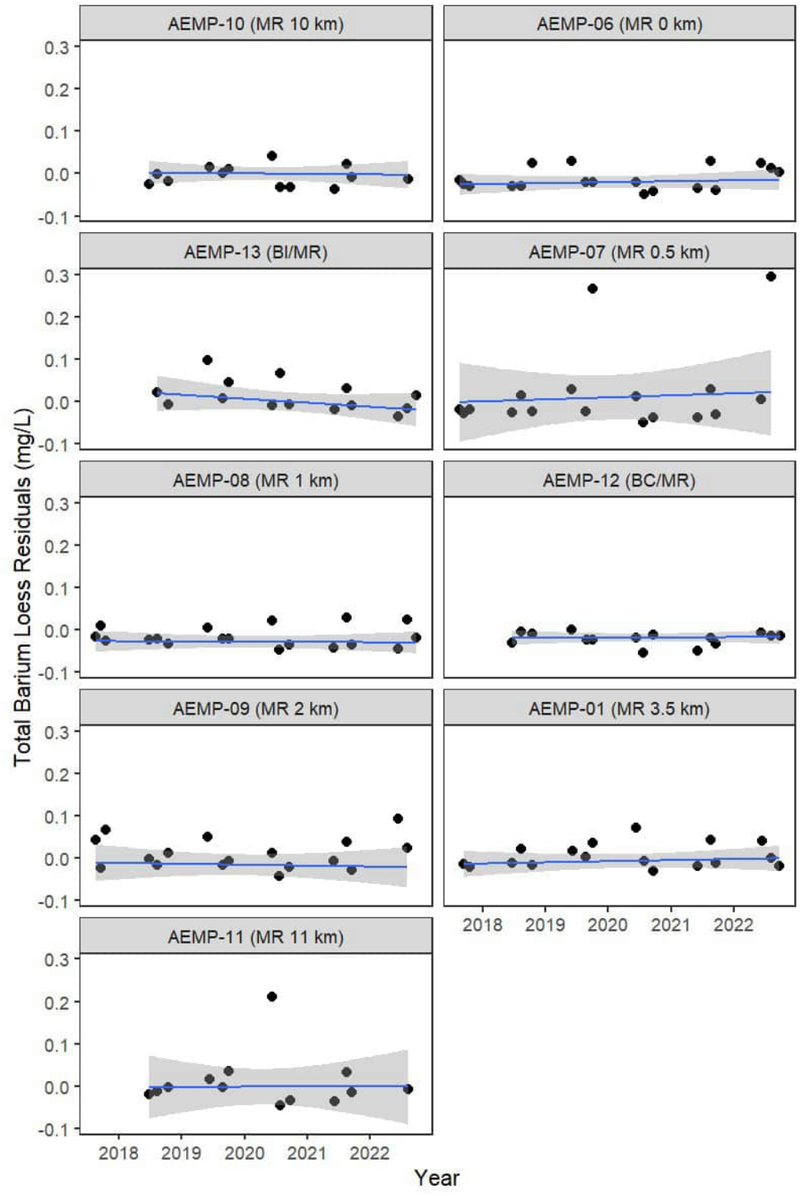
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FIGURE: **AD-13** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total barium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total barium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total barium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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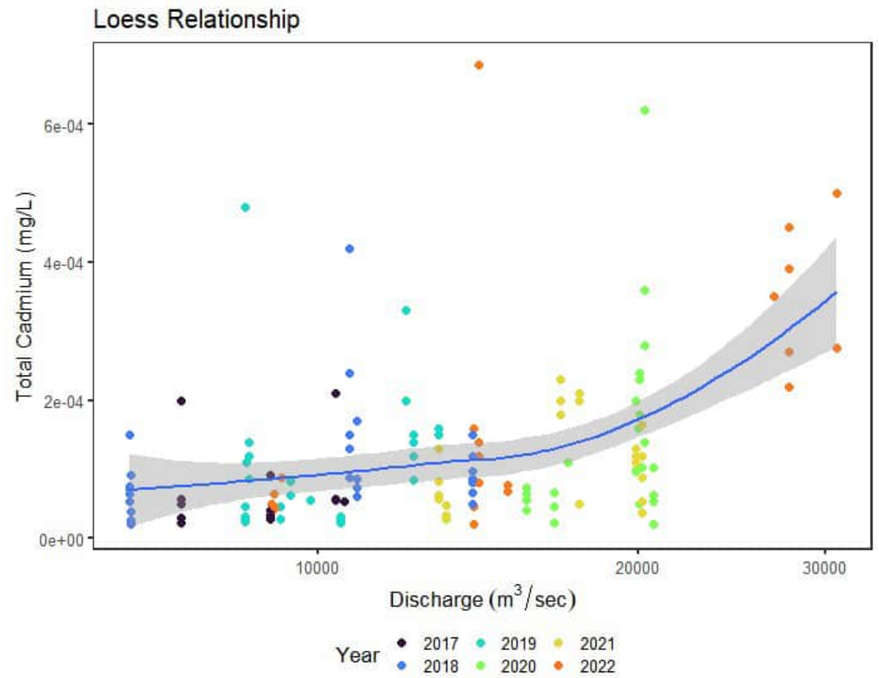
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL BARIUM

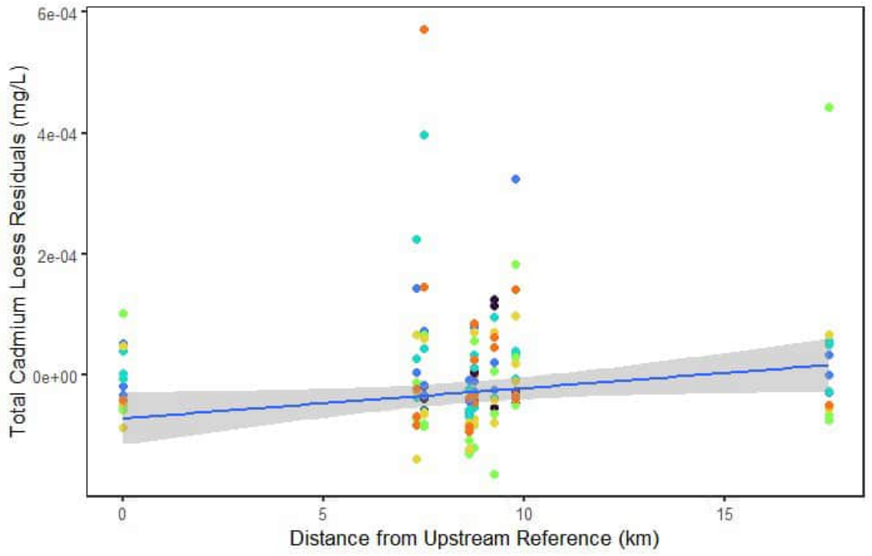
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

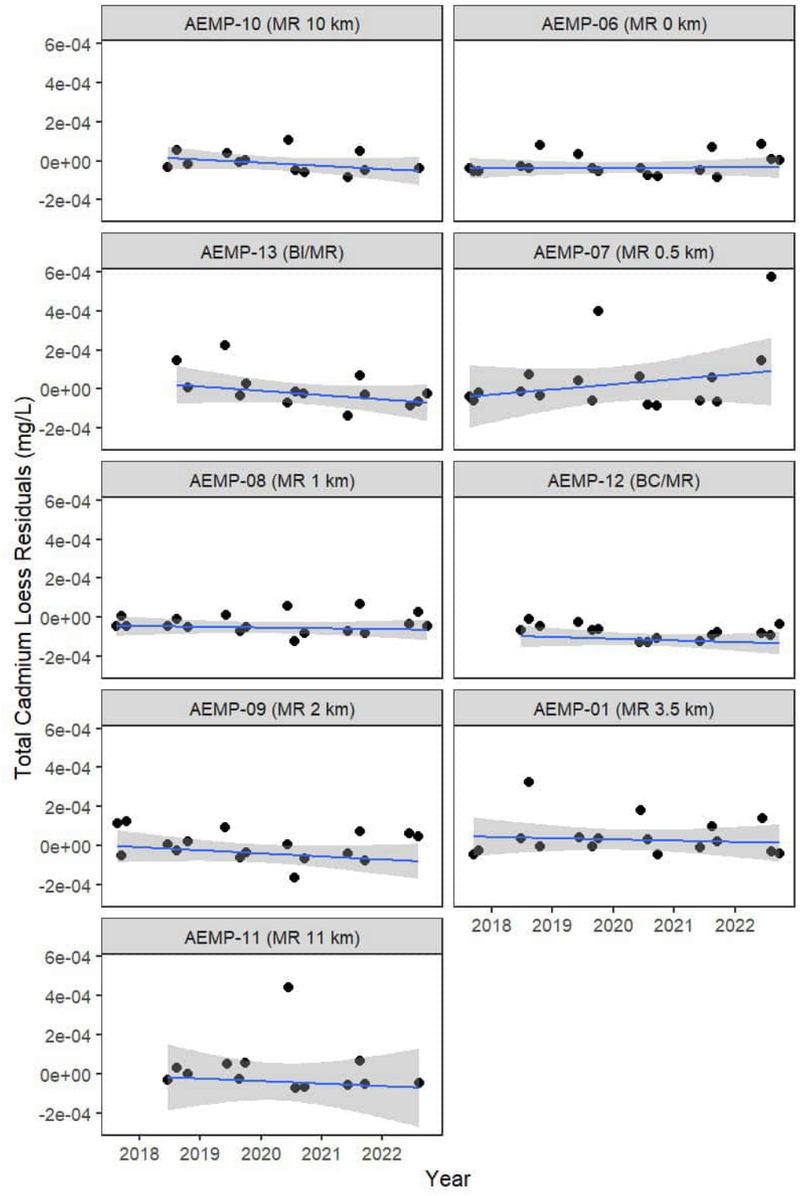
Worley Project No. 417085-42051-22200

FIGURE: **AD-14** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total cadmium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total cadmium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total cadmium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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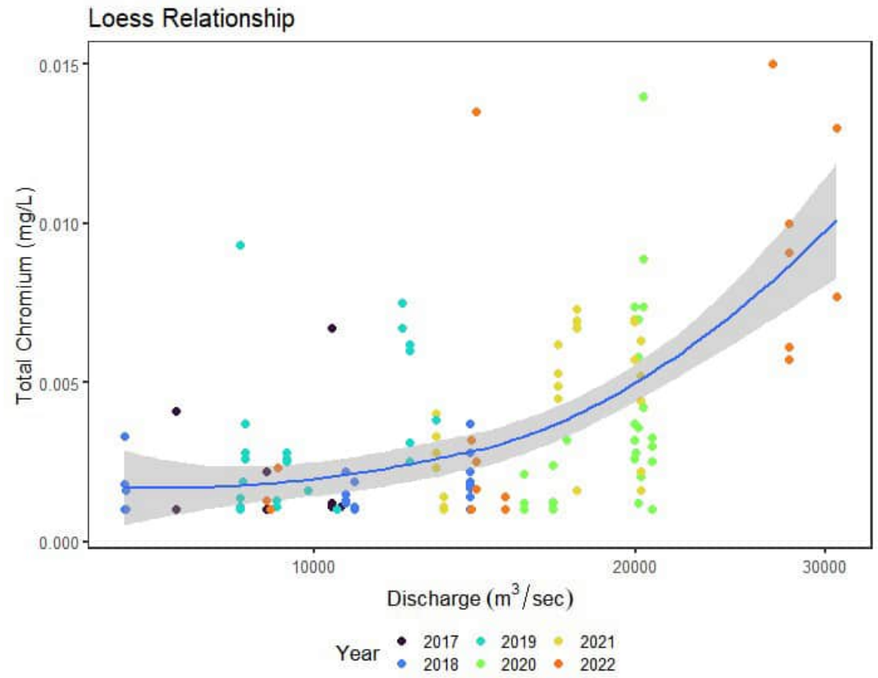
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL CADMIUM

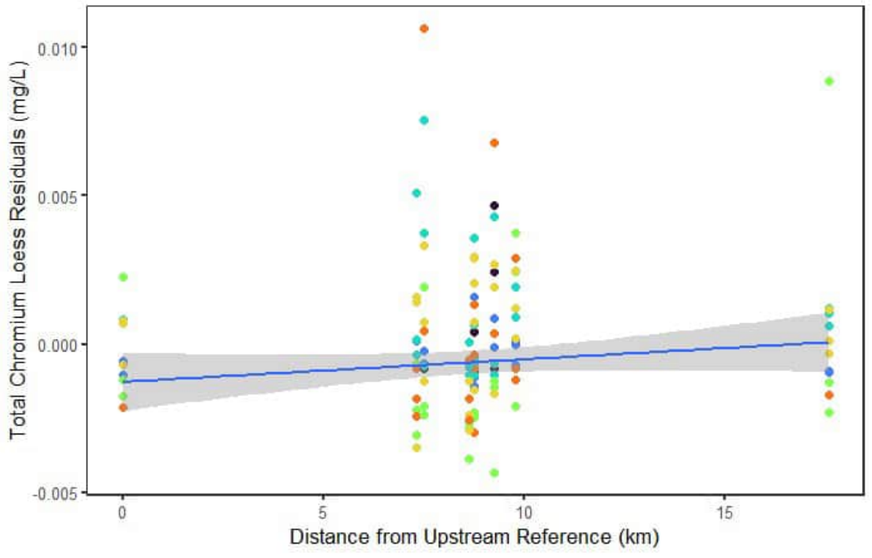
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

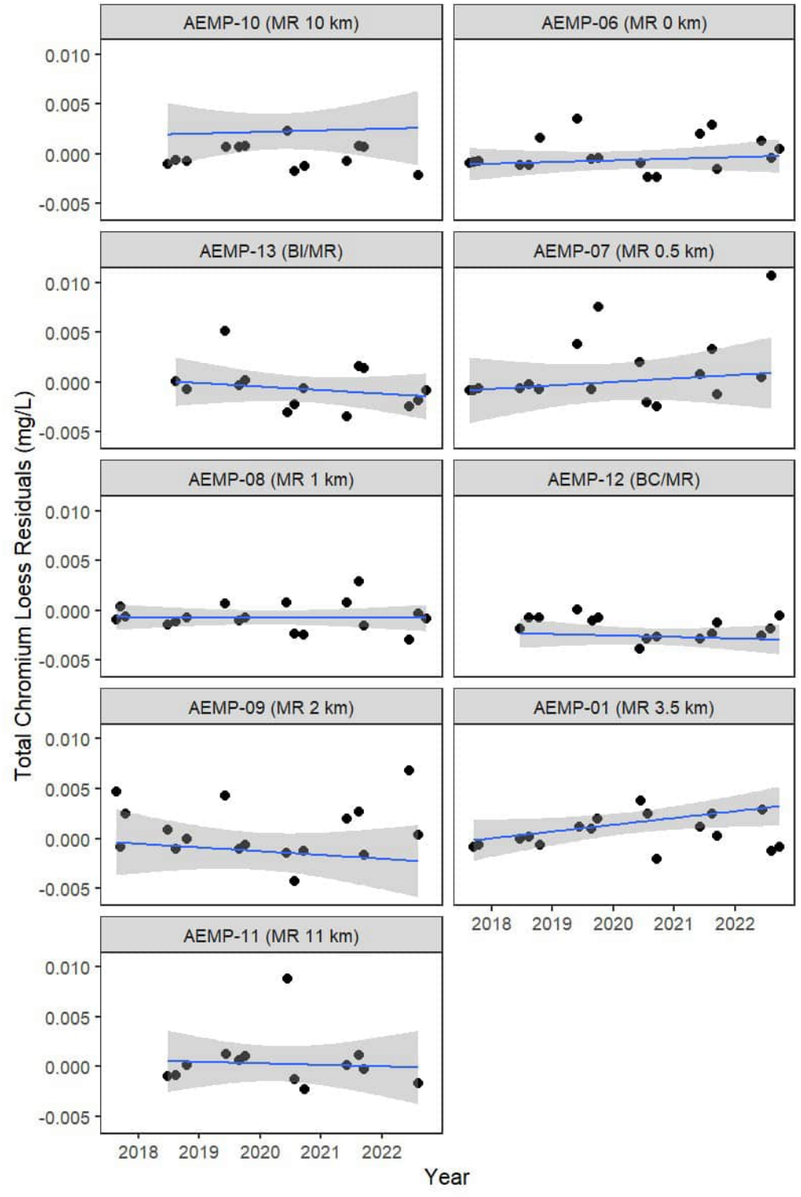
Worley Project No.
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FIGURE: **AD-15** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total chromium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total chromium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total chromium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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NORMAN WELLS, NT

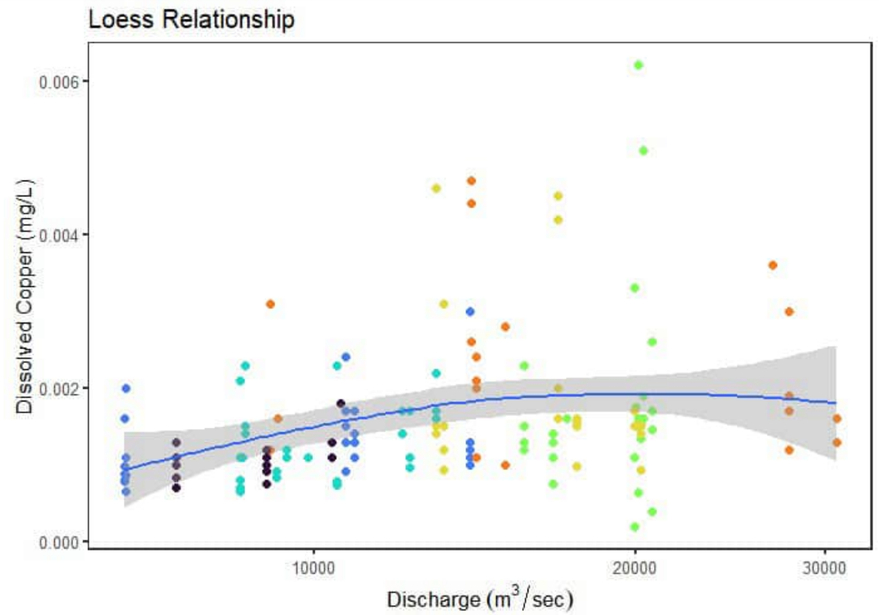
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL CHROMIUM

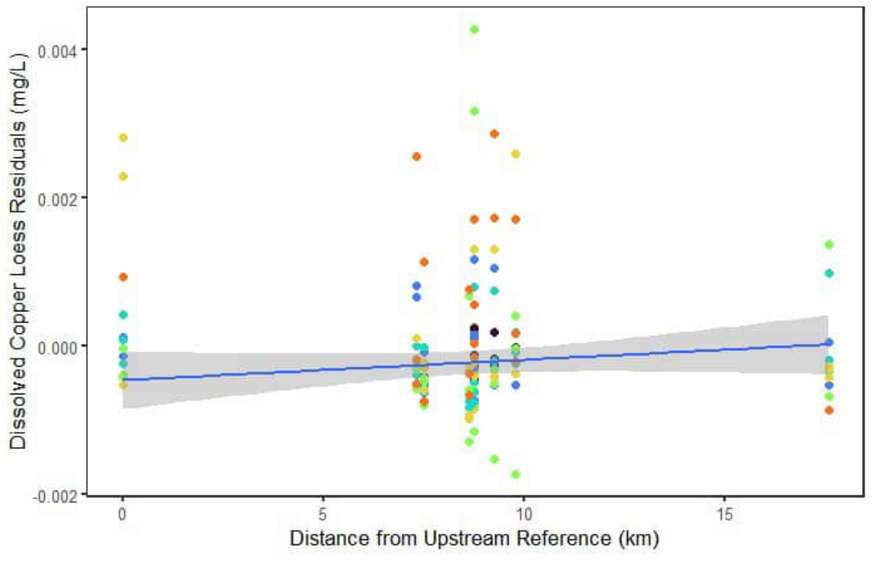
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

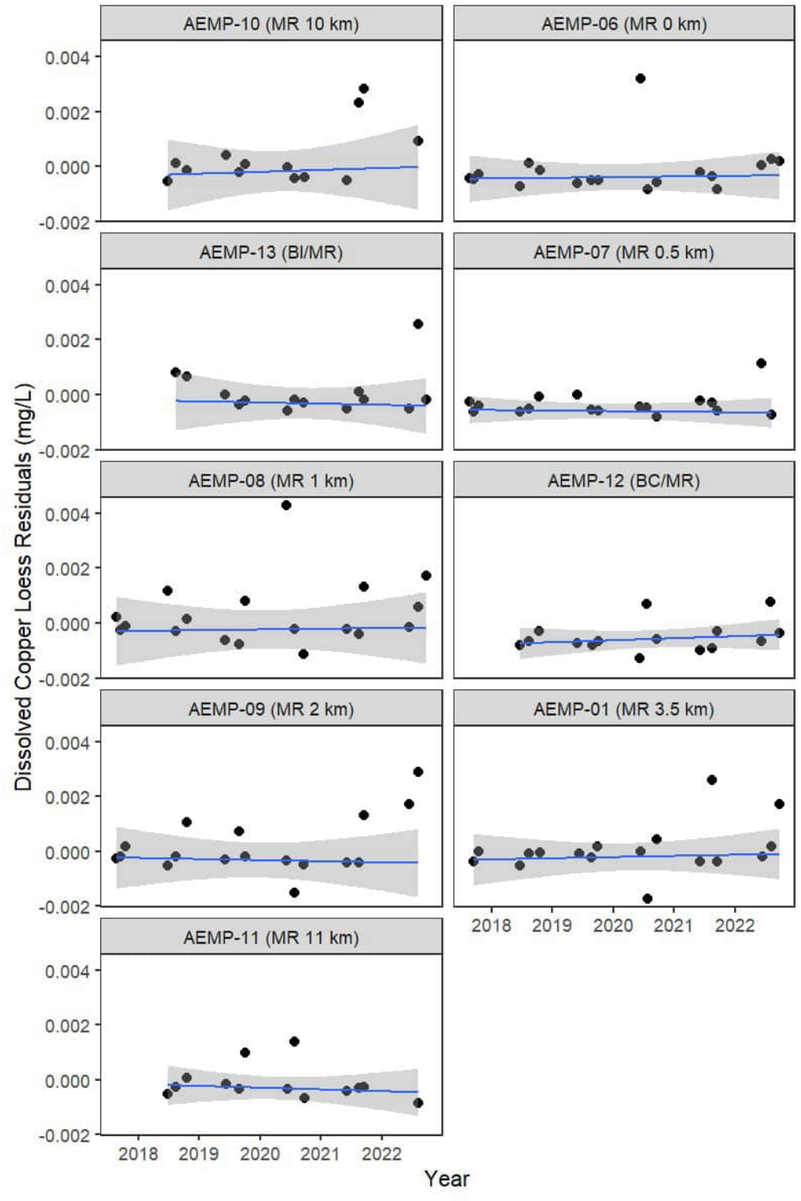
Worley Project No. 417085-42051-22200

FIGURE: **AD-16** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of dissolved copper chromium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved copper (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved copper (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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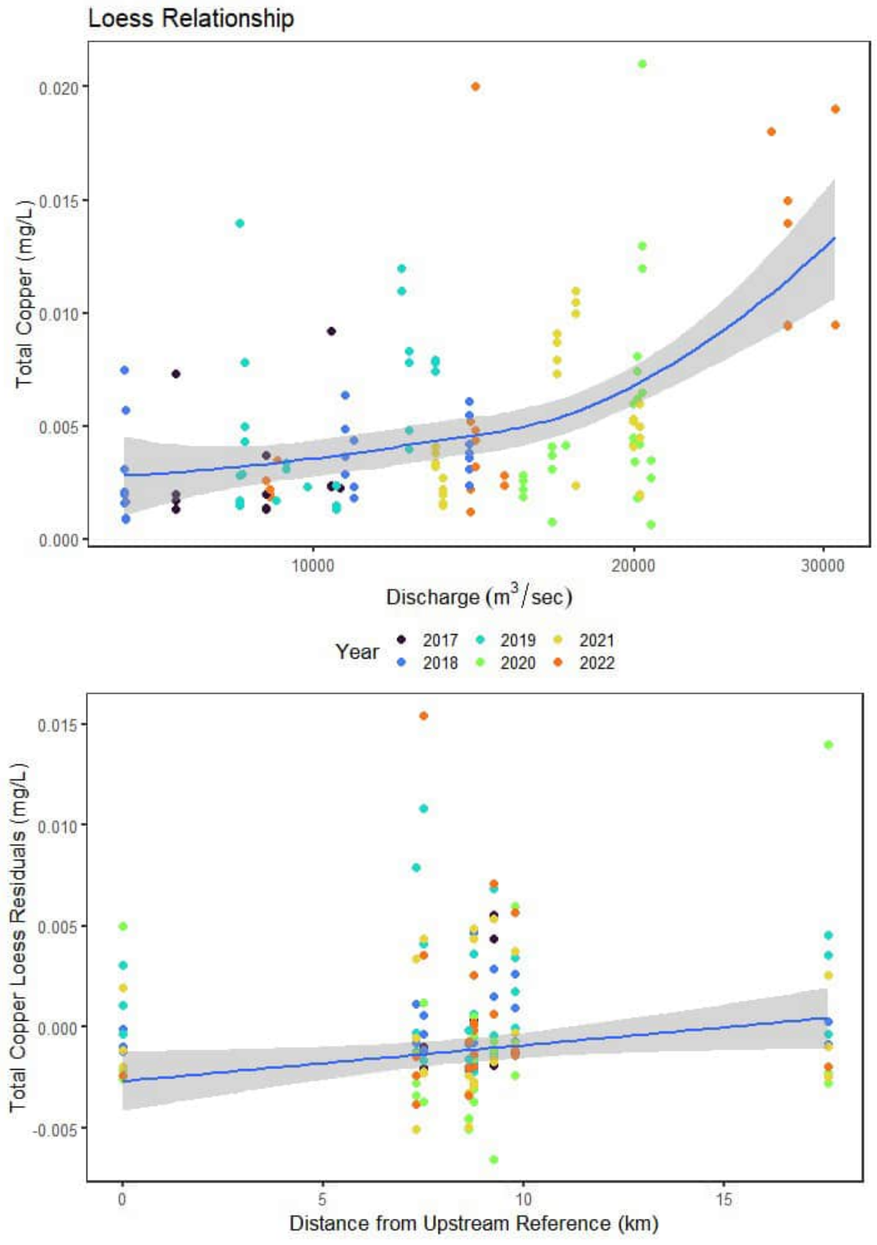
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
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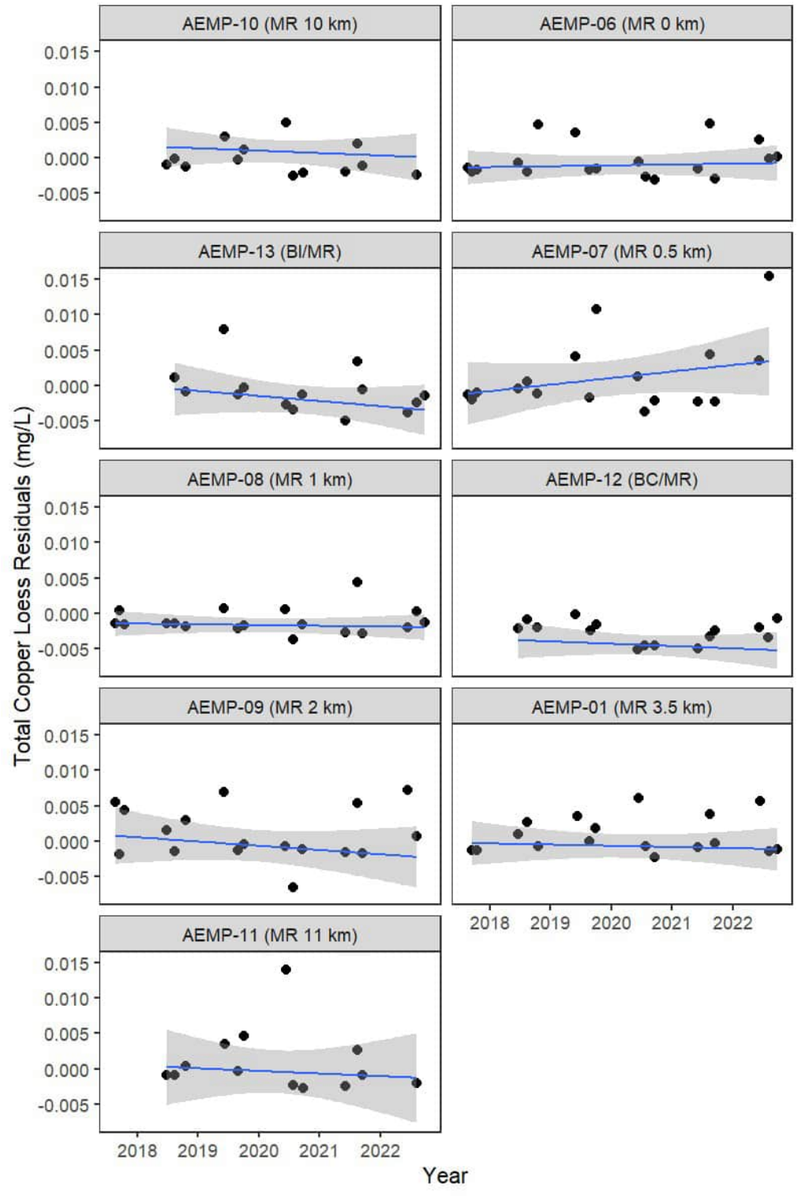
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

Worley Project No. 417085-42051-22200

FIGURE: **AD-17** REV **A**

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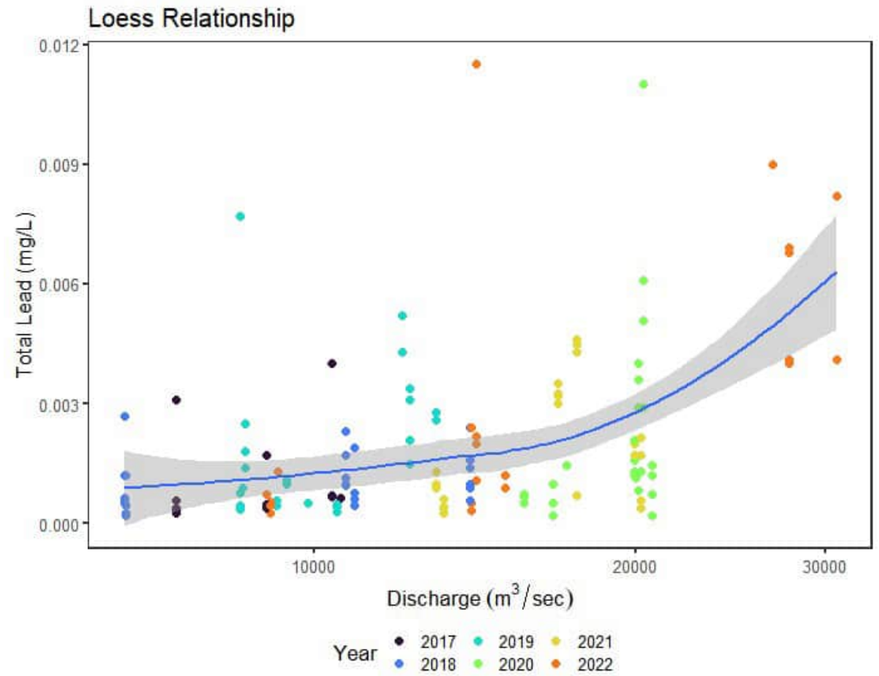
Notes:
Top Left - Local regression (Loess) plot of total copper concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total copper (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total copper (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
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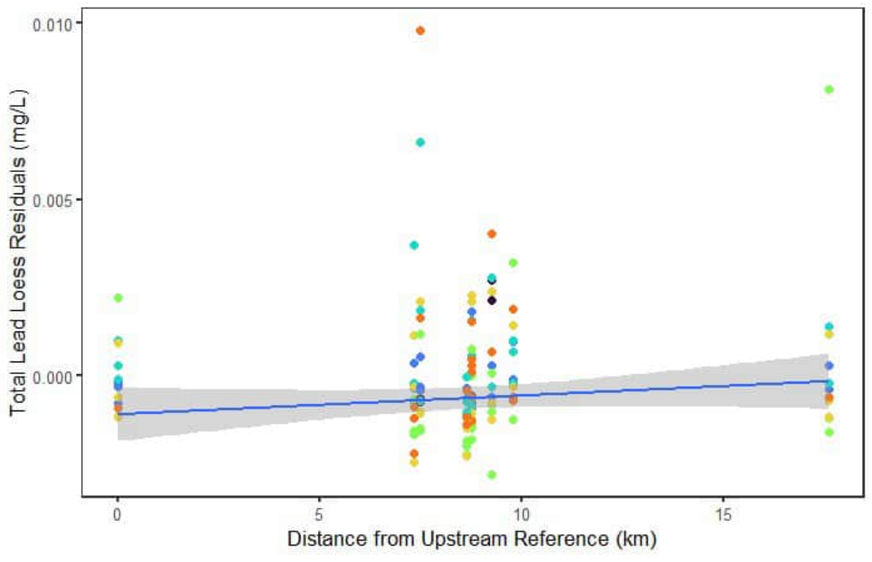
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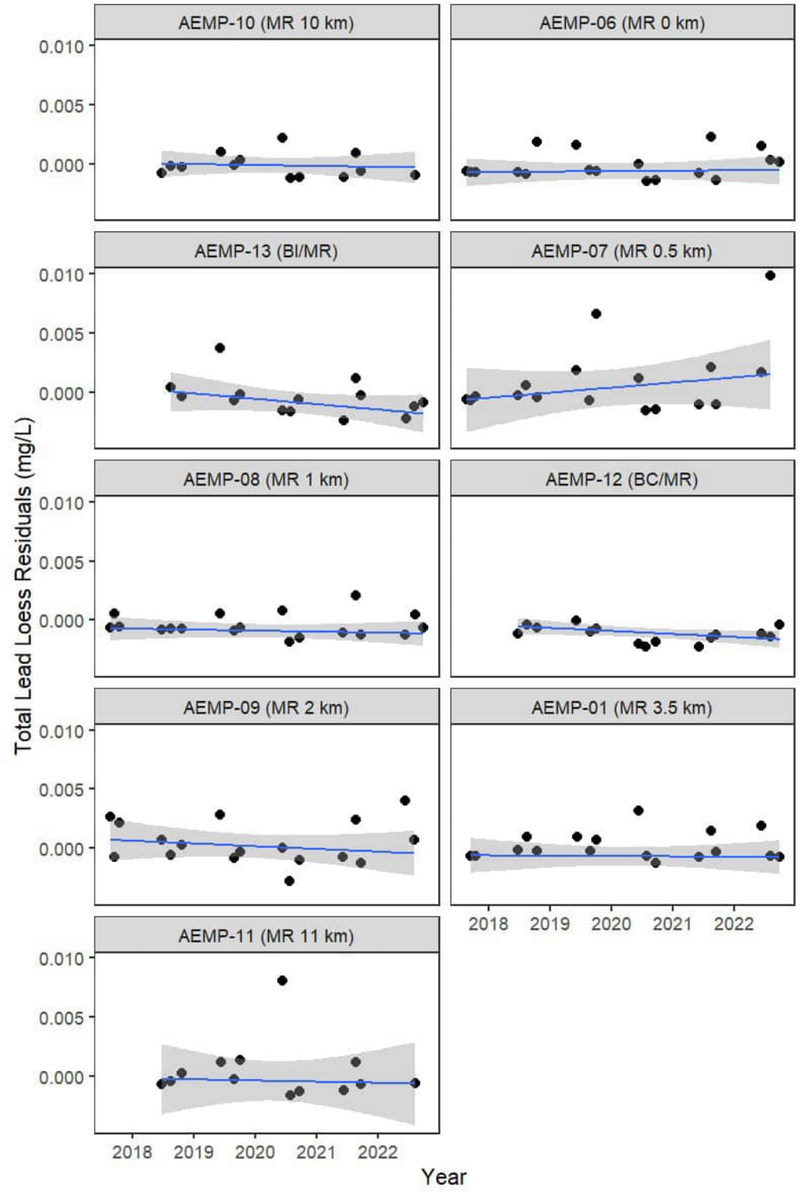
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL COPPER

Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AD-18	REV A

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Notes:
Top Left - Local regression (Loess) plot of total lead concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total lead (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total lead (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
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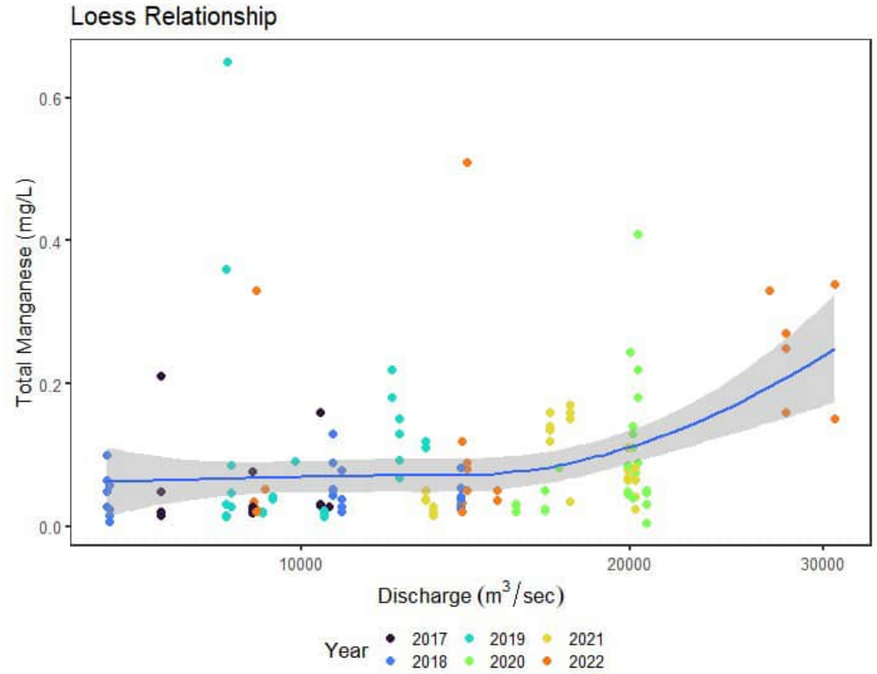
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL LEAD

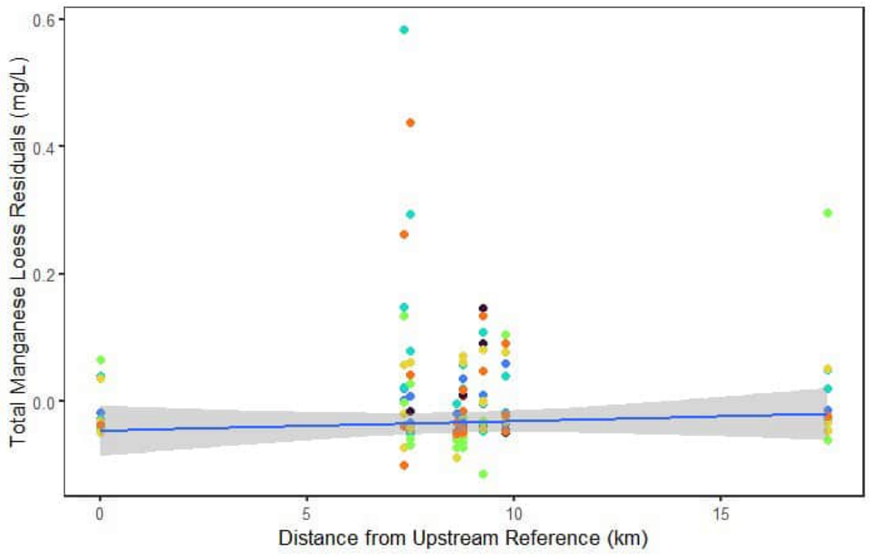
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

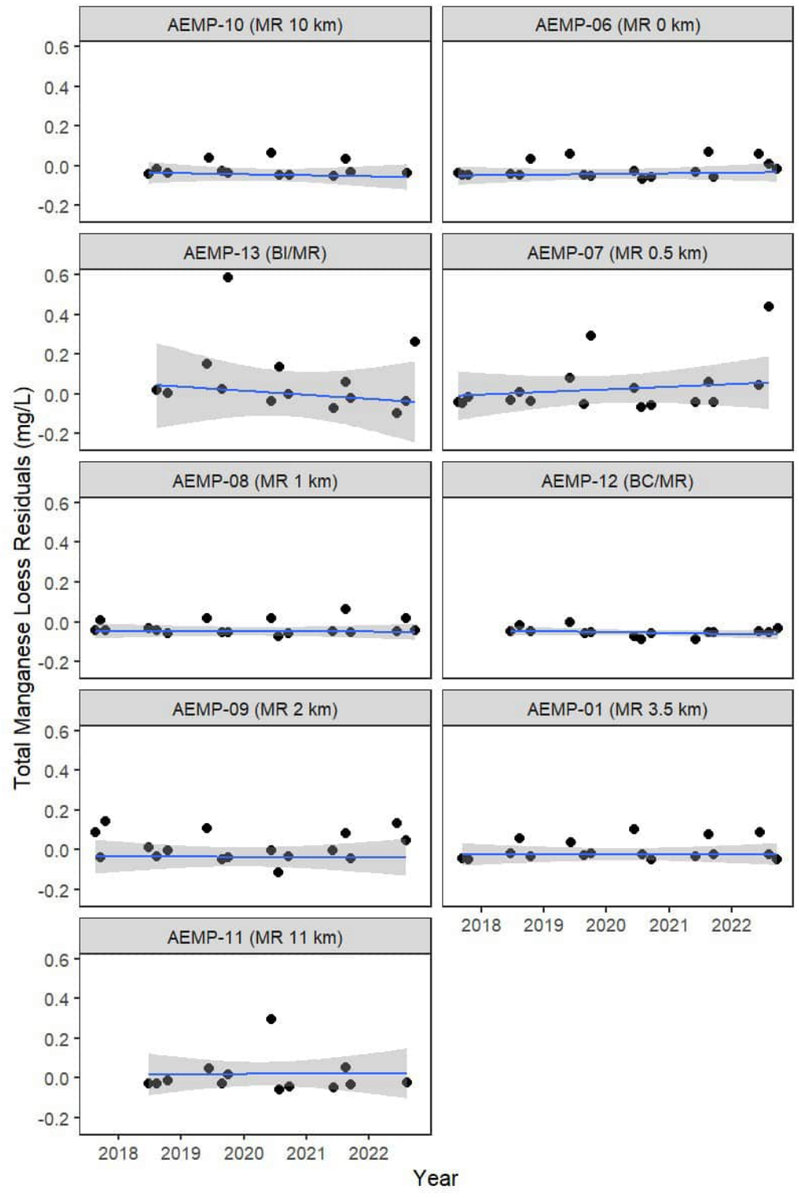
Worley Project No. 417085-42051-22200

FIGURE: **AD-19** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total manganese concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total manganese (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total manganese (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
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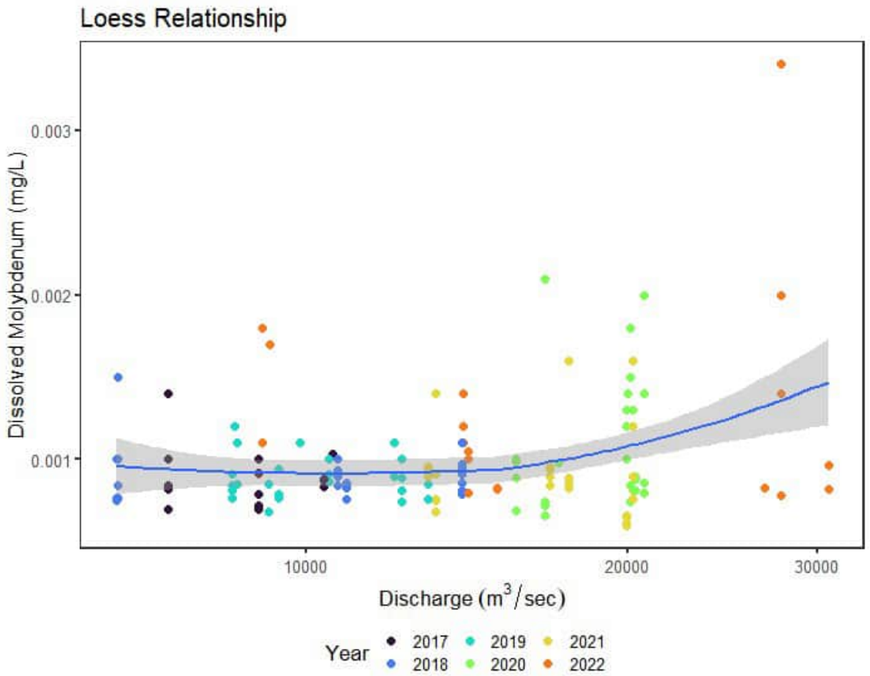
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL MANGANESE

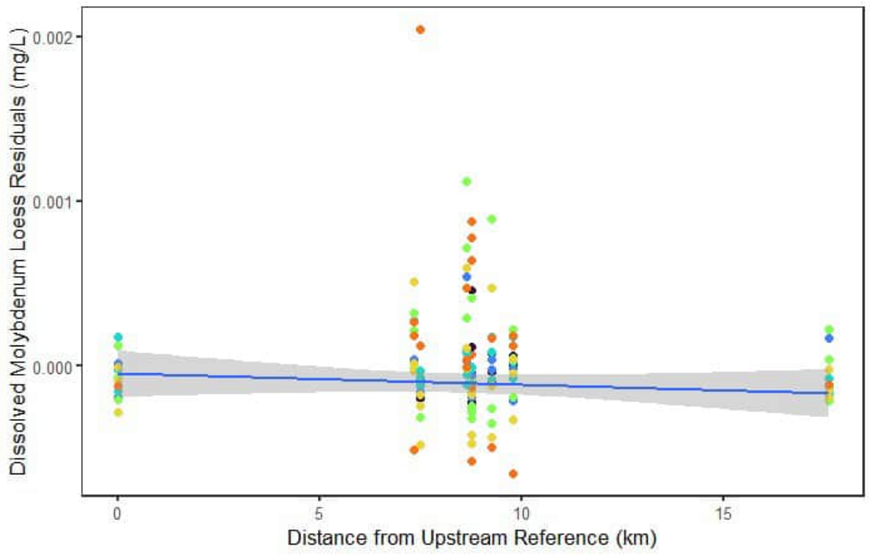
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

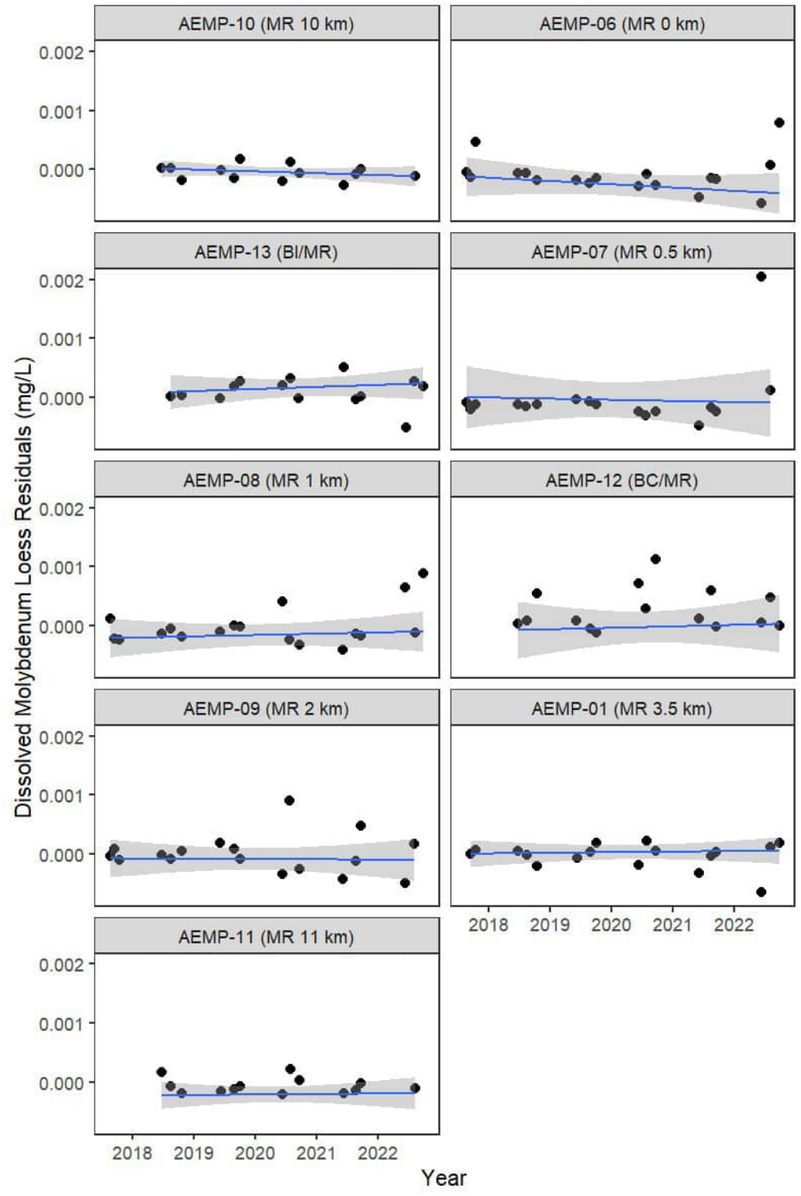
Worley Project No.
417085-42051-22200

FIGURE: **AD-20** REV **A**

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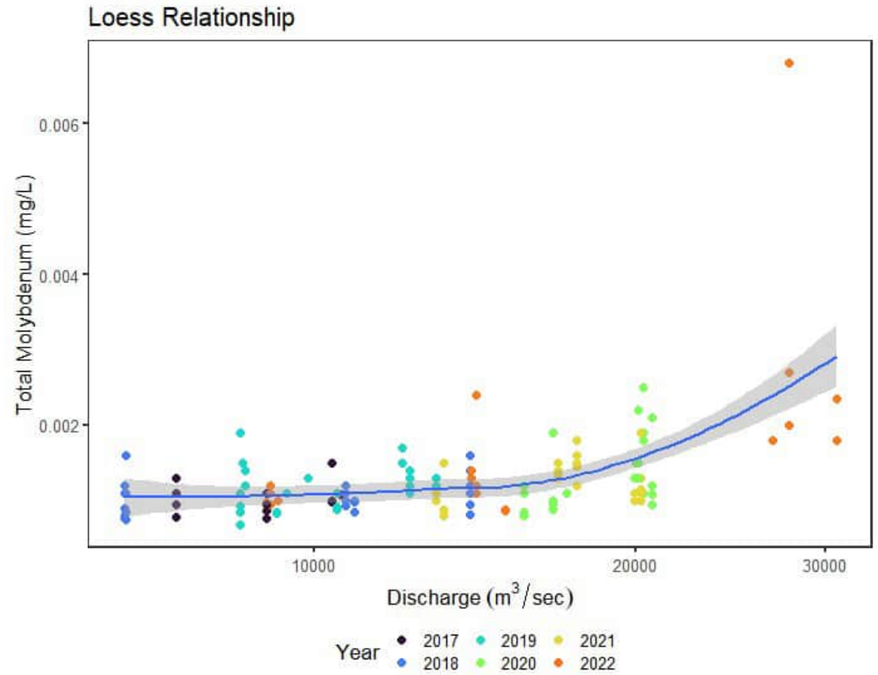
Notes:
Top Left - Local regression (Loess) plot of dissolved molybdenum concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved molybdenum manganese (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved molybdenum (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
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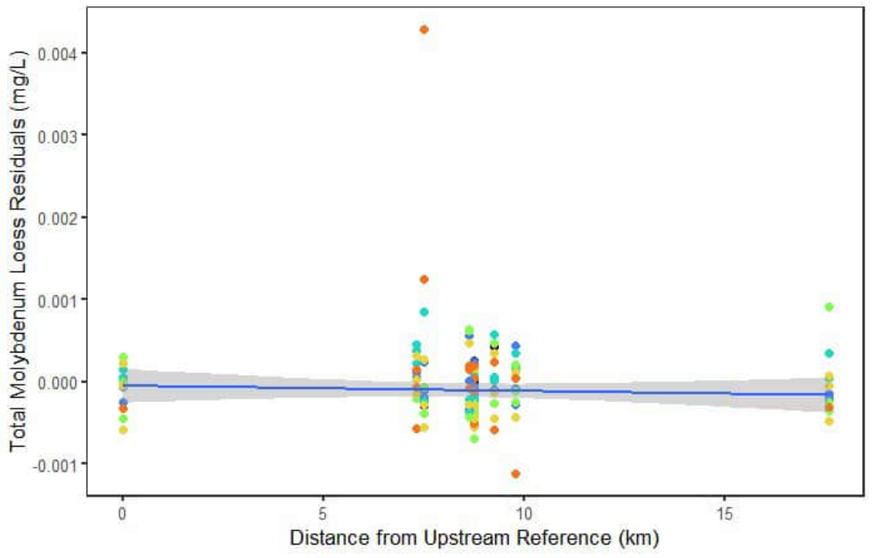
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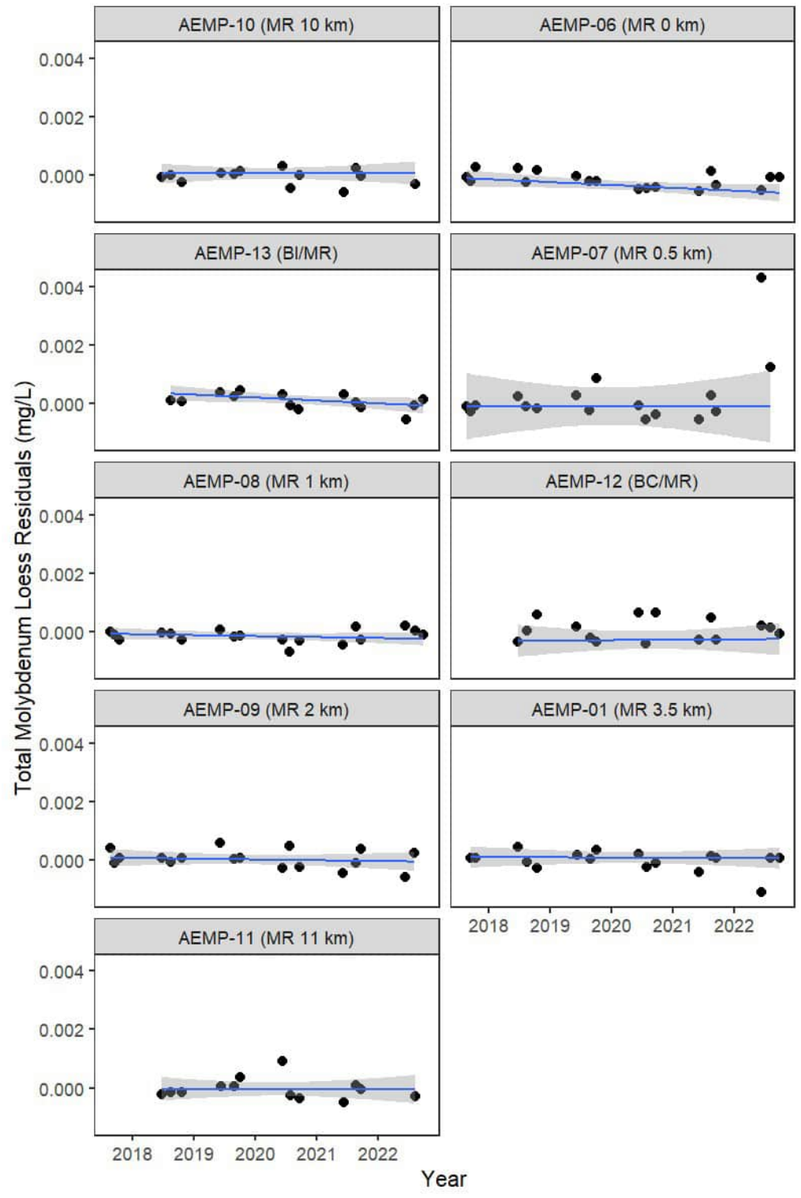
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL MOLYBDENUM

Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AD-21	REV A

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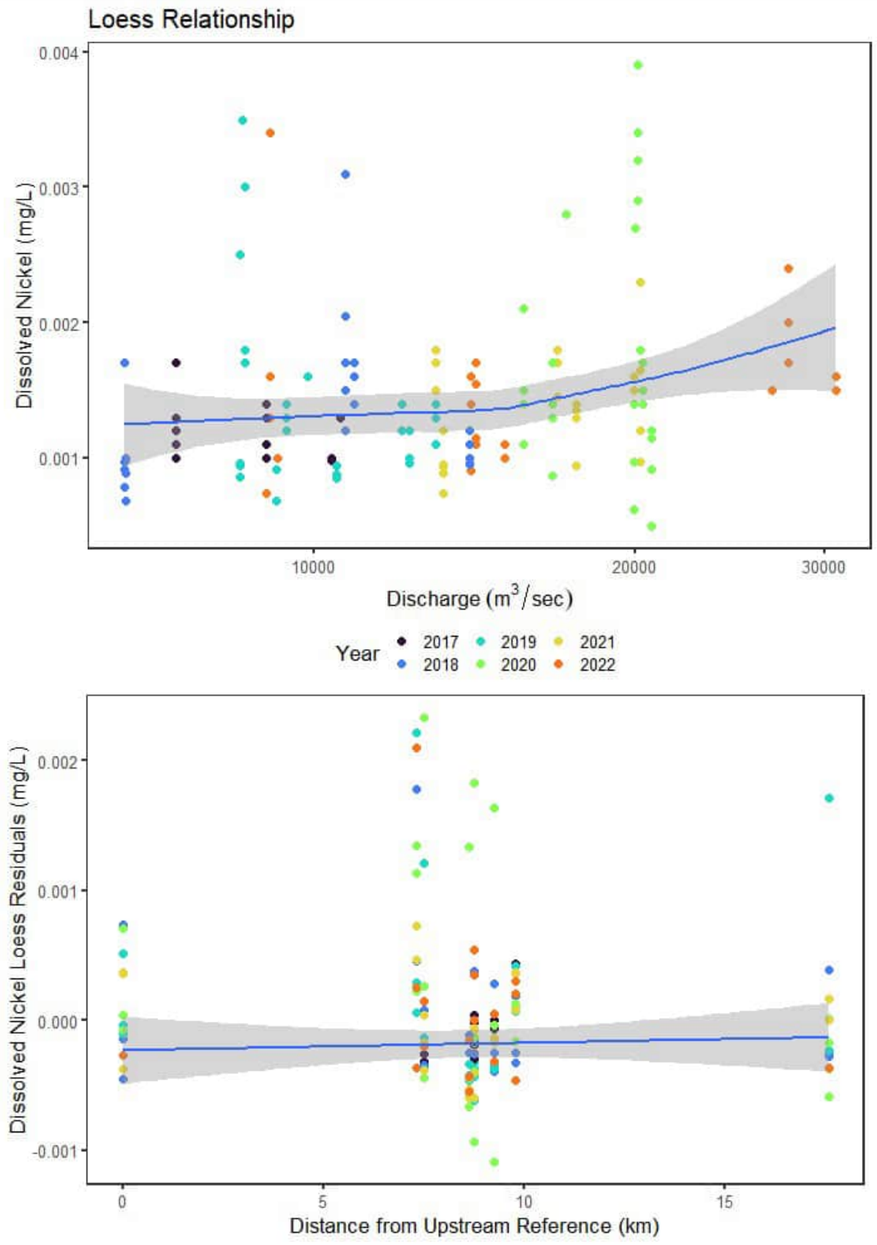
Notes:
Top Left - Local regression (Loess) plot of total molybdenum concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total molybdenum (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total molybdenum (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
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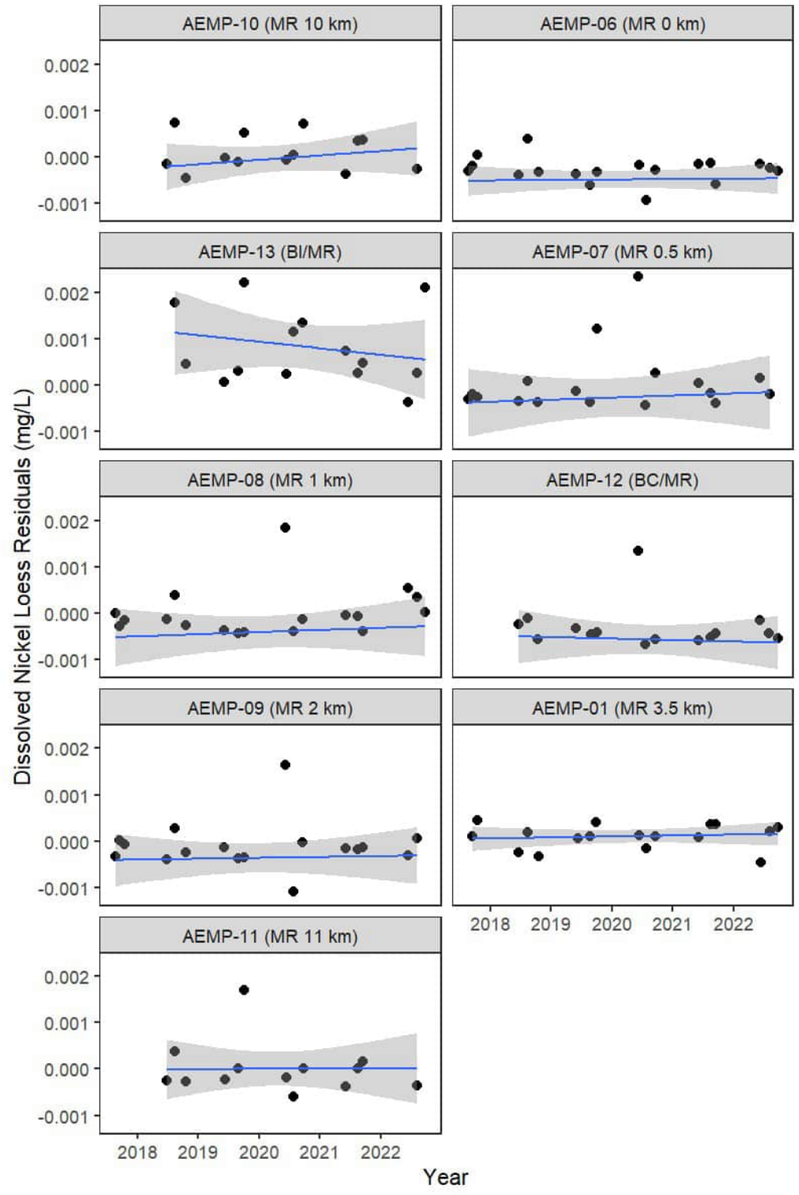
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FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL MOLYBDENUM

Imperial	Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH	
			Worley Project No. 417085-42051-22200		
			FIGURE: AD-22	REV A	

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Notes:
Top Left - Local regression (Loess) plot of dissolved nickel concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved nickel (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved nickel (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

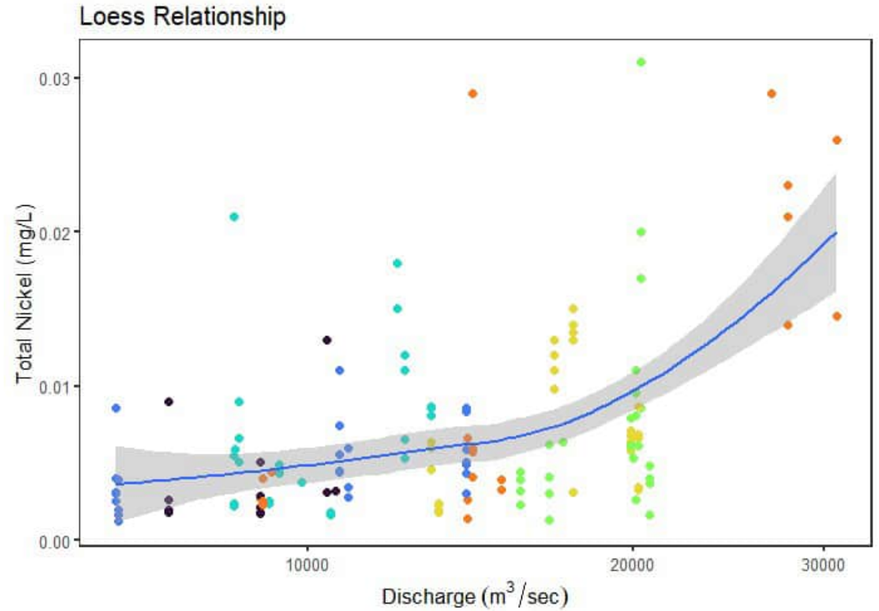
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED NICKEL

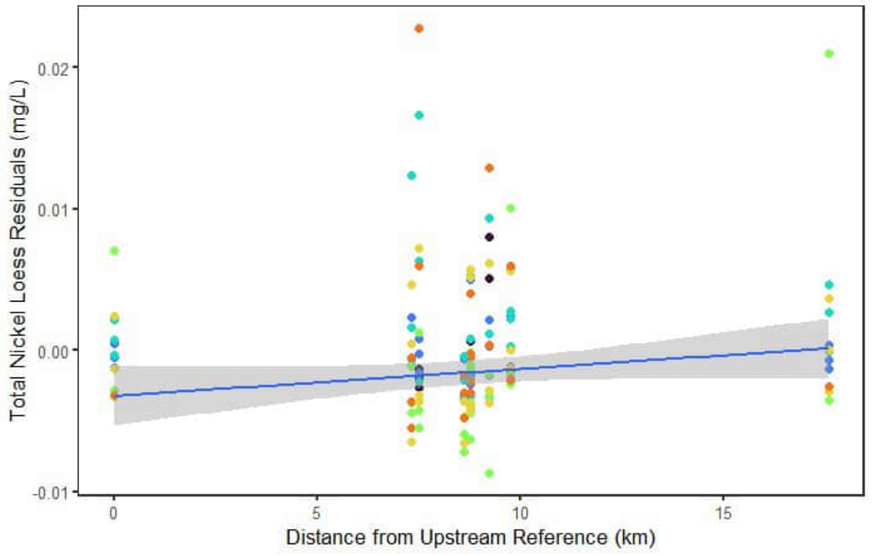
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

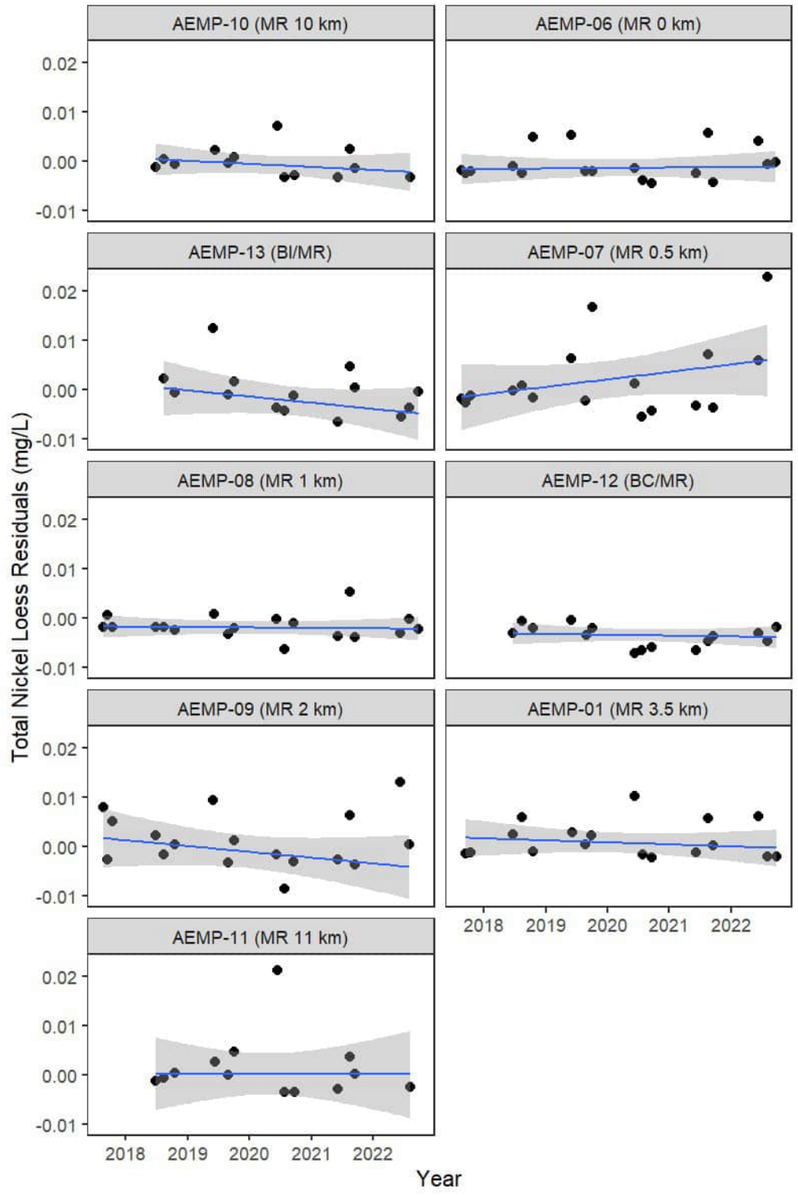
Worley Project No. 417085-42051-22200

FIGURE: **AD-23** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total nickel concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total nickel (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total nickel (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

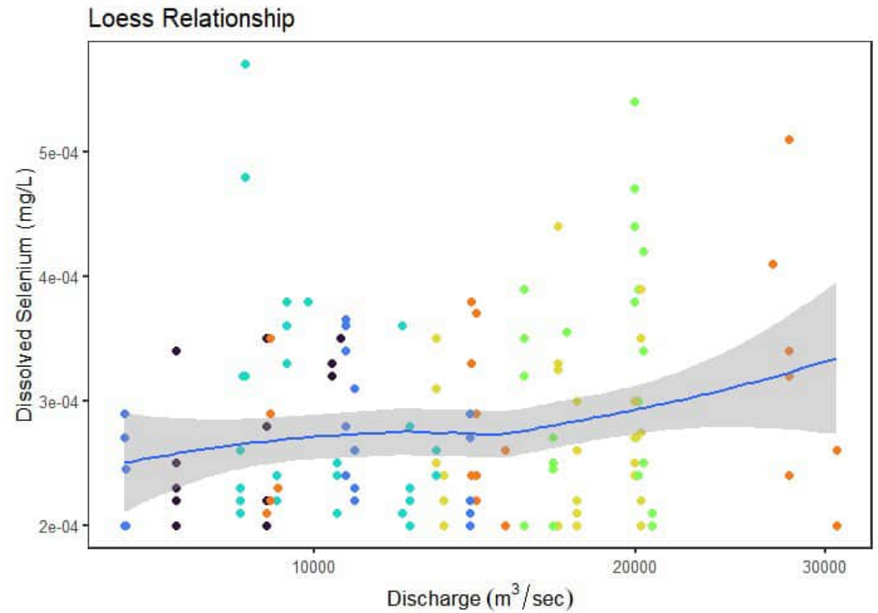
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL NICKEL

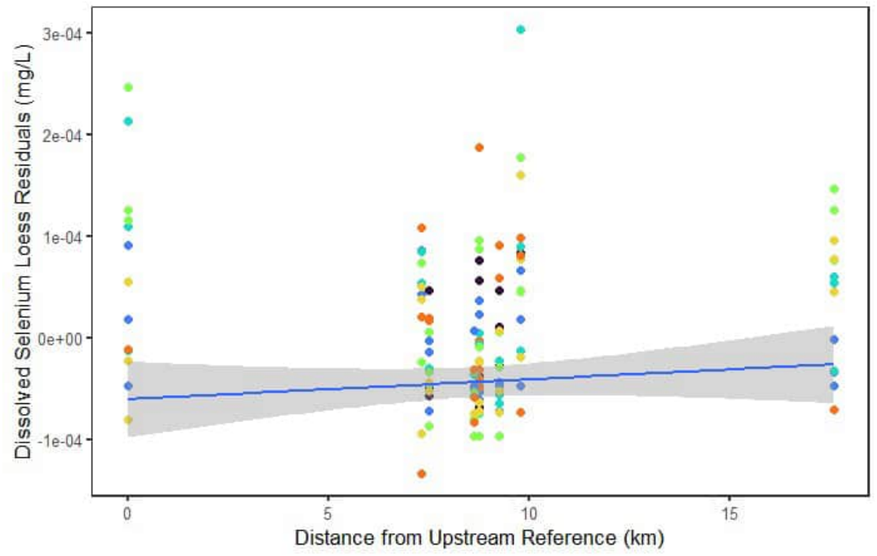
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

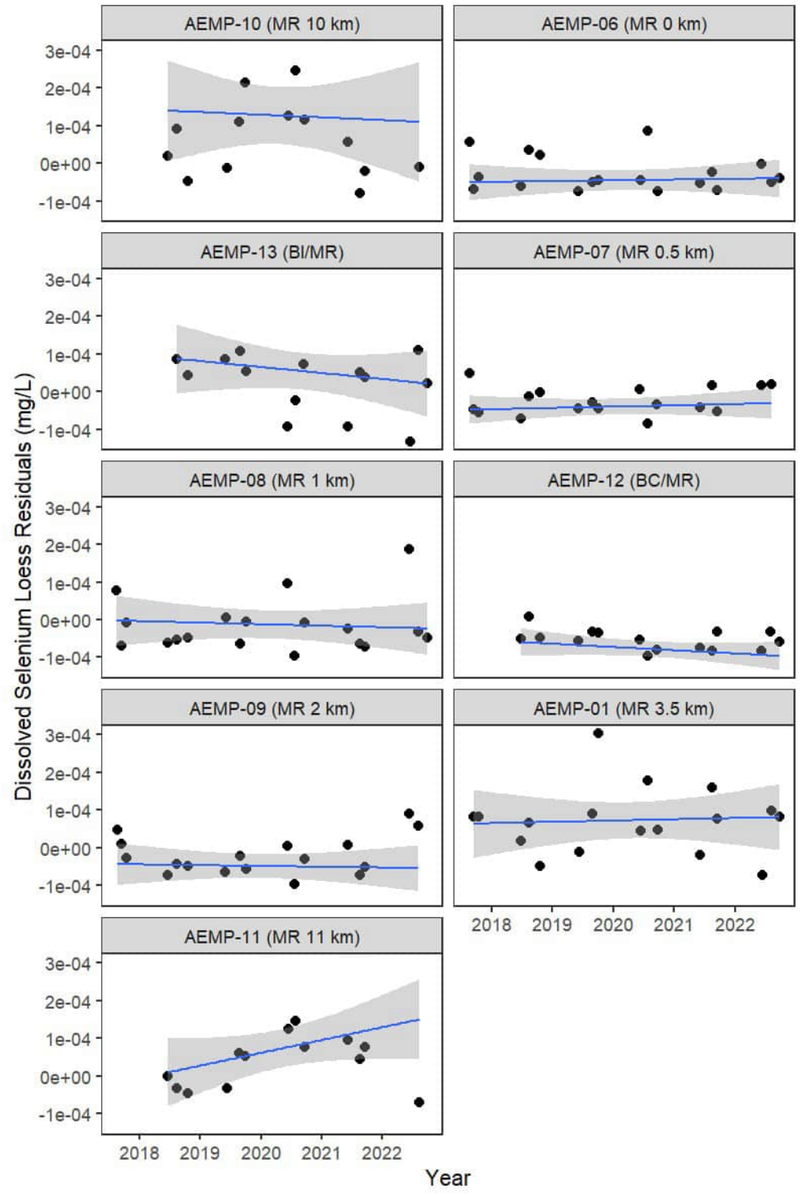
Worley Project No. 417085-42051-22200

FIGURE: **AD-24** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of dissolved selenium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved selenium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved selenium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

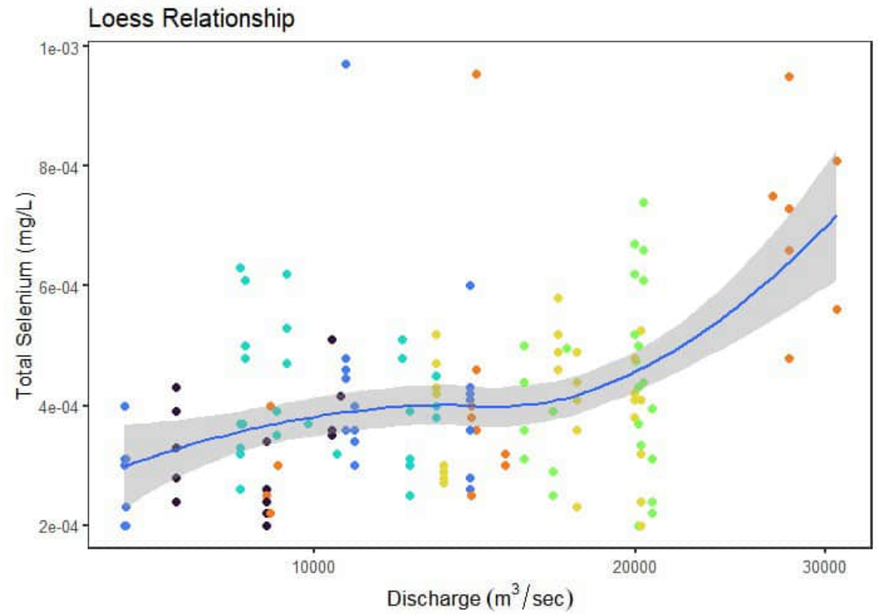
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED SELENIUM

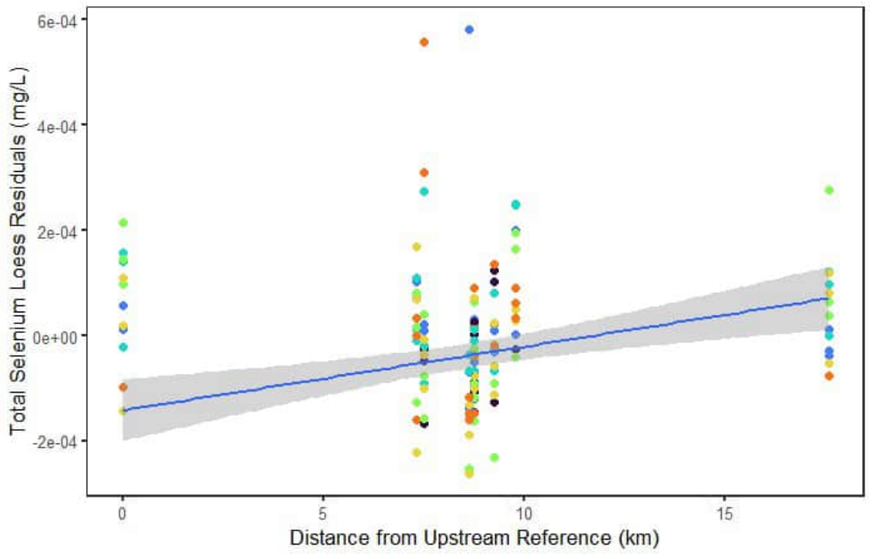
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

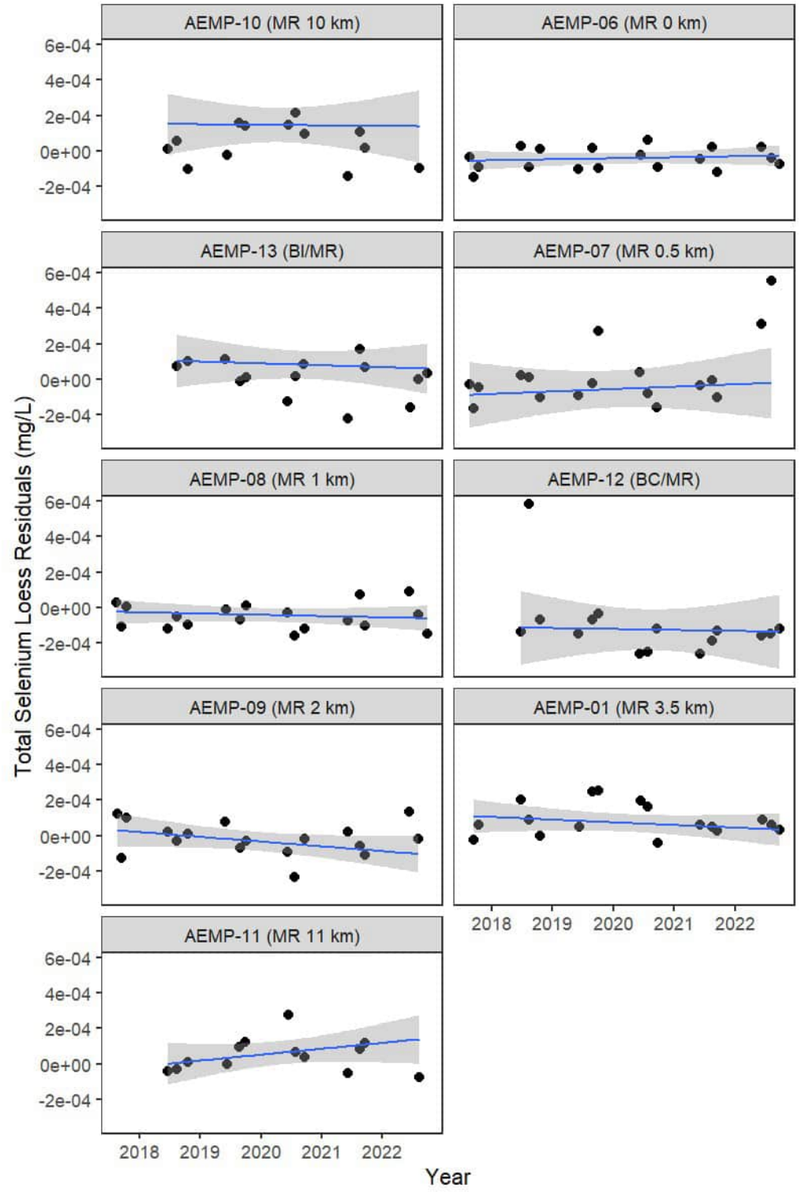
Worley Project No. 417085-42051-22200

FIGURE: **AD-25** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total selenium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total selenium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total selenium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
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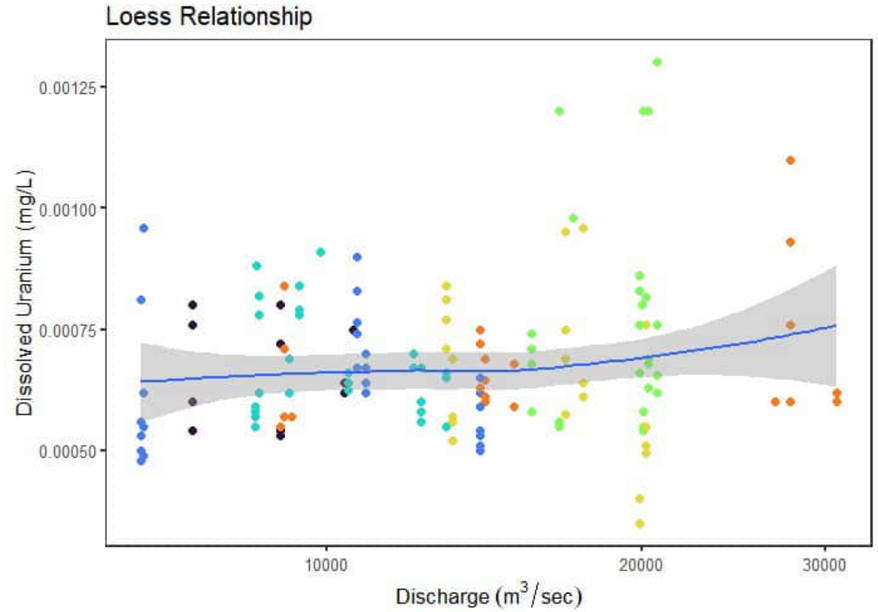
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL SELENIUM

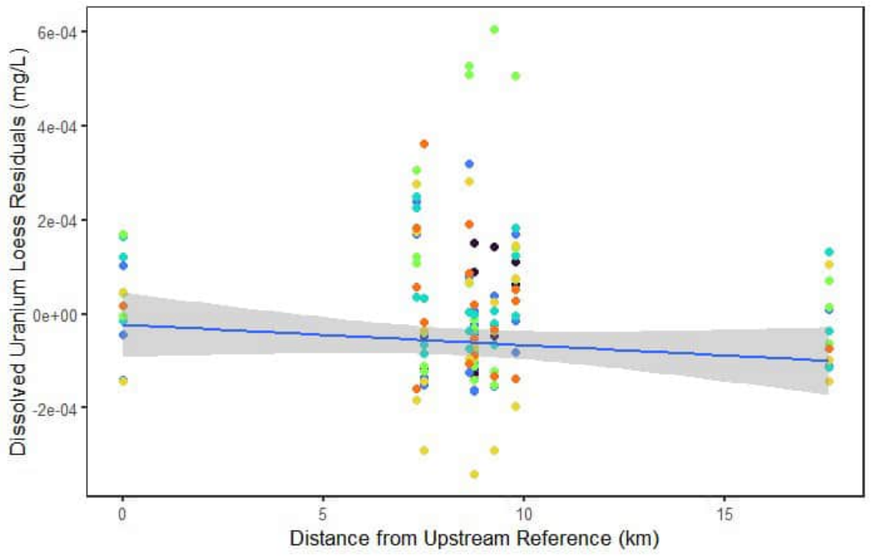
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

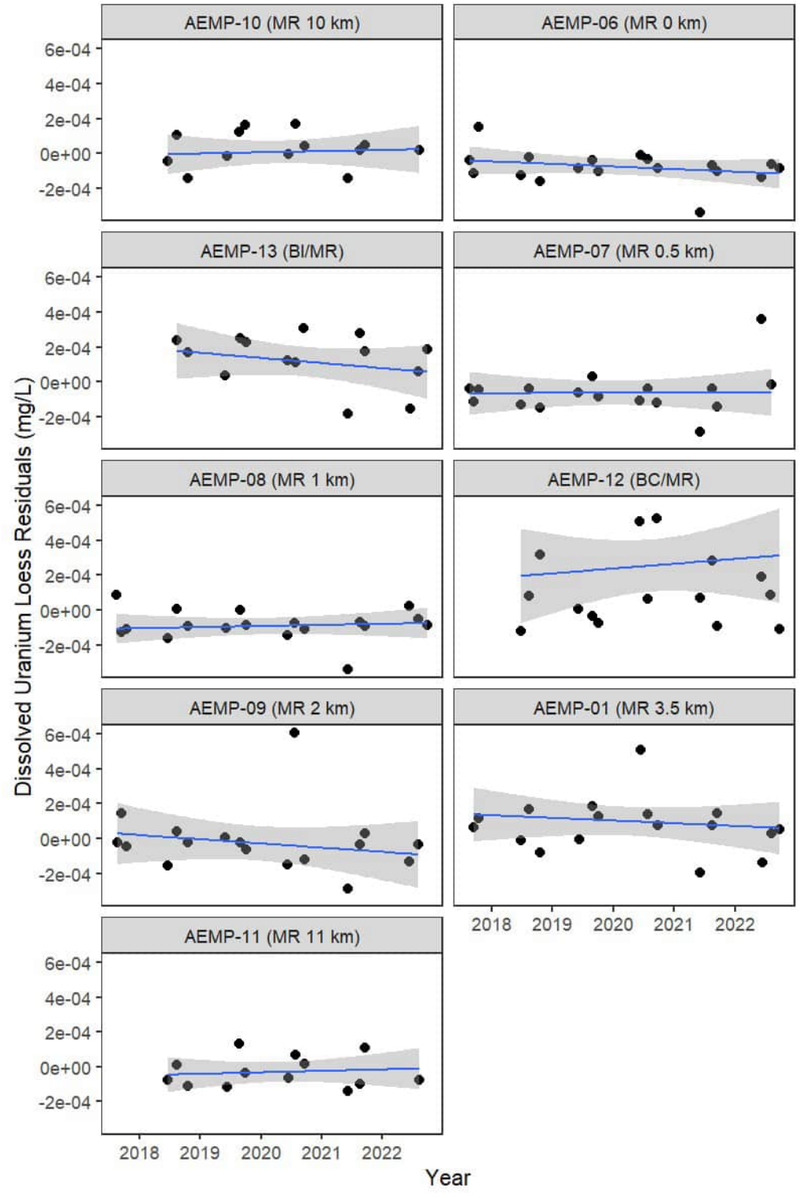
Worley Project No. 417085-42051-22200

FIGURE: **AD-26** REV **A**

"This drawing is prepared for the use of our customer as specified in the accompanying report
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Notes:
Top Left - Local regression (Loess) plot of dissolved uranium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of dissolved uranium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of dissolved uranium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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NORMAN WELLS, NT

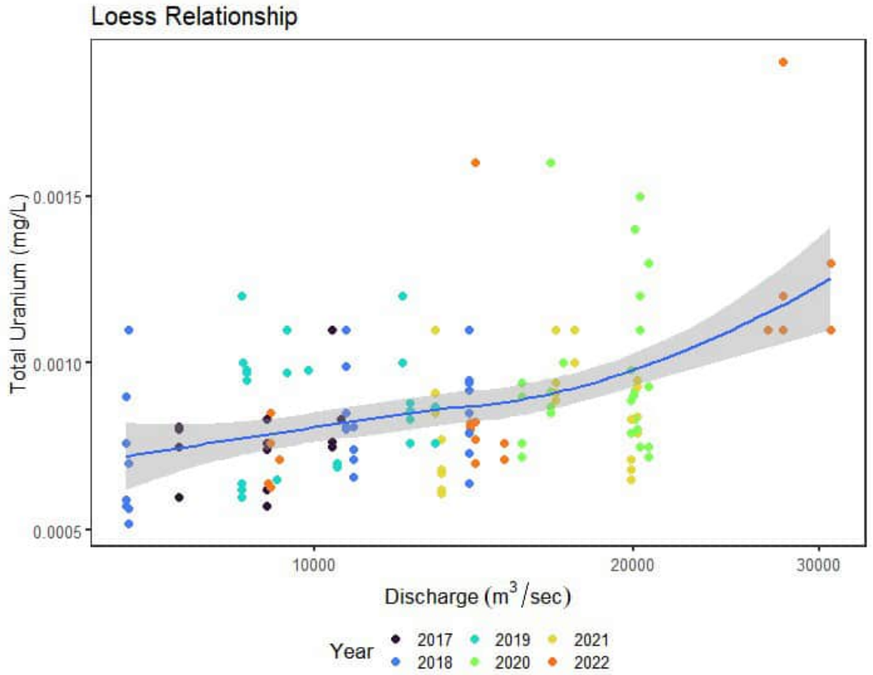
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
DISSOLVED URANIUM

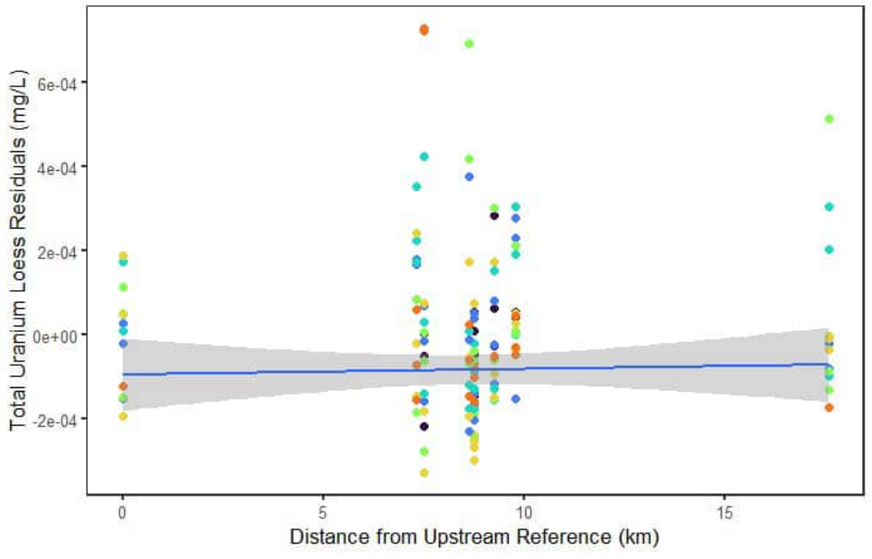
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

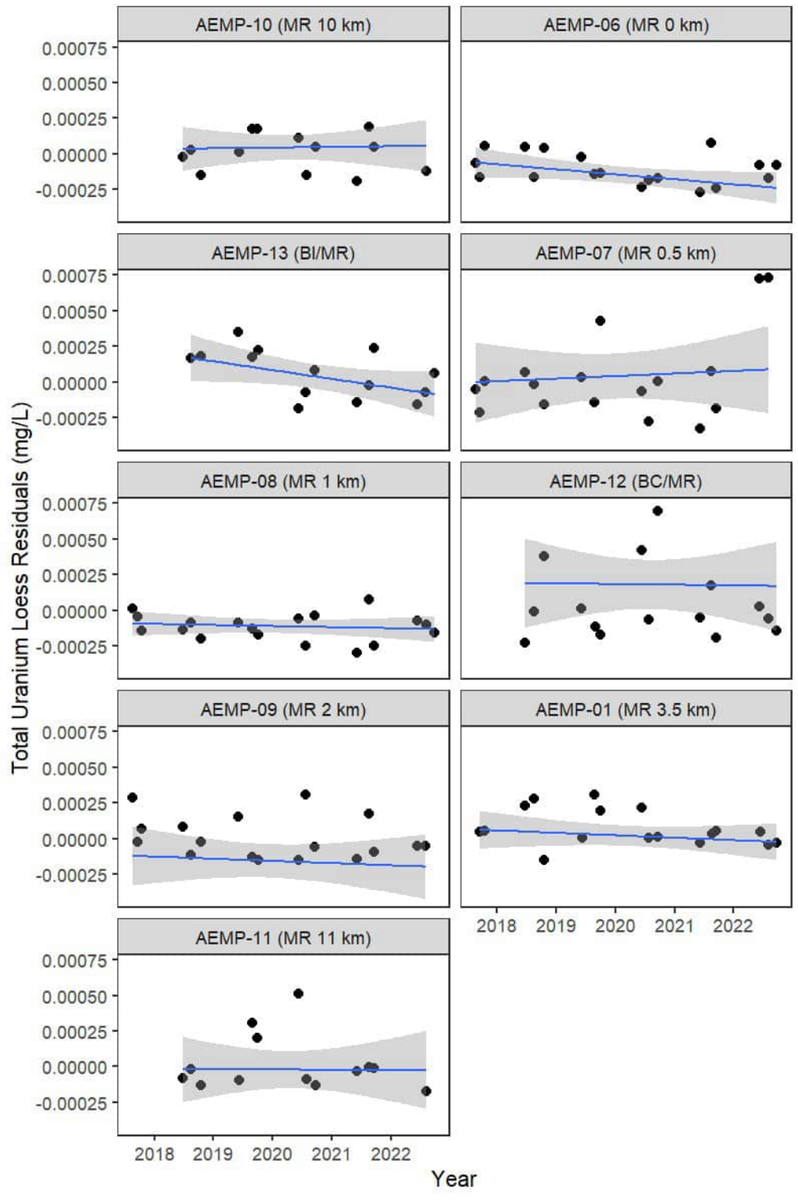
Worley Project No.
417085-42051-22200

FIGURE: **AD-27** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total uranium concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total uranium (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total uranium (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

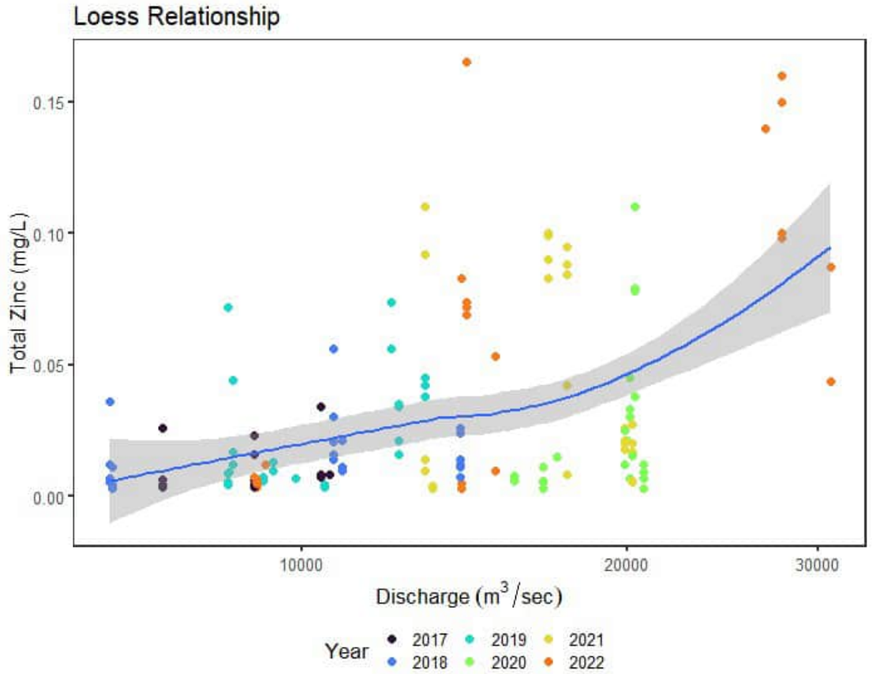
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL URANIUM

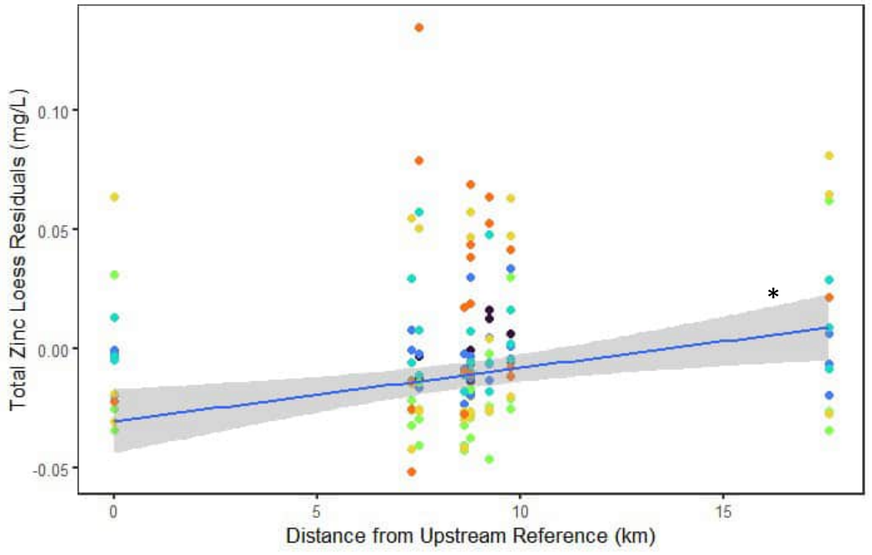
Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH

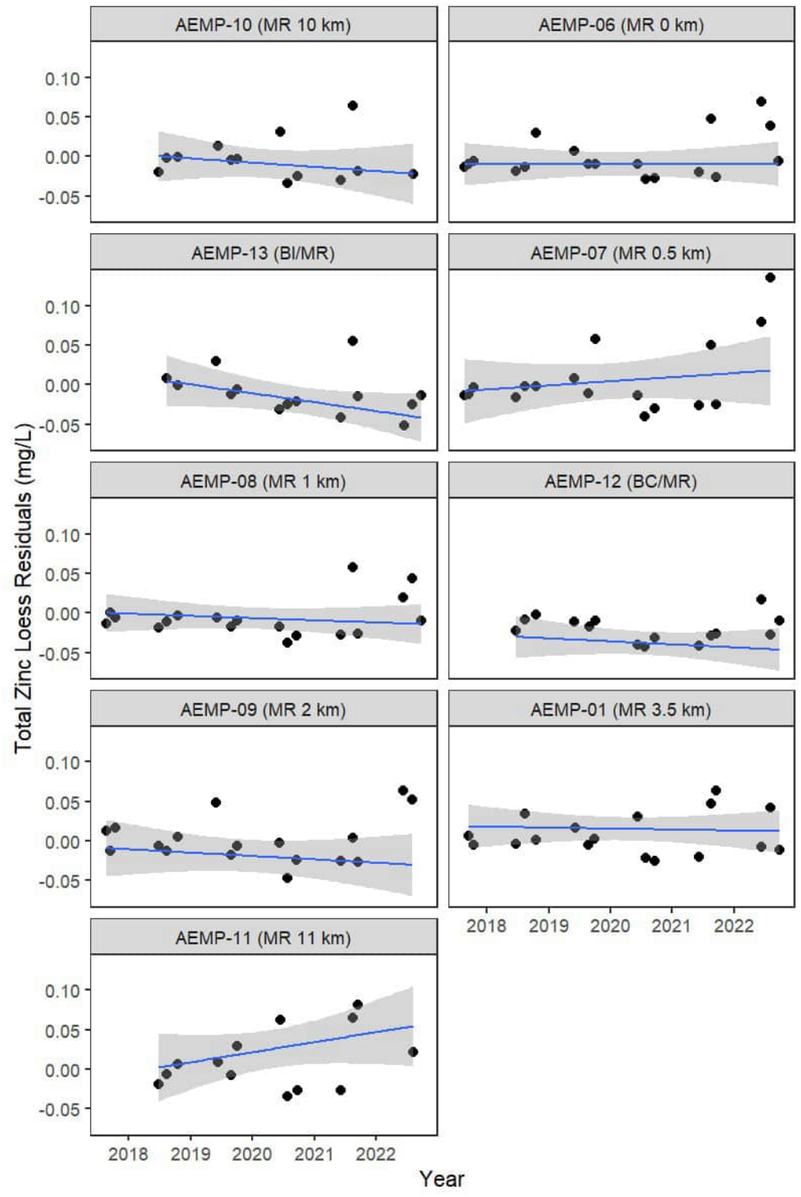
Worley Project No. 417085-42051-22200

FIGURE: **AD-28** REV **A**

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Notes:
Top Left - Local regression (Loess) plot of total zinc concentration (mg/L) in the Mackenzie River as a function of discharge (m^3/sec) plotted on a log transformed scale.
Bottom Left - Residuals of total zinc (mg/L) from the Loess analysis by the distance (m) downstream from the reference location (AEMP-10) with the Theil-Sen slope line; shading represents 95% confidence limit of the slope.
Right - Residuals of total zinc (mg/L) from the Loess analysis plotted by sampling date for each sampling location on the Mackenzie River. Sampling locations are provided from upstream to downstream locations with distances in brackets providing the distance from the sampling location at the upstream end of Norman Wells (AEMP-06).
MR = Mackenzie River; BC = Bosworth Creek
* indicates that the trend shown in the associated plot is statistically significant based on Mann-Kendall trend analysis.

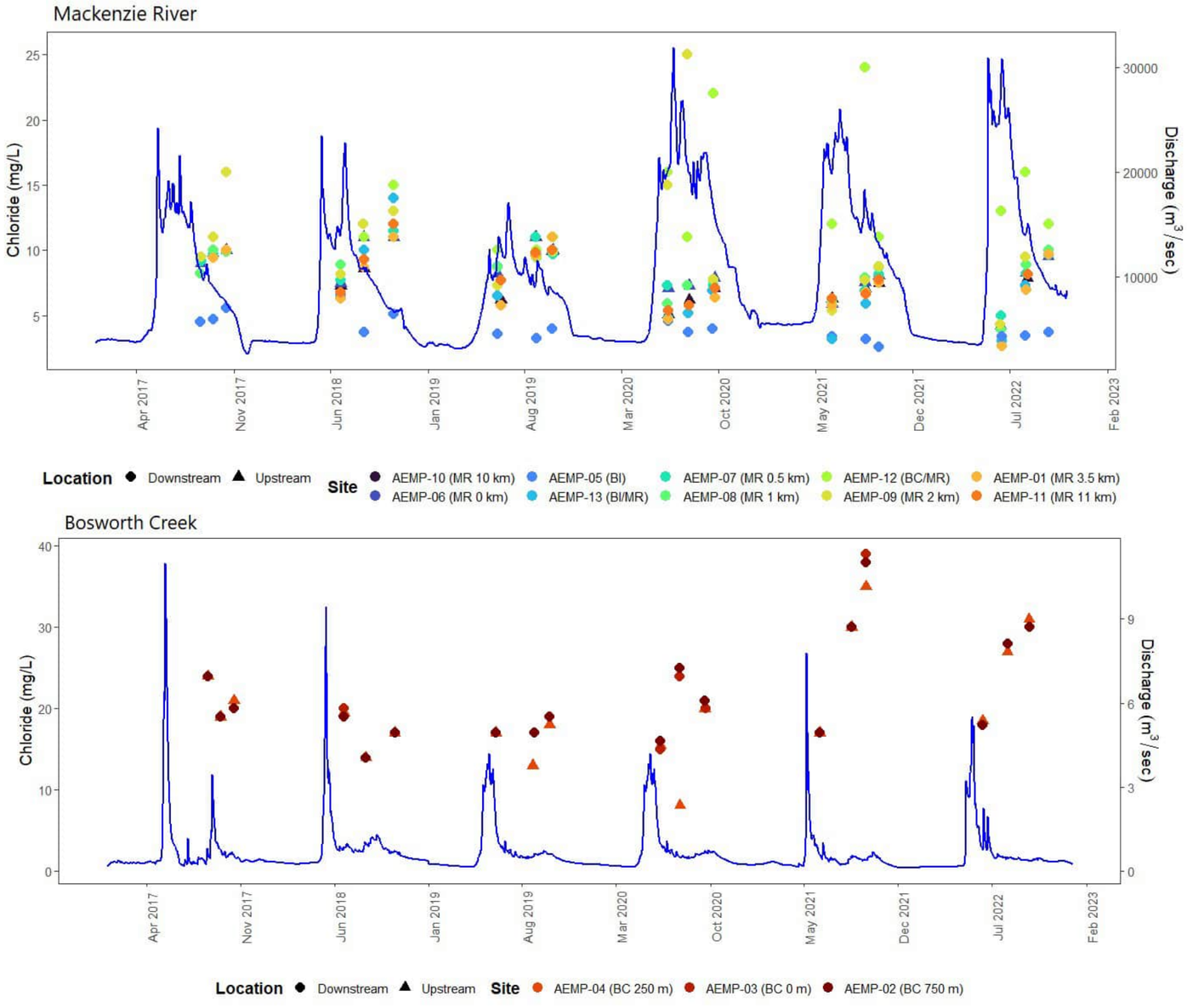
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

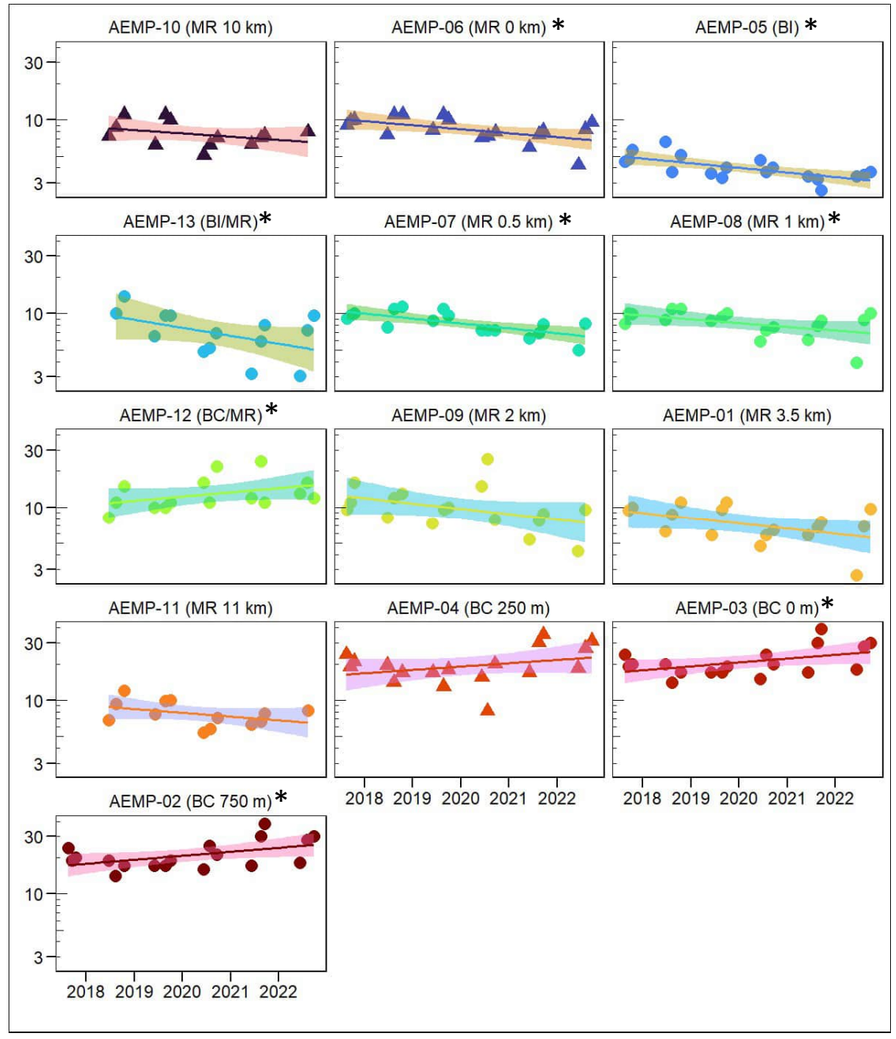
FLOW-WEIGHTED TREND ANALYSIS (2017 - 2022)
TOTAL ZINC

Date: 21-Feb-2023	Drawn by: GY	Edited by: CM	App'd by: AH
		Worley Project No. 417085-42051-22200	
		FIGURE: AD-29	REV A

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Appendix E
Historical Data Summary Sheets





Notes:
Left - Chloride concentration (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Chloride concentration (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

Chloride concentrations (mg/L) documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are below the CCME Freshwater Aquatic Life (FWAL) Guideline of 120 mg/L.

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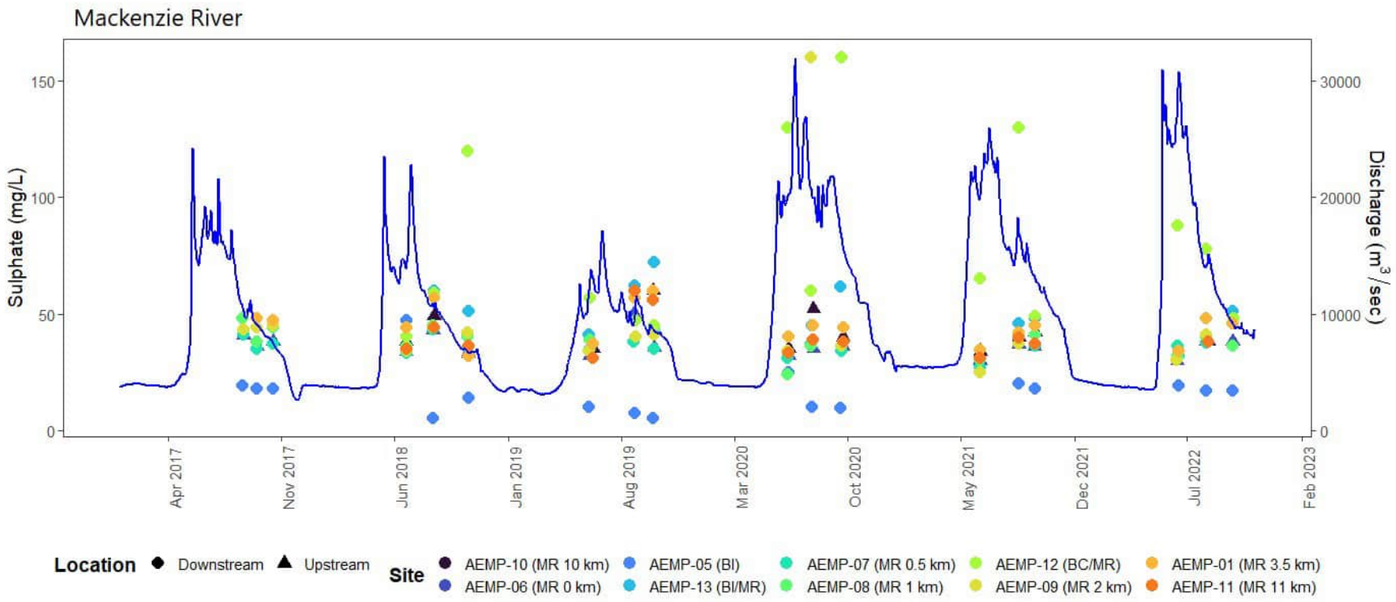
CHLORIDE DATA SUMMARY (2017 - 2022)

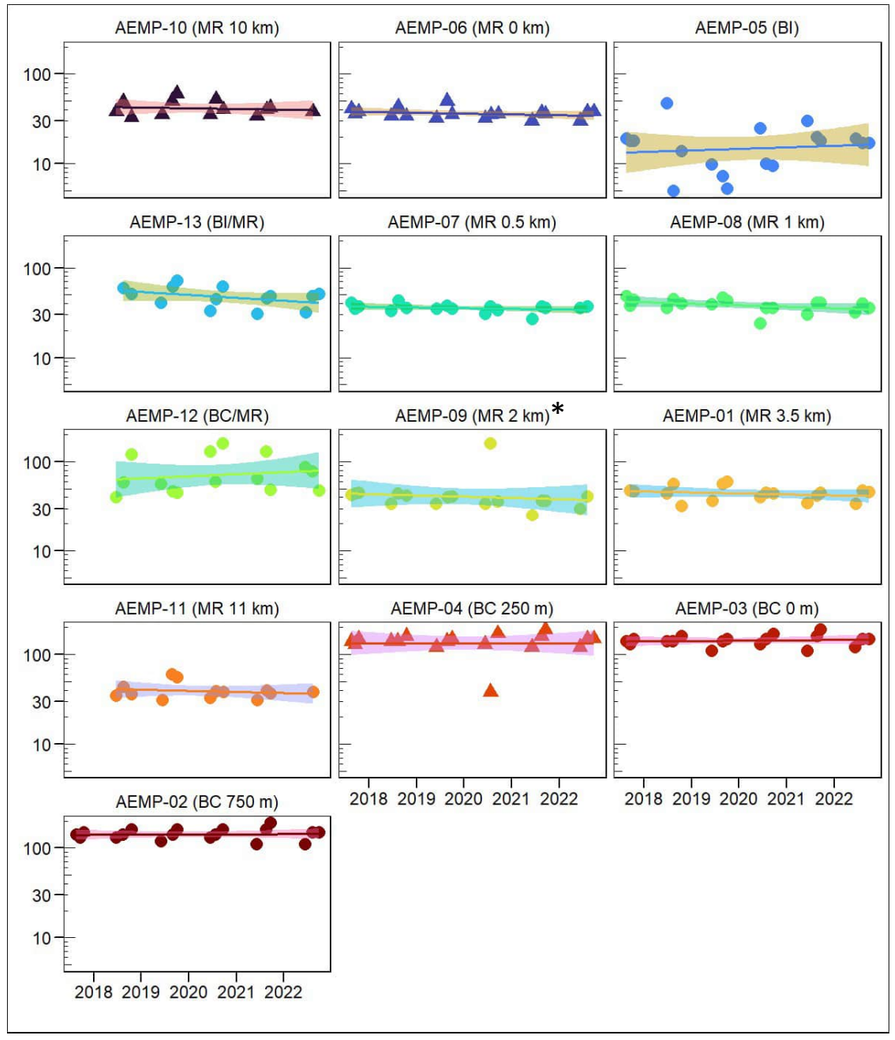
Date: 20-feb-2023	Drawn by: GY	Edited by: NT	App'd by: AH

Worley Project No. 417085-42051-22200

FIGURE: **AE-1** REV **A**

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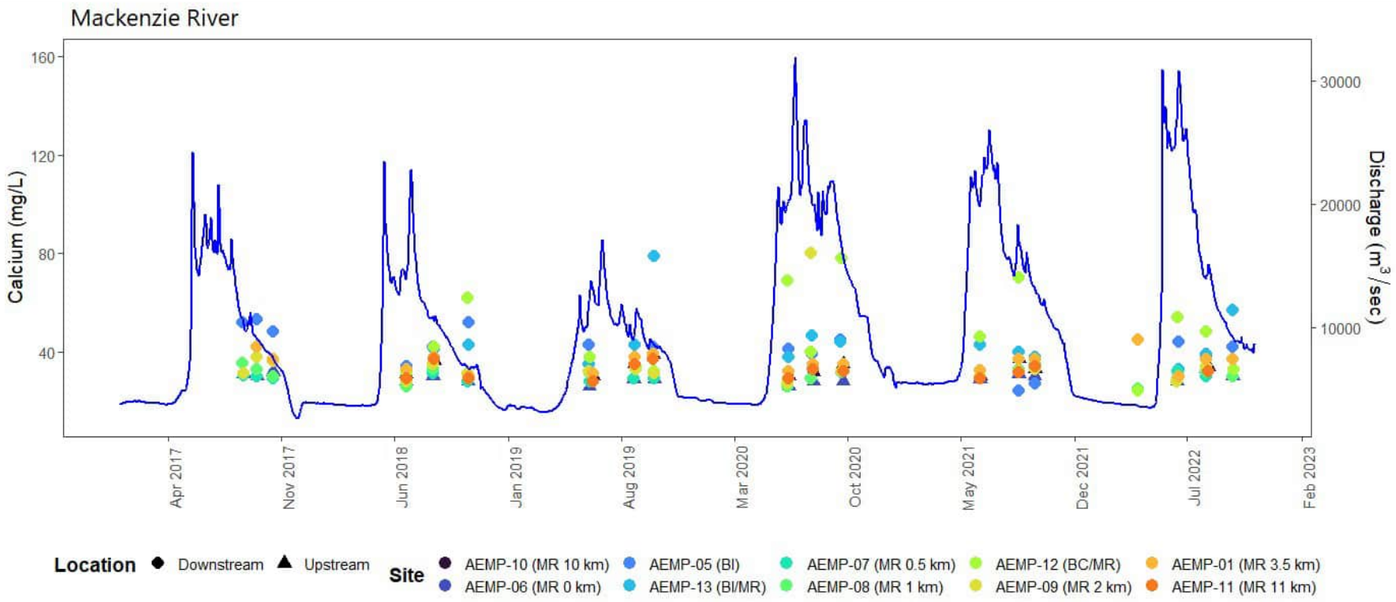
Notes:
Left - Sulphate concentration (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Sulphate concentration (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
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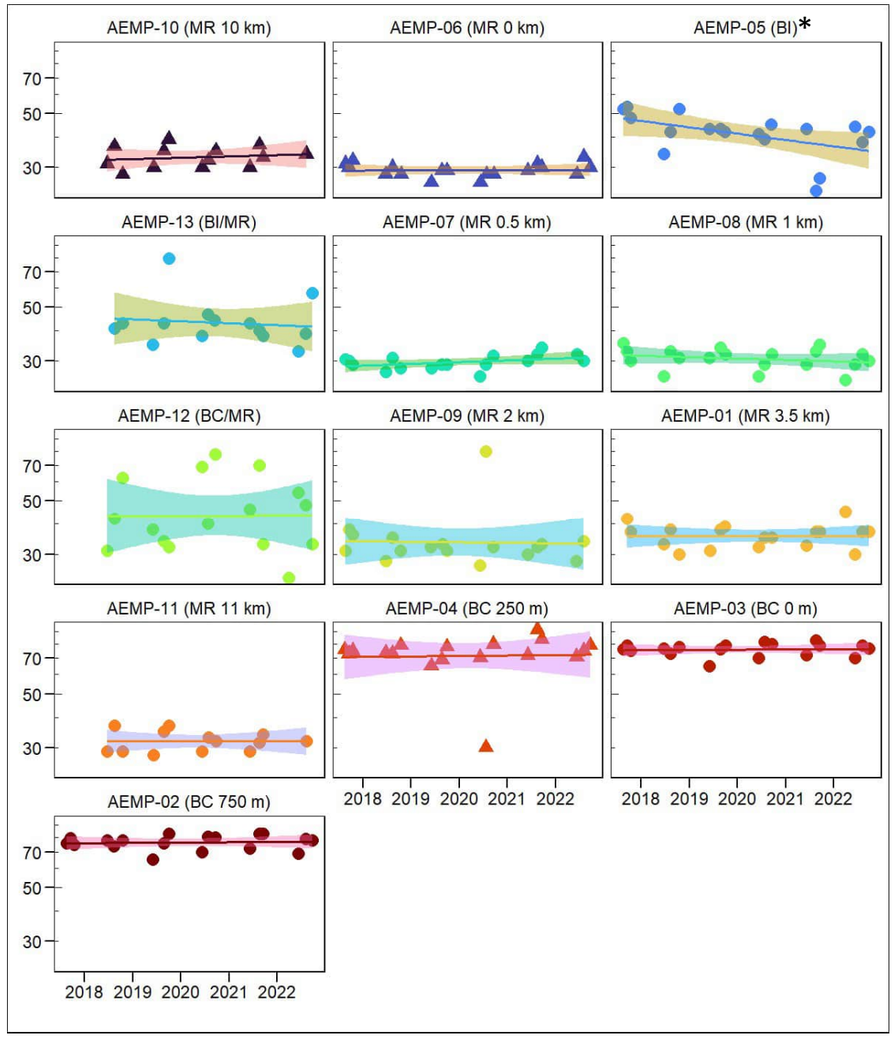
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

SULPHATE DATA SUMMARY (2017 - 2022)

Date: 14-mar-2022	Drawn by: GY	Edited by: NT	App'd by: AH
		Worley Project No. 417085-42051-22400	
		FIGURE: AE-2	REV A

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Notes:
Left - Calcium concentration (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Calcium concentration (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

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NORMAN WELLS, NT

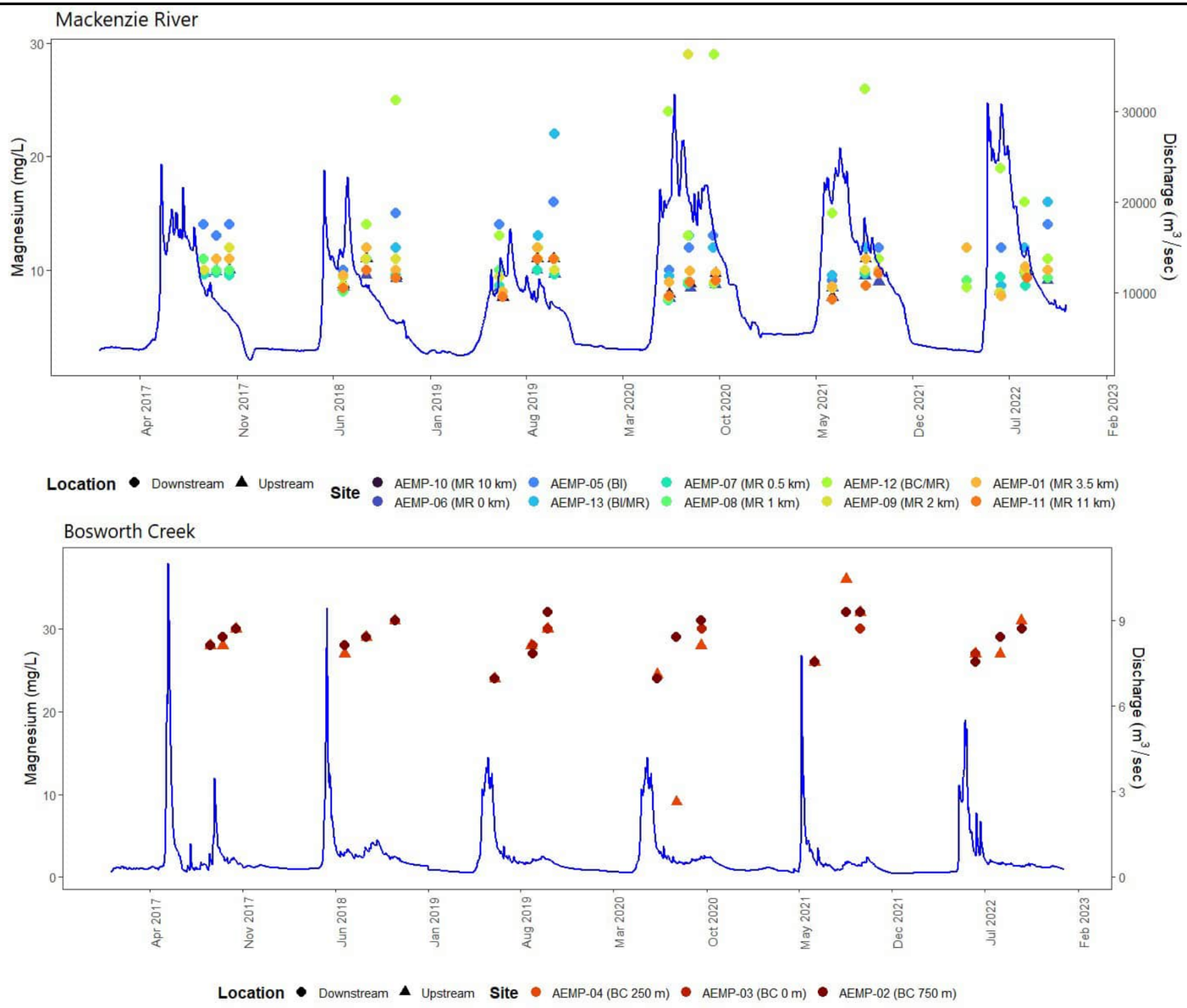
CALCIUM DATA SUMMARY (2017 - 2022)

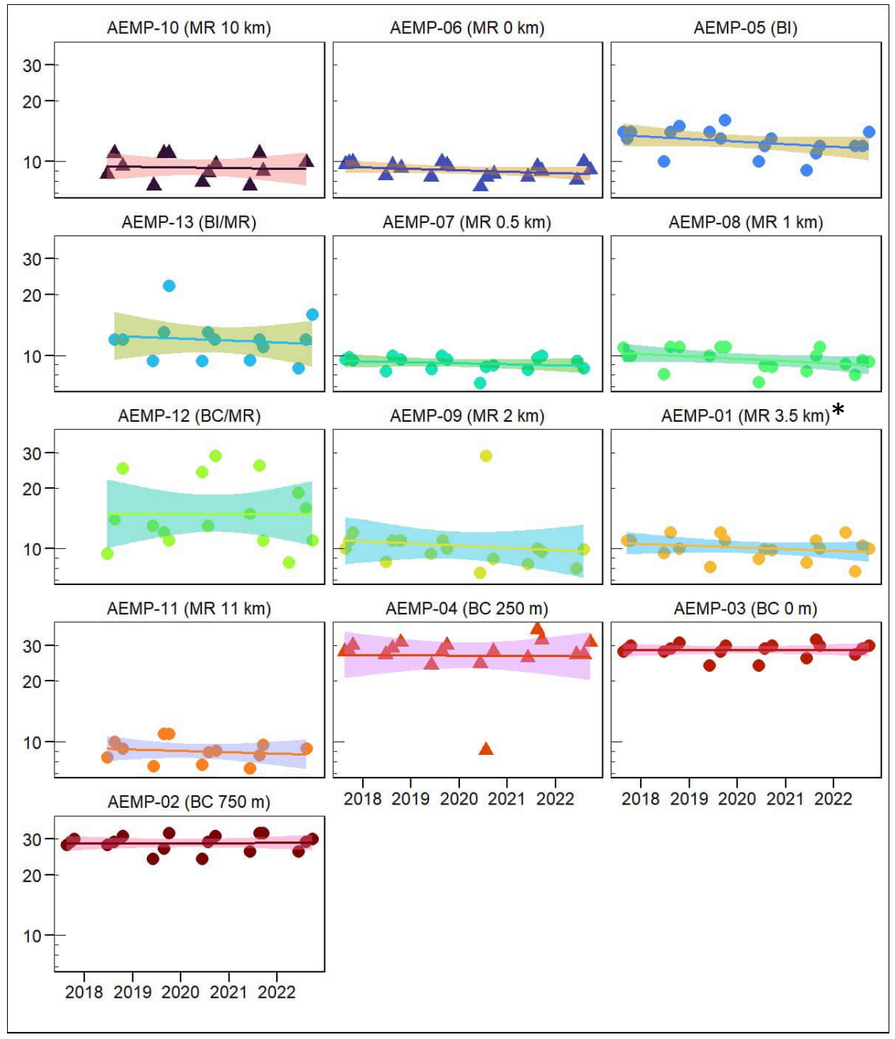
Date: 22-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-3** REV **A**

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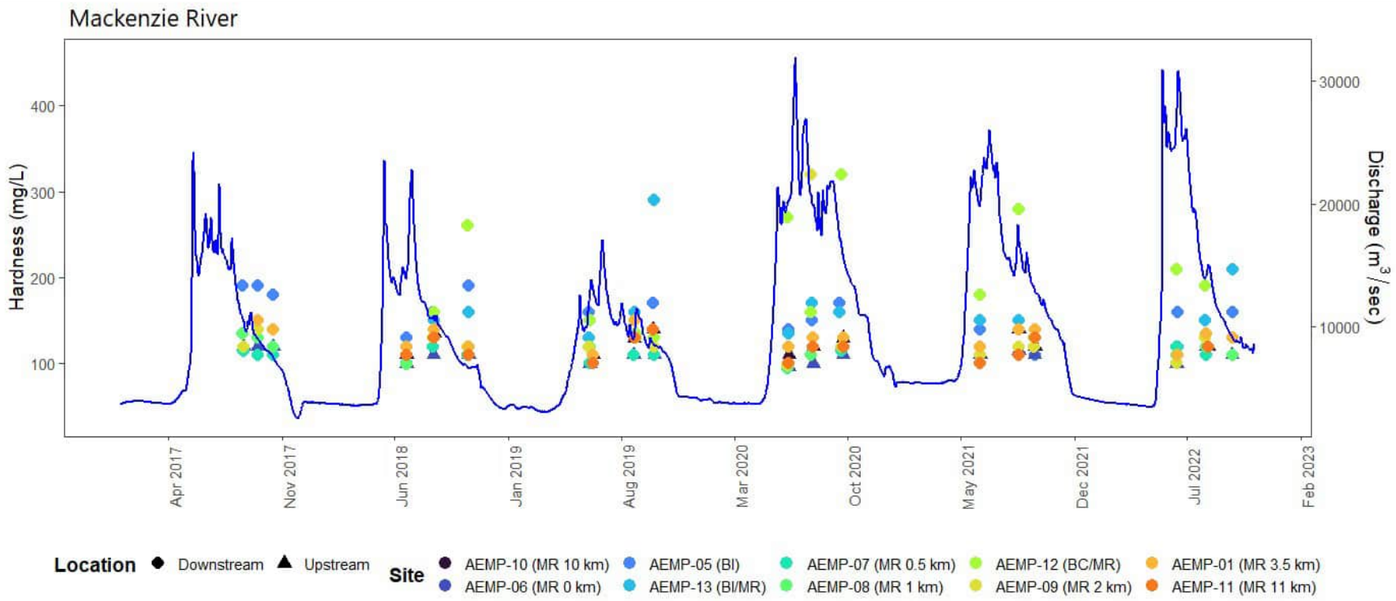
Notes:
Left - Magnesium concentration (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Magnesium concentration (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

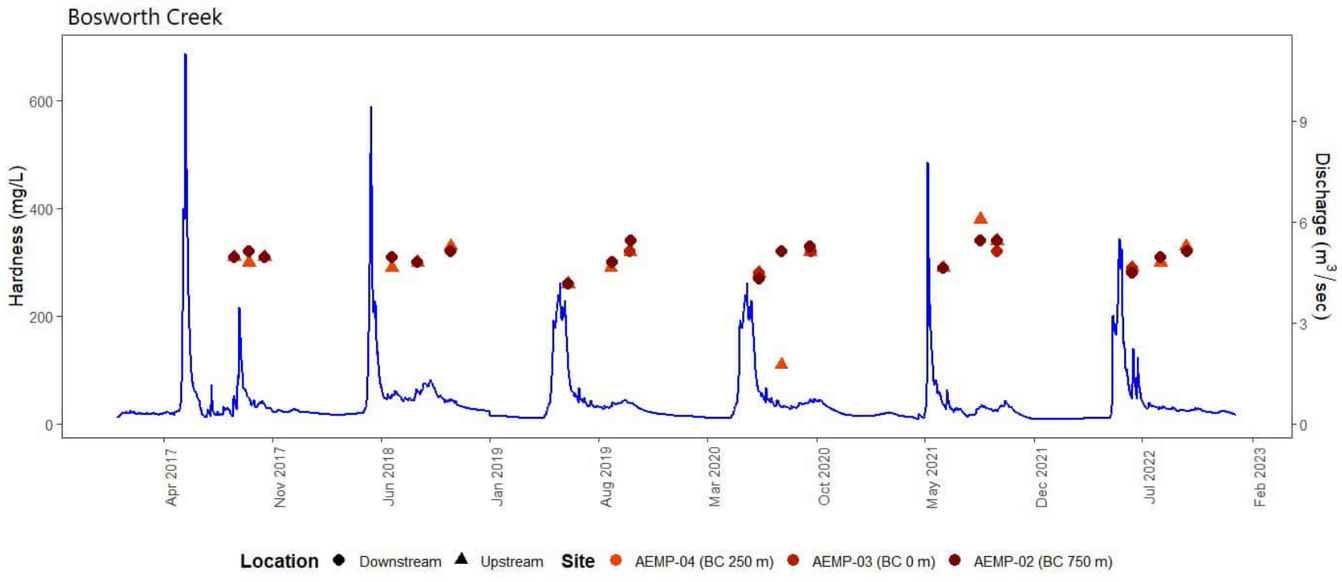
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

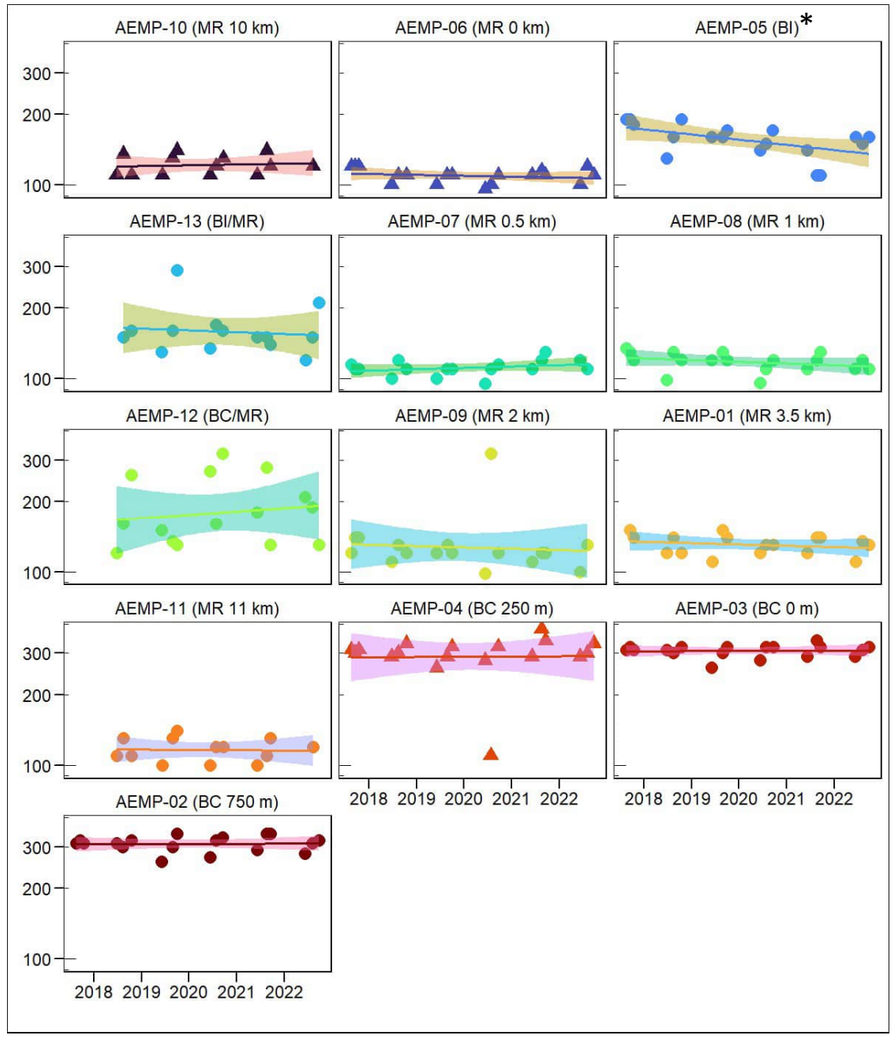
MAGNESIUM DATA SUMMARY (2017 - 2022)

Date: 22-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-4	REV A

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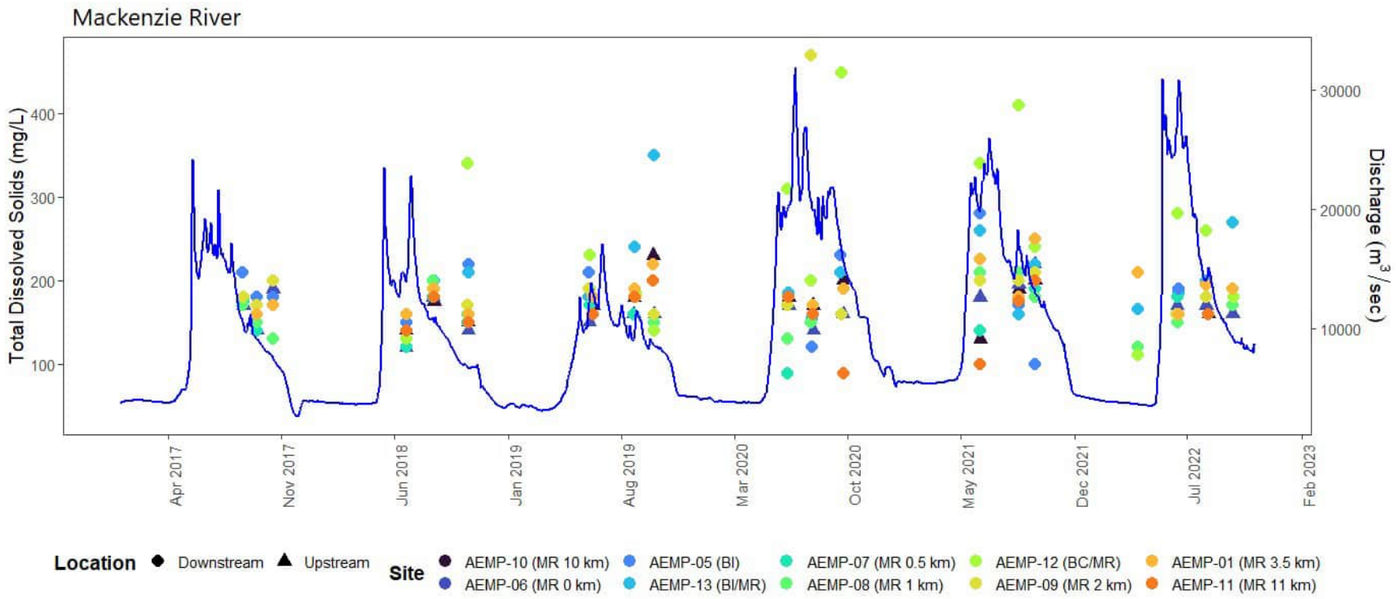
Notes:
Left - Hardness (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Hardness (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

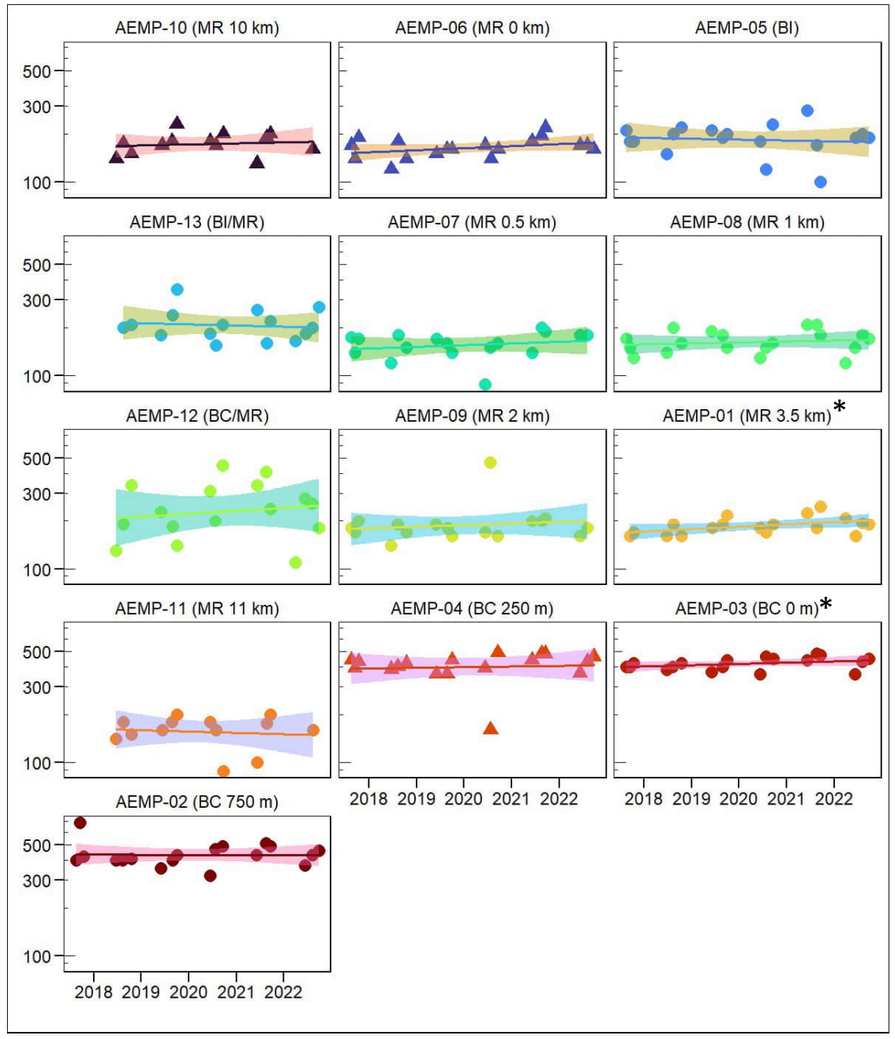
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

HARDNESS DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-5	REV A

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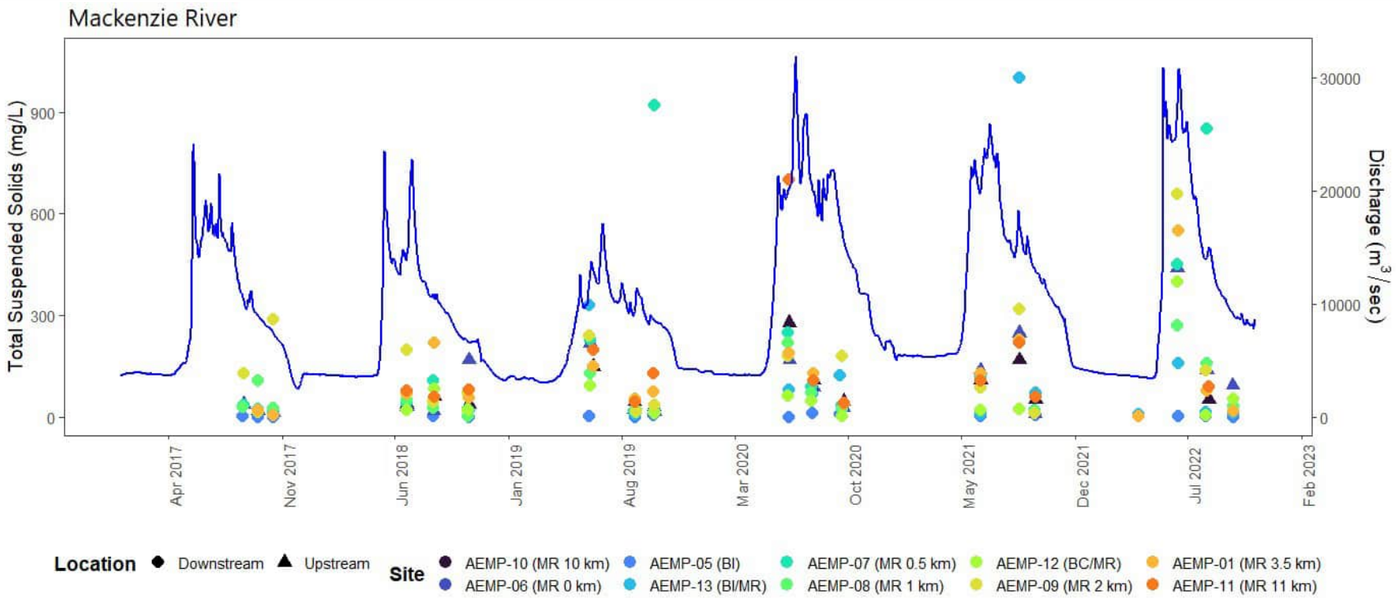
Notes:
Left - Total dissolved solids (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total dissolved solids (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

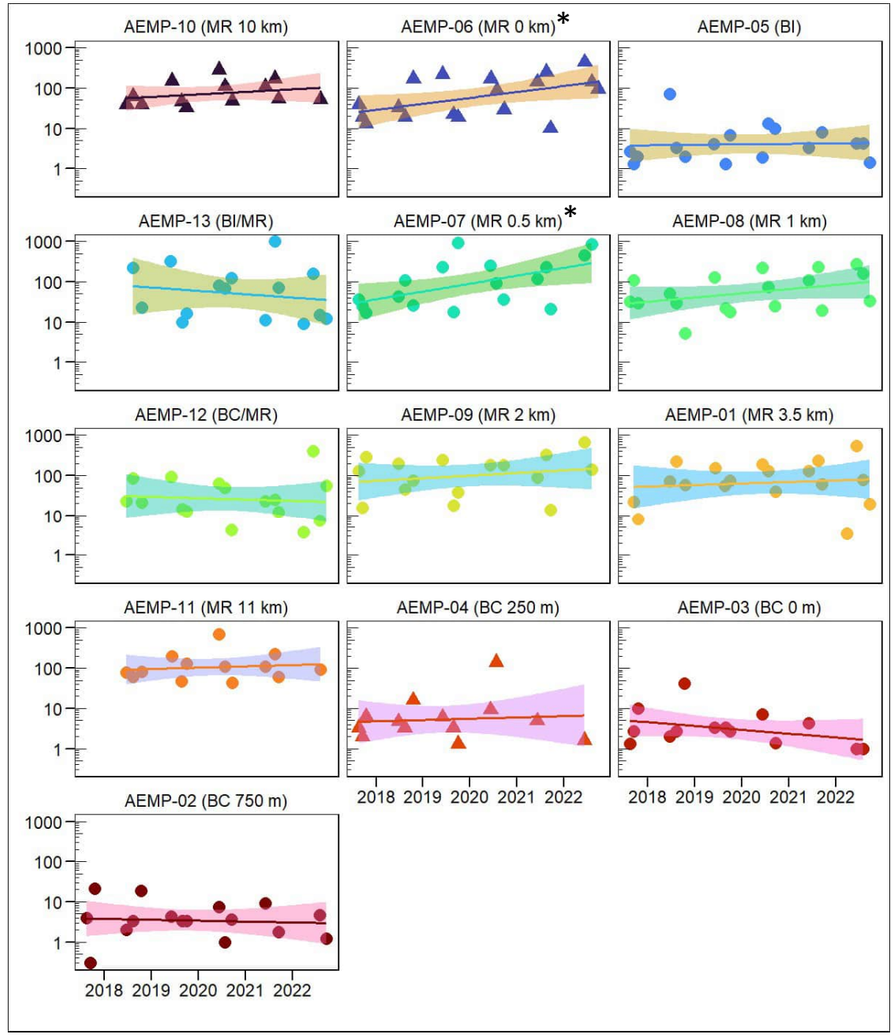
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL DISSOLVED SOLIDS DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-6	REV A

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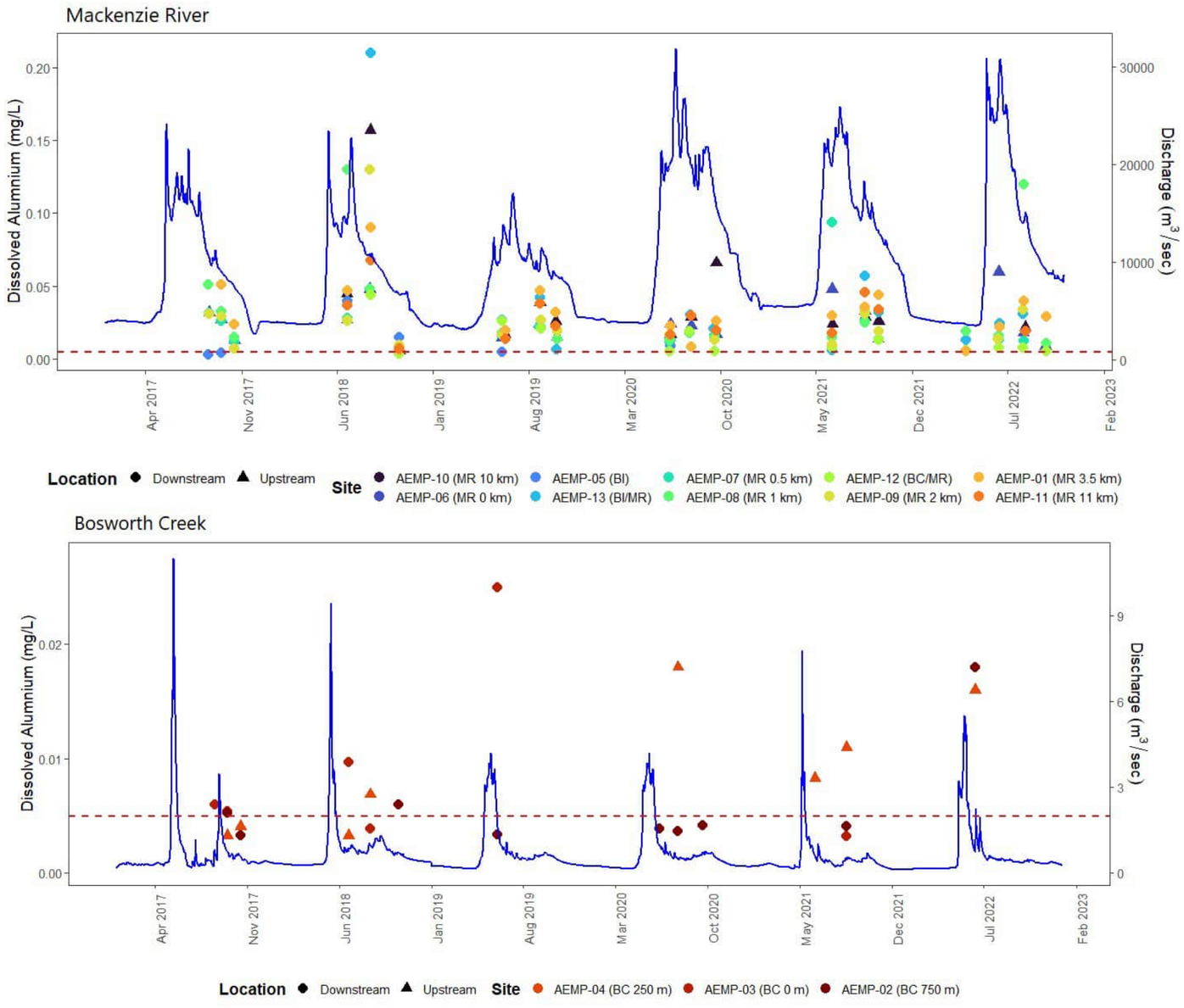
Notes:
Left - Total suspended solids (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total suspended solids (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.
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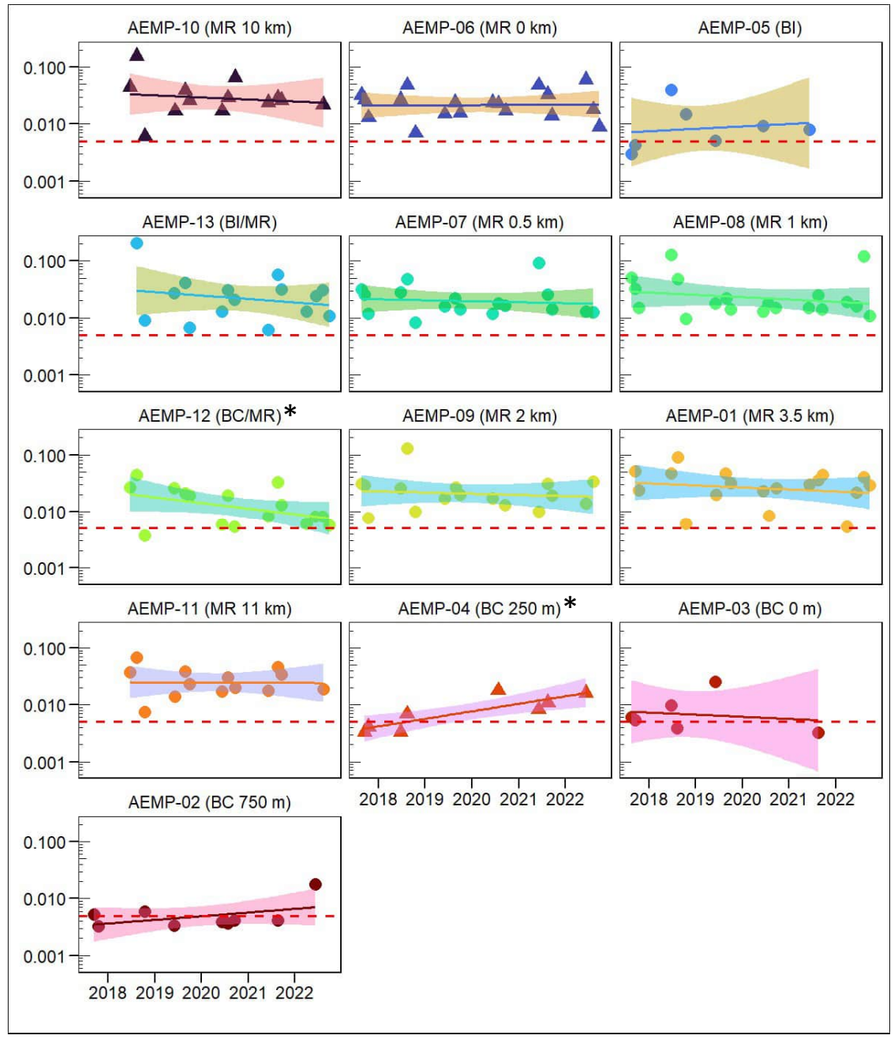
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL SUSPENDED SOLIDS DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-7	REV A

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Notes:
Left - Dissolved aluminum (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved aluminum (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

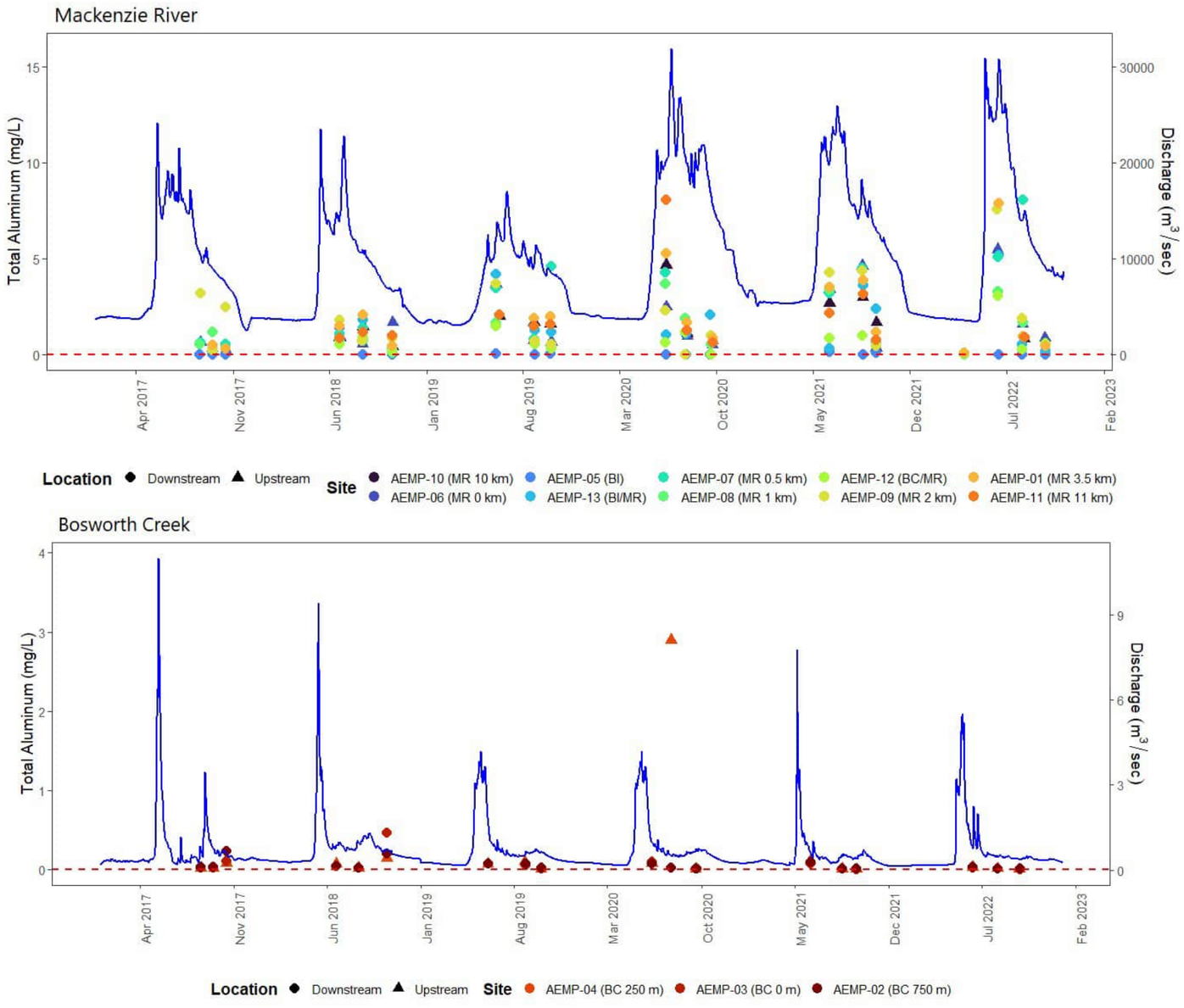
The dissolved aluminum concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.005 mg/L (indicated by dashed red line).

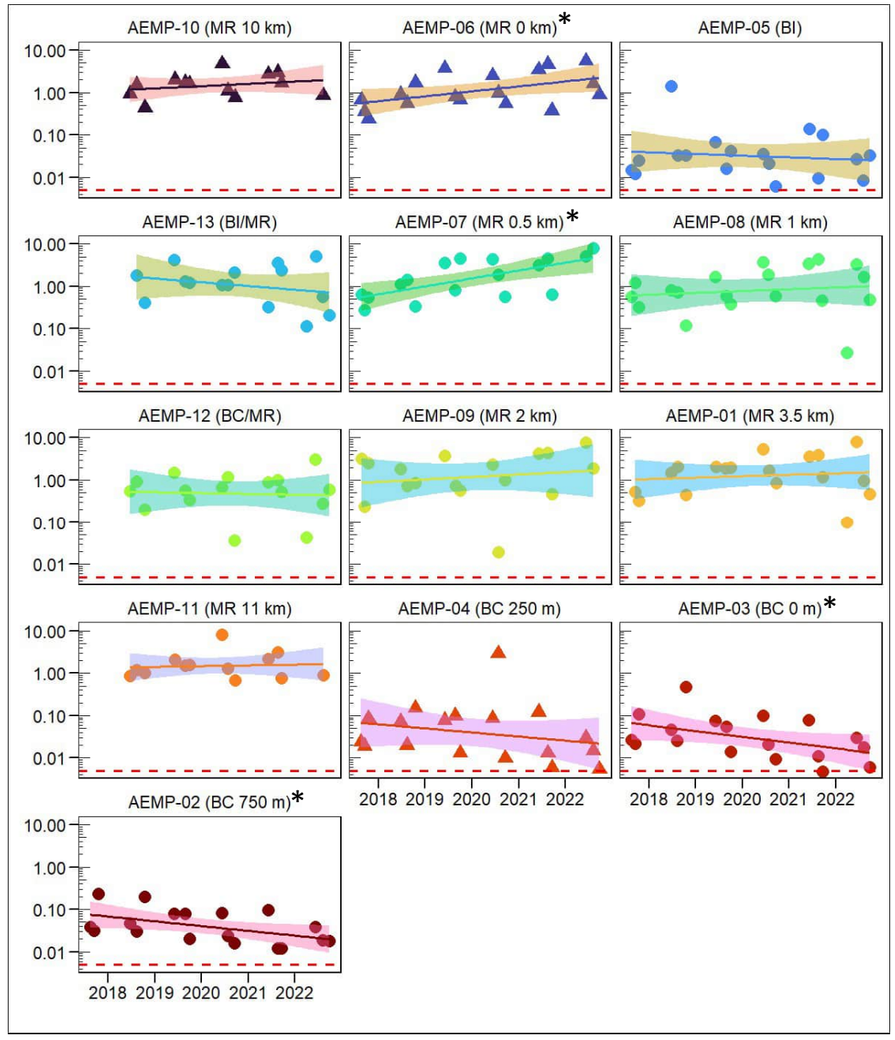
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AQUATIC EFFECTS MONITORING PROGRAM
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DISSOLVED ALUMINUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-8	REV A

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Notes:
Left - Total aluminum (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total aluminum (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

The total aluminum concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.005 mg/L (indicated by dashed red line).

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NORMAN WELLS, NT

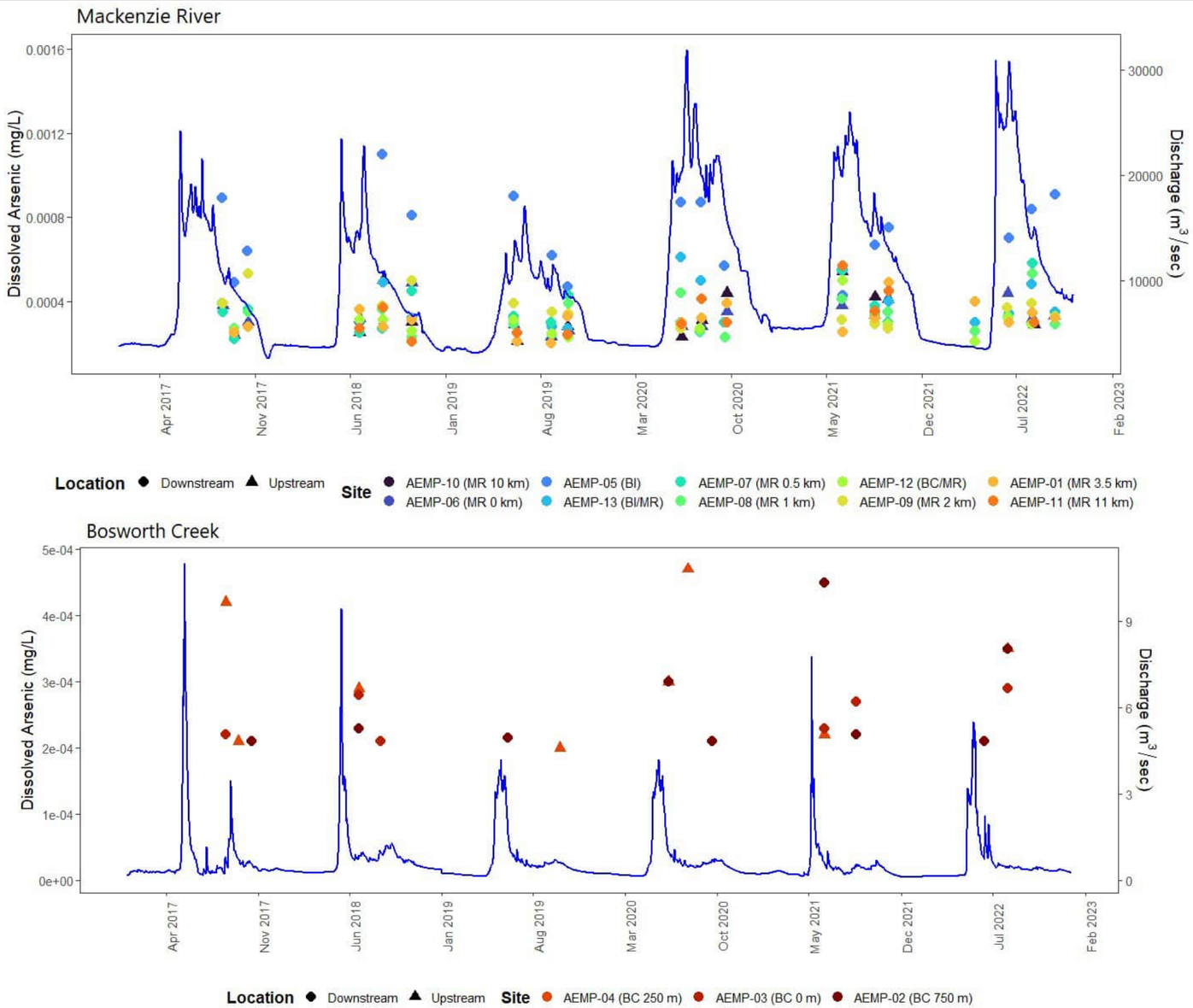
TOTAL ALUMINUM DATA SUMMARY (2017 - 2022)

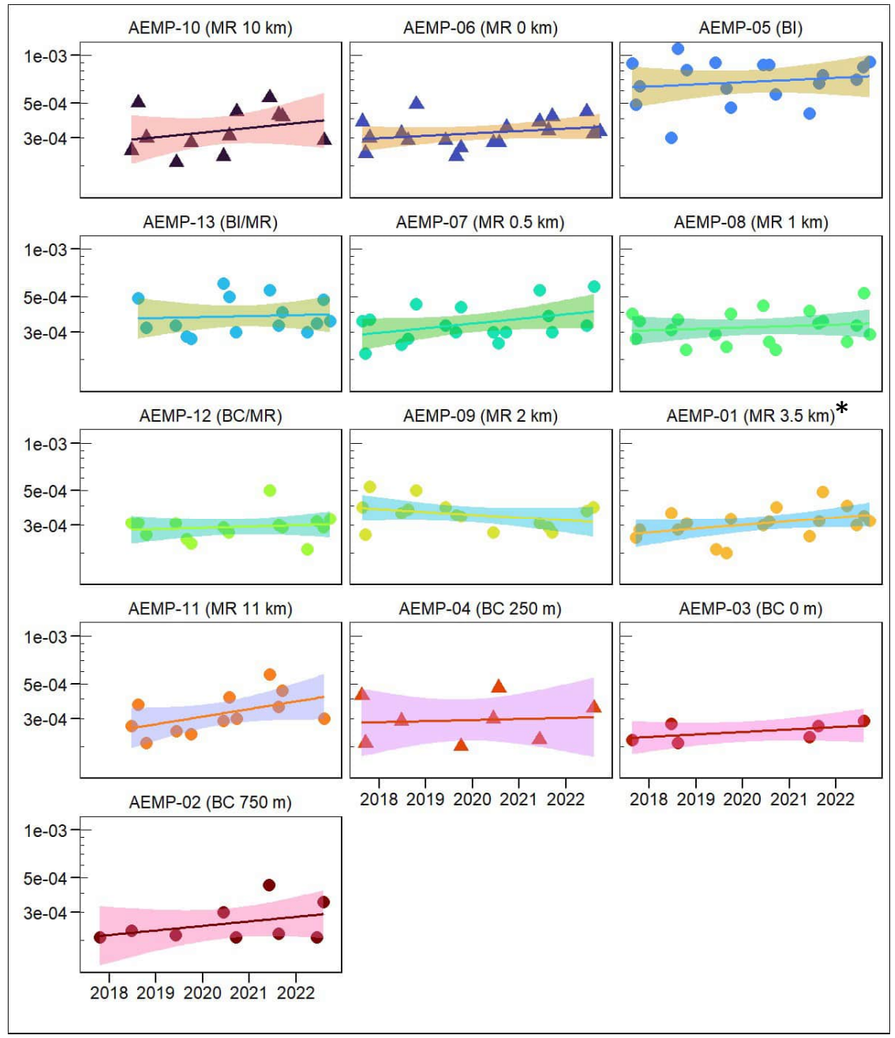
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-9** REV **A**

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Notes:
Left - Dissolved arsenic (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved arsenic (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

The dissolved arsenic concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.005 mg/L.

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NORMAN WELLS, NT

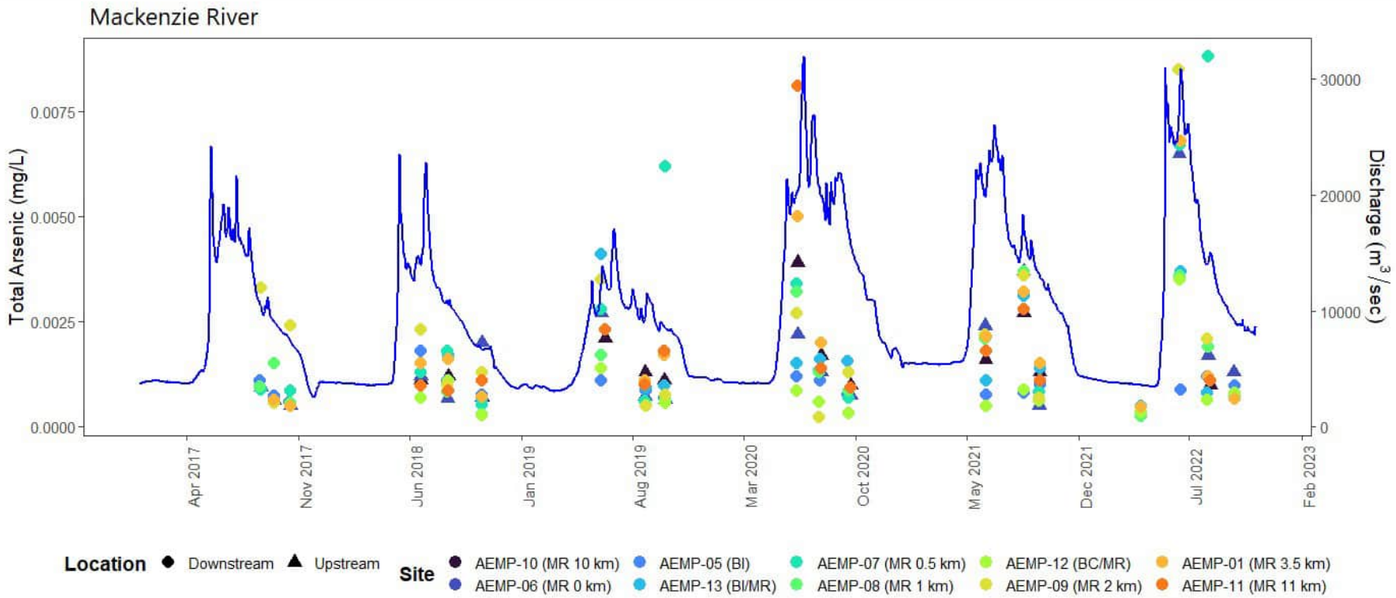
DISSOLVED ARSENIC DATA SUMMARY (2017 - 2022)

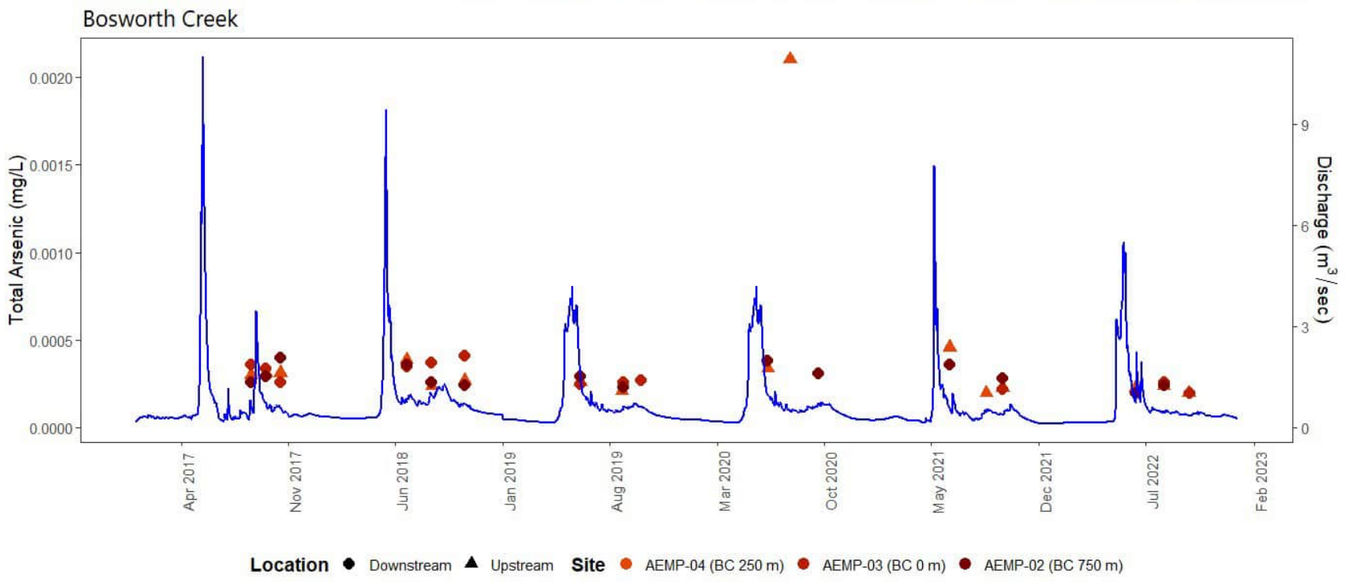
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

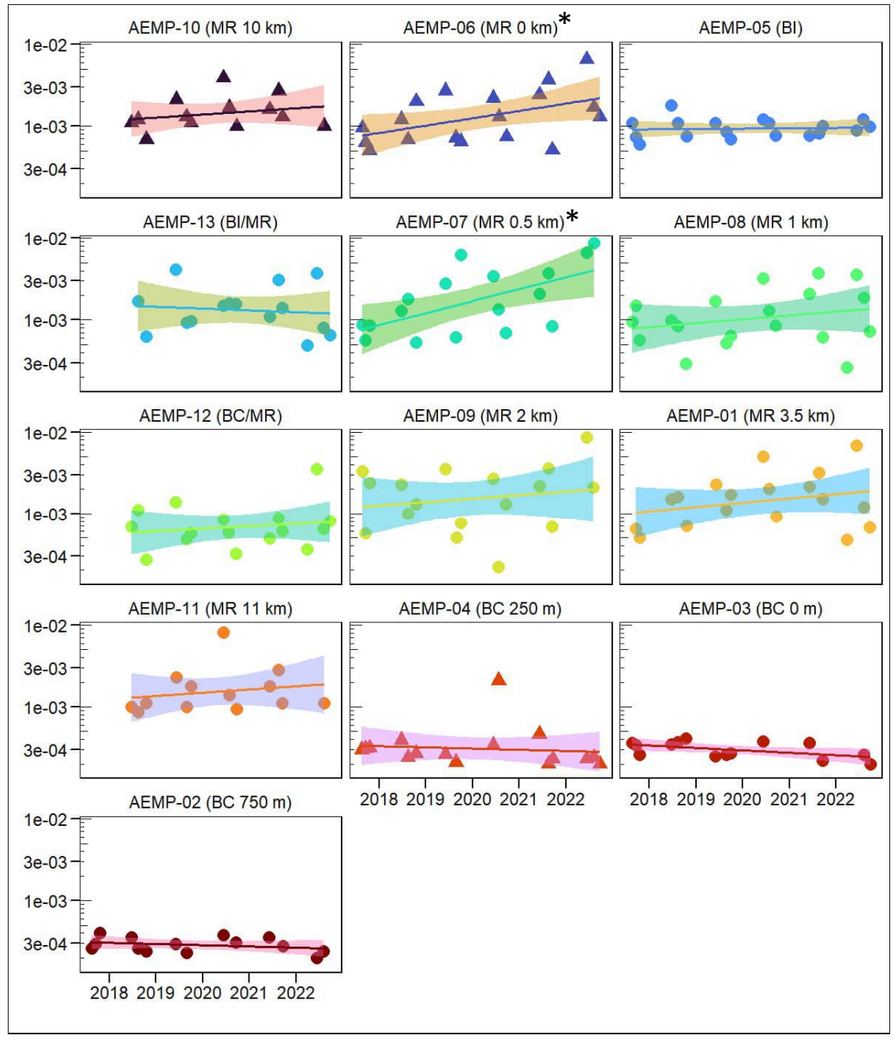
Worley Project No.
417085-42051-22200

FIGURE: **AE-10** REV **A**

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Notes:
Left - Total arsenic (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total arsenic (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

The total arsenic concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.005 mg/L.

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NORMAN WELLS, NT

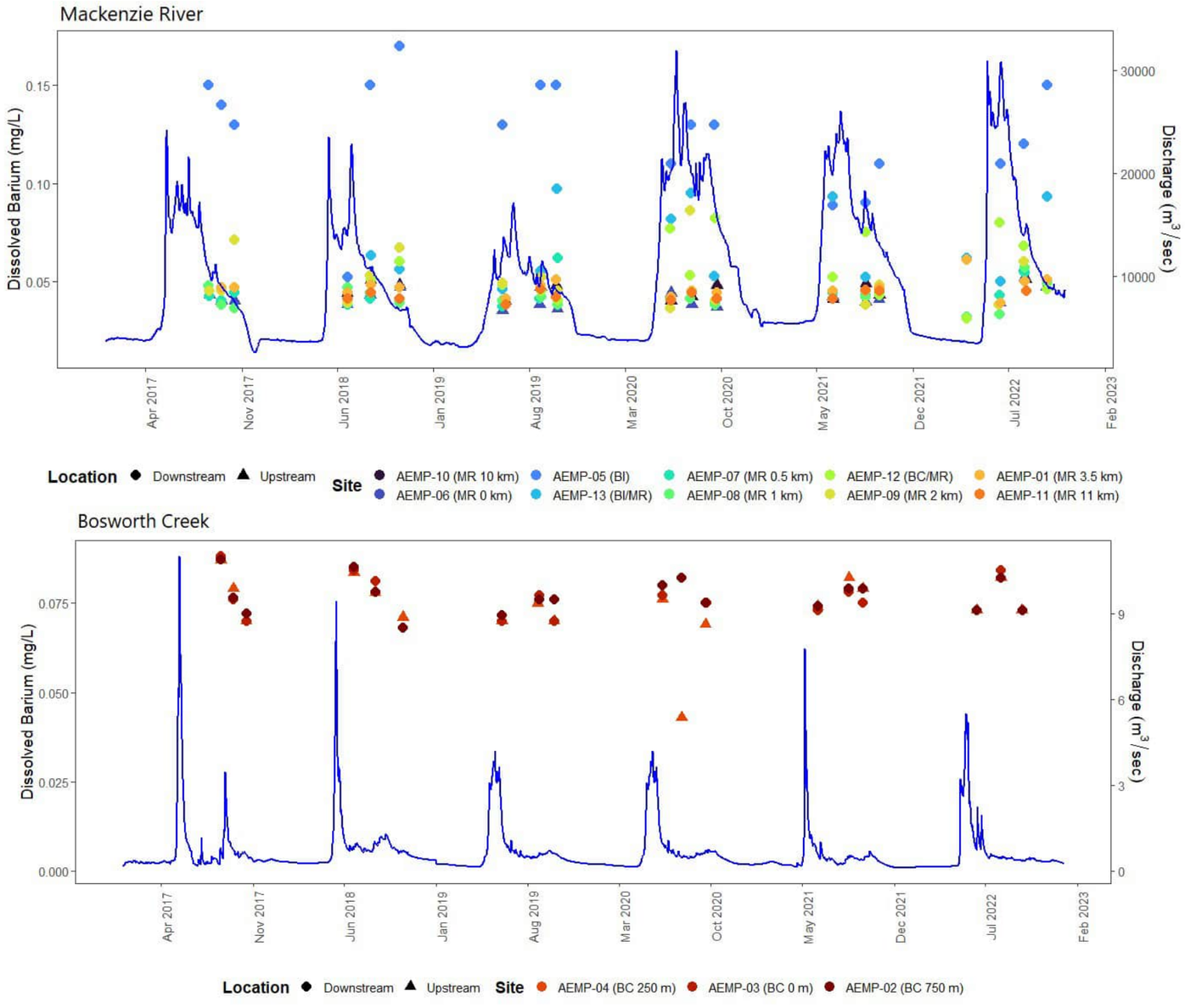
TOTAL ARSENIC DATA SUMMARY (2017 - 2022)

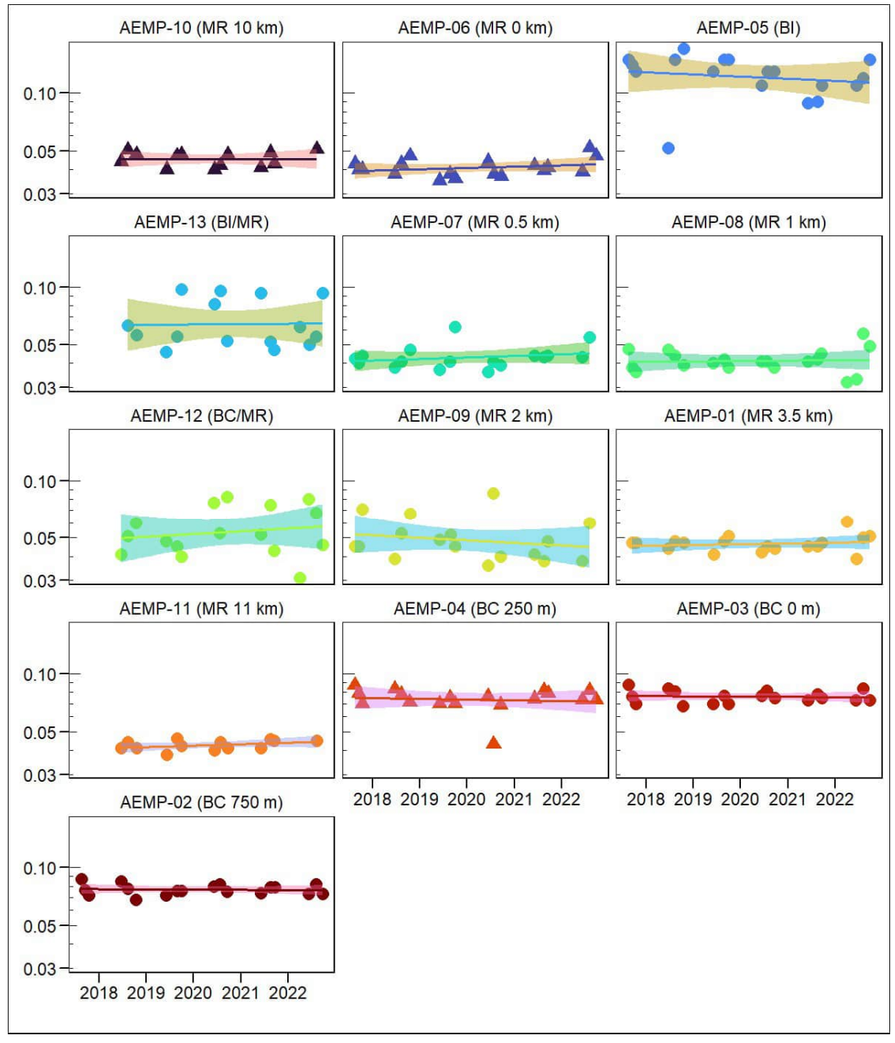
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-11** REV **A**

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Notes:
Left - Dissolved barium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved barium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

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NORMAN WELLS, NT

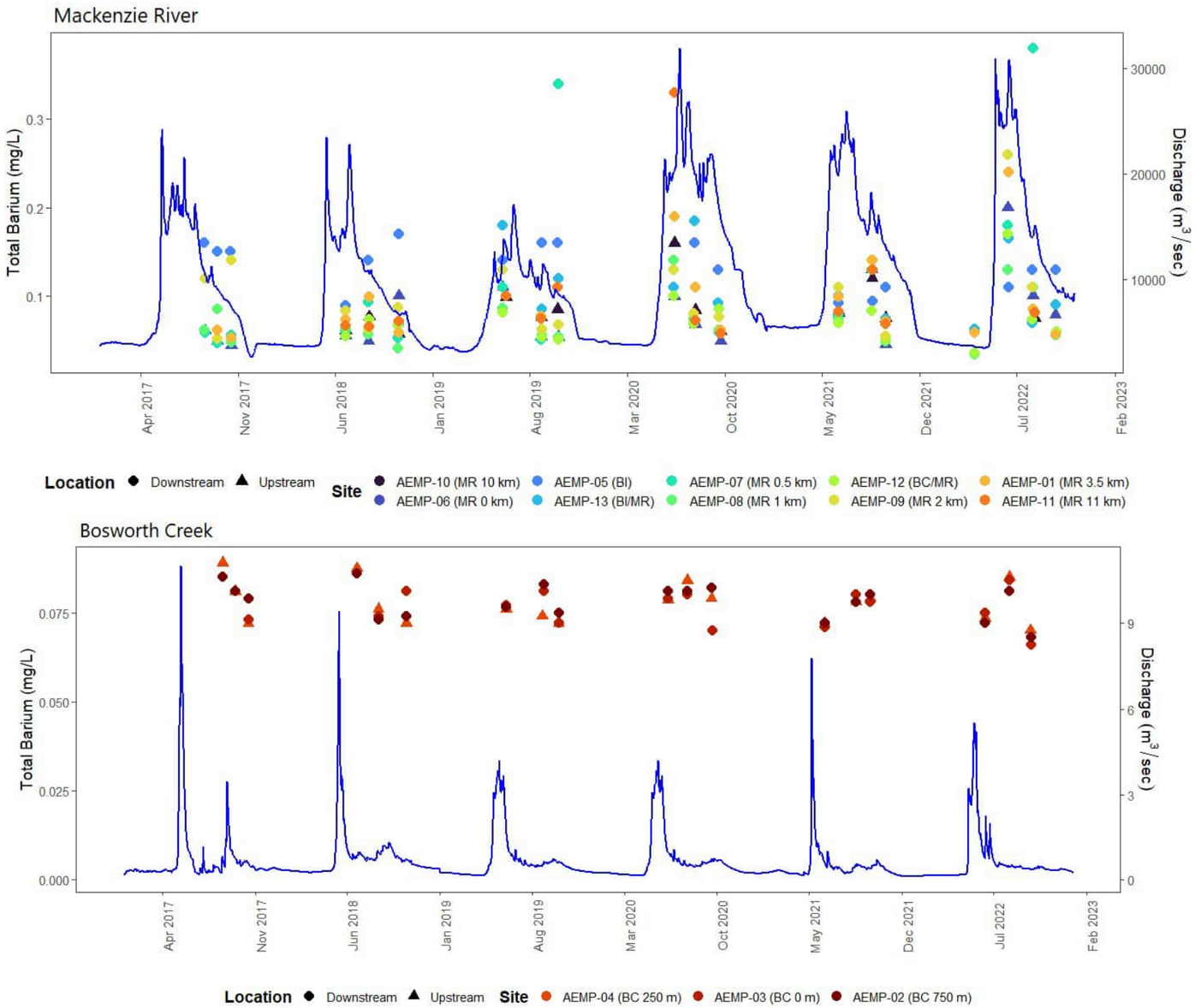
DISSOLVED BARIUM DATA SUMMARY (2017 - 2022)

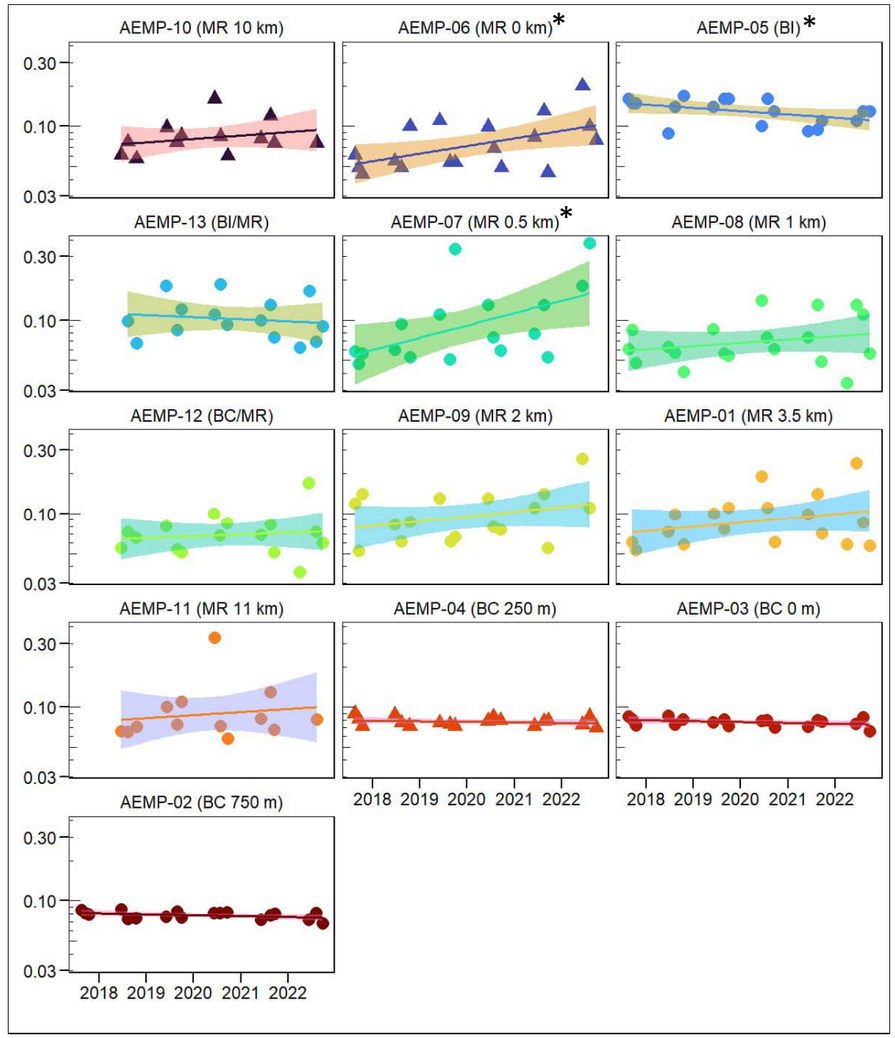
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-12** REV **A**

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Notes:
Left - Total barium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total barium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

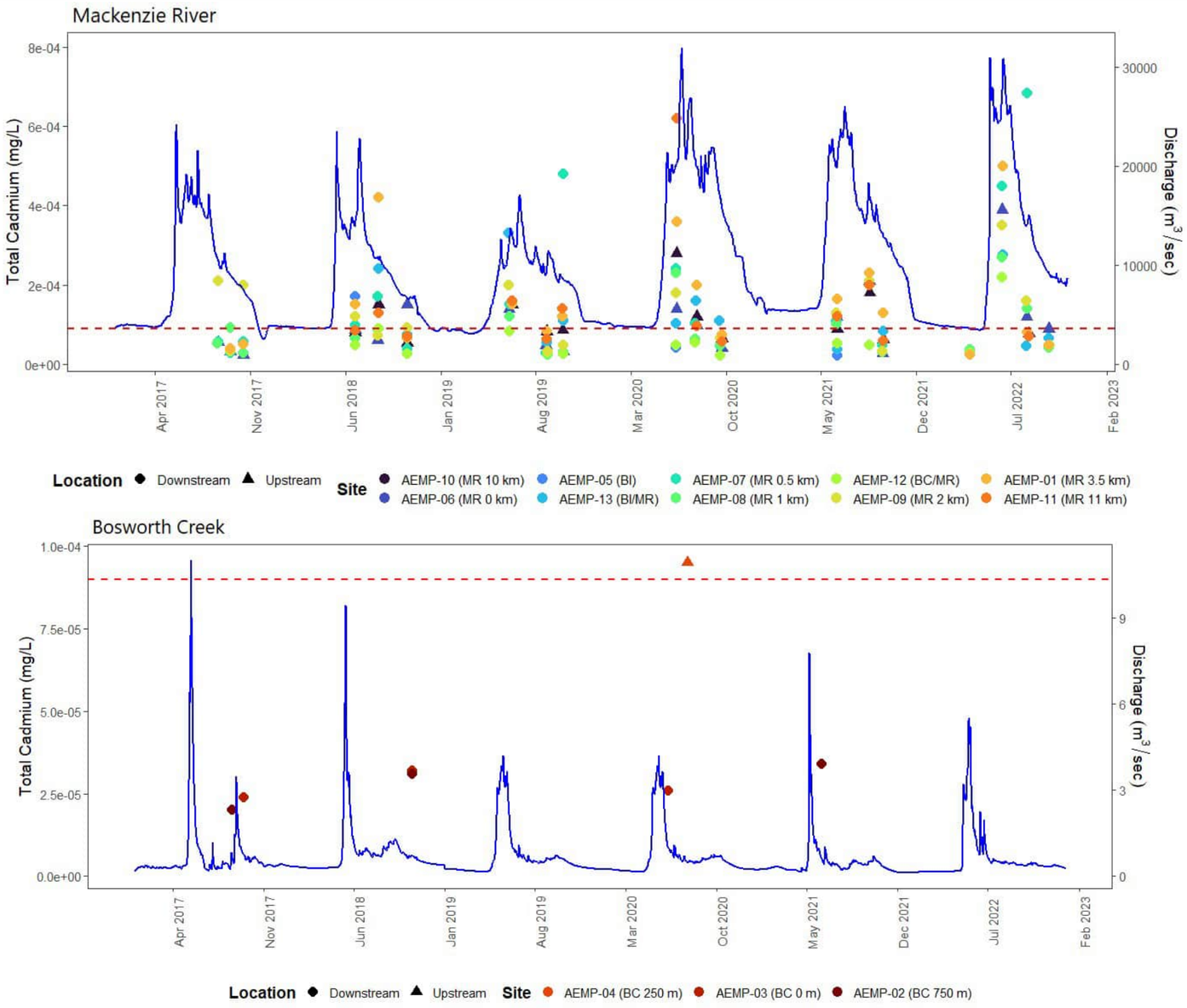
TOTAL BARIUM DATA SUMMARY (2017 - 2022)

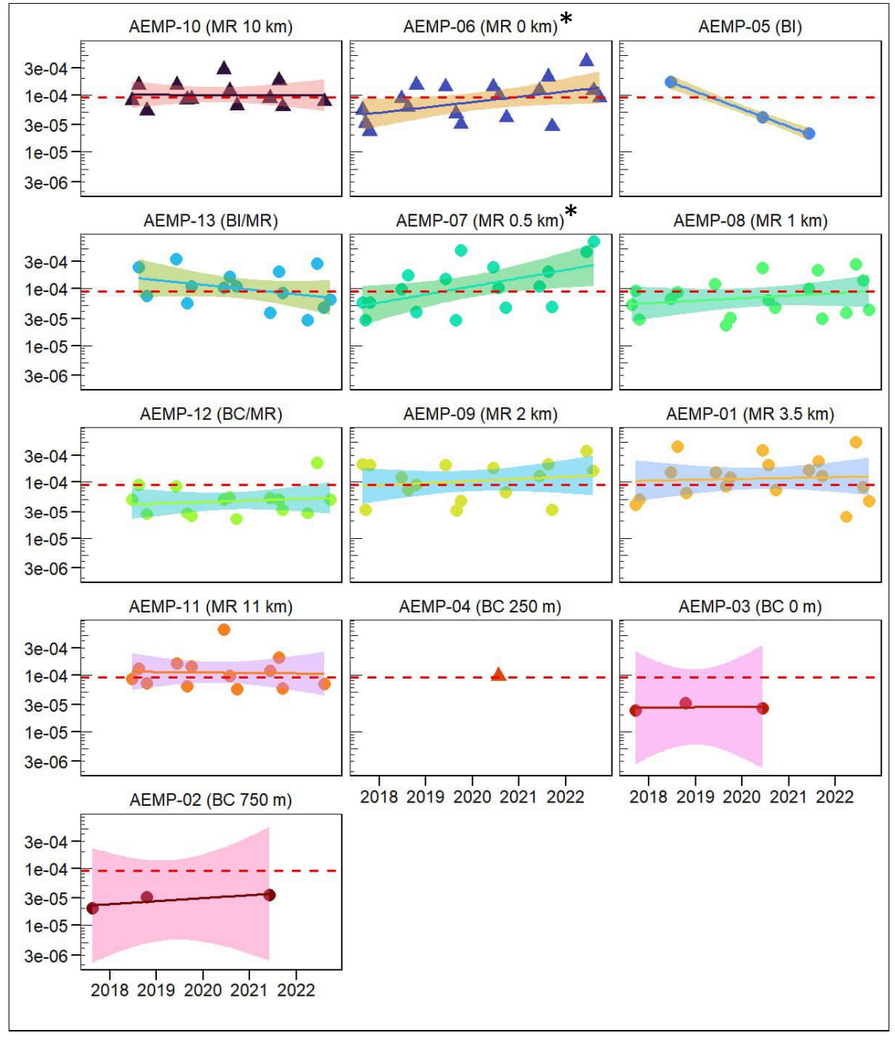
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No.
417085-42051-22200

FIGURE: **AE-13** REV **A**

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Notes:
Left - Total cadmium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total cadmium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

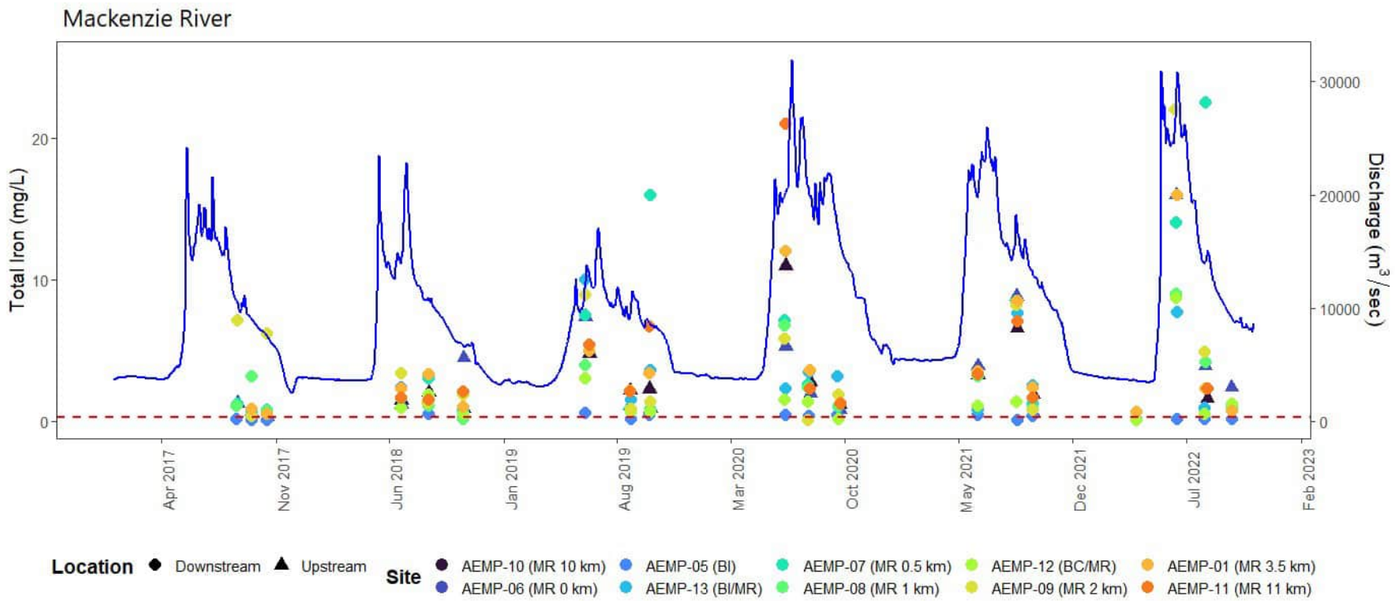
The total cadmium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.00009 mg/L (indicated by dashed red line).

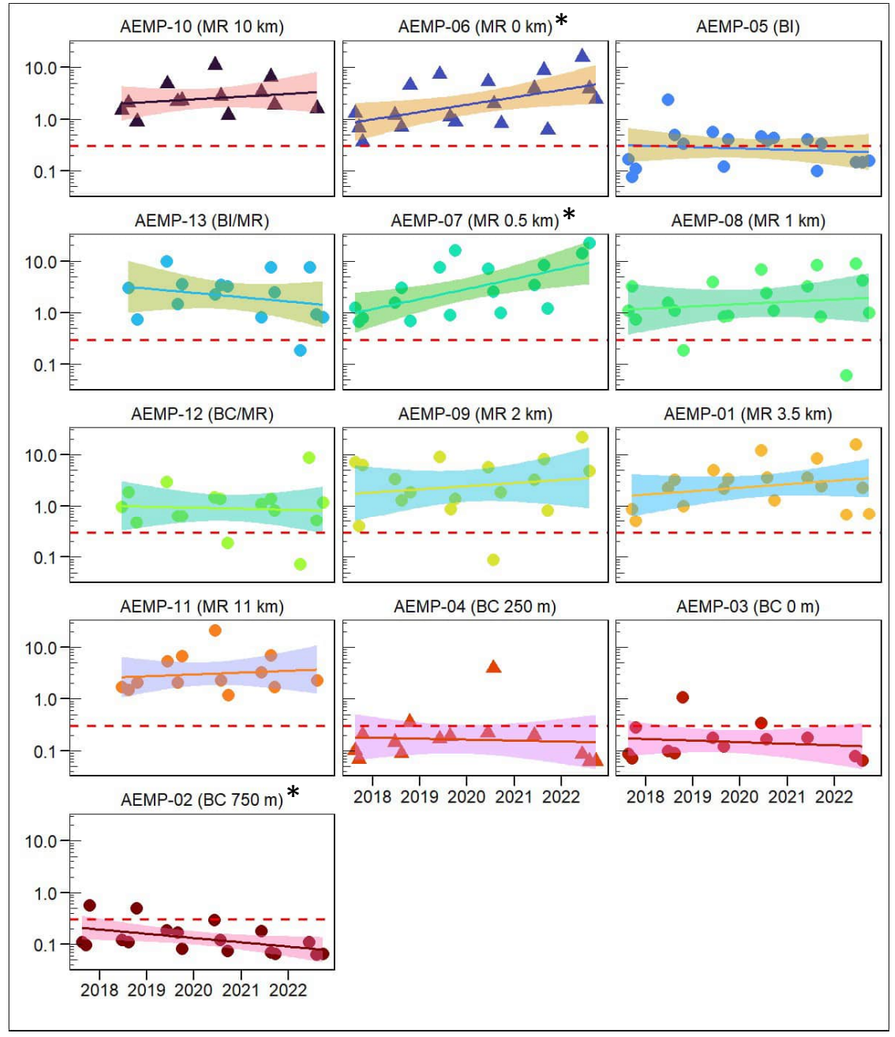
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NORMAN WELLS, NT

TOTAL CADMIUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: **AE-14**	REV **A**

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Notes:
Left - Total iron (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total iron (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

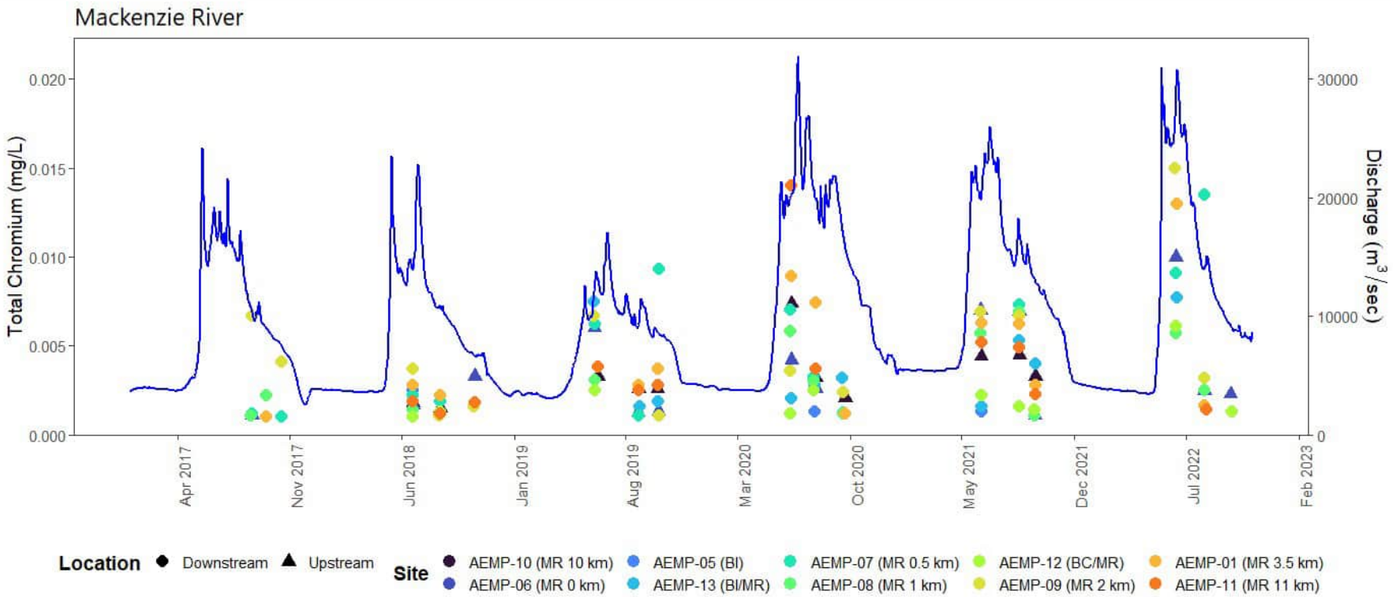
The iron concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.3 mg/L (indicated by dashed red line).

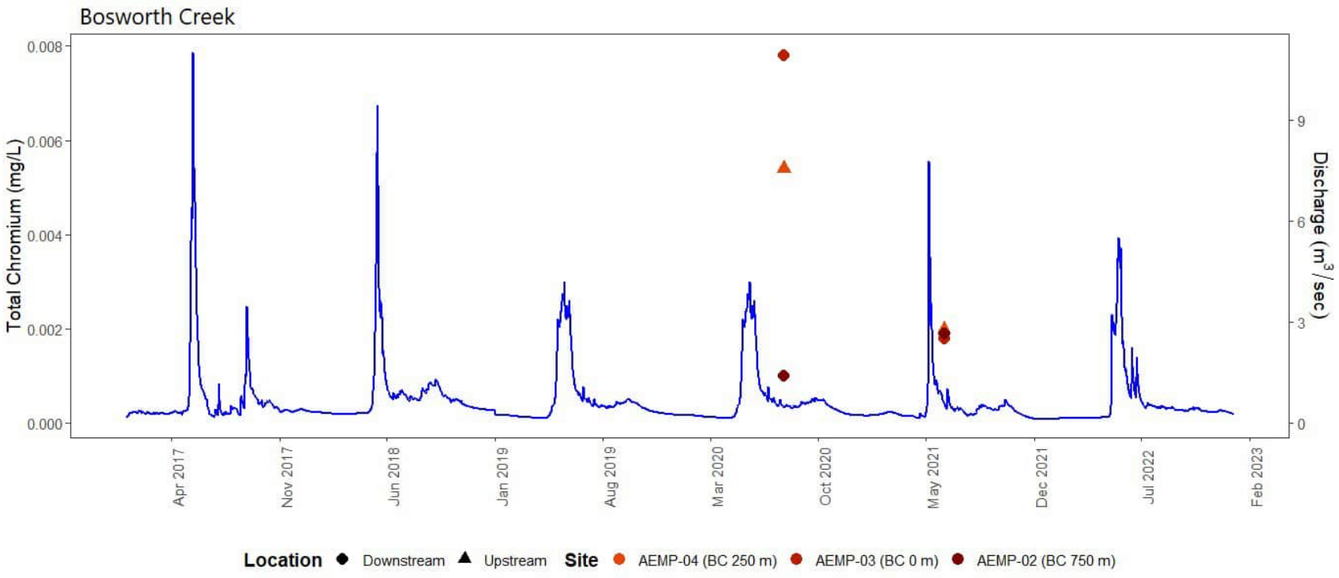
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

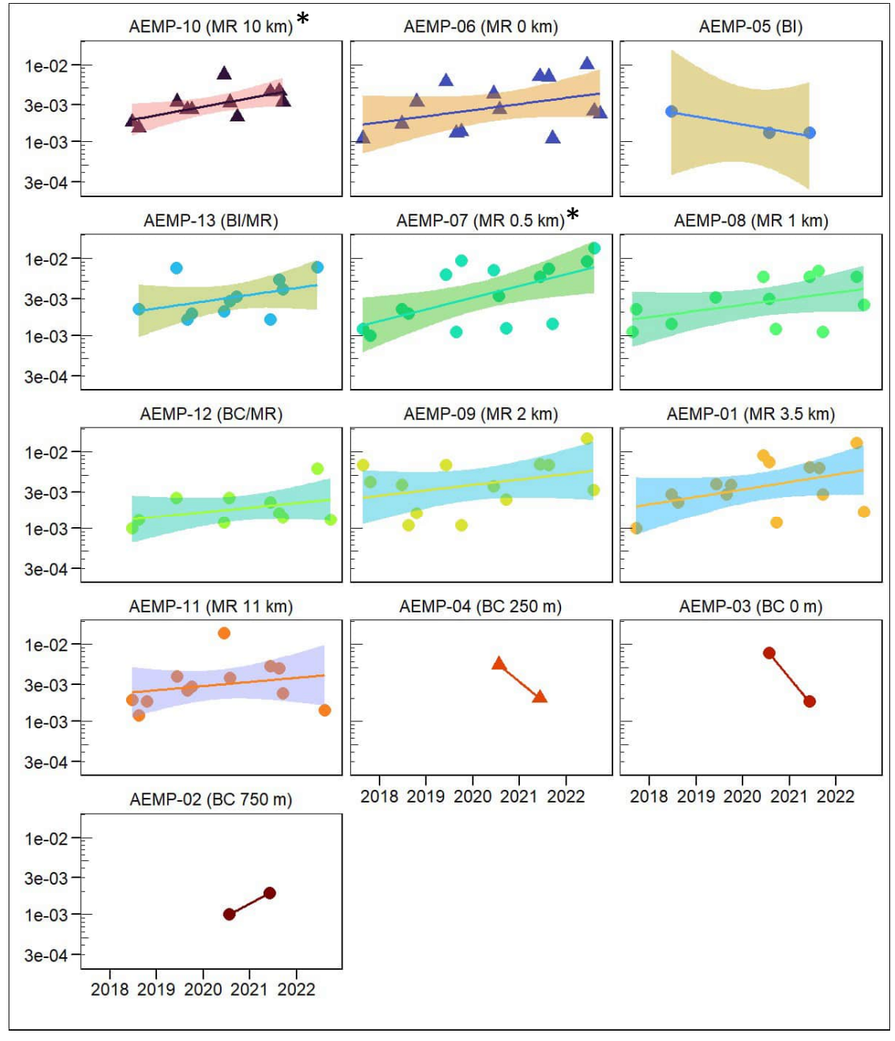
TOTAL IRON DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-15	REV A

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Notes:
Left - Total chromium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total chromium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

The total chromium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.0089 mg/L.

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NORMAN WELLS, NT

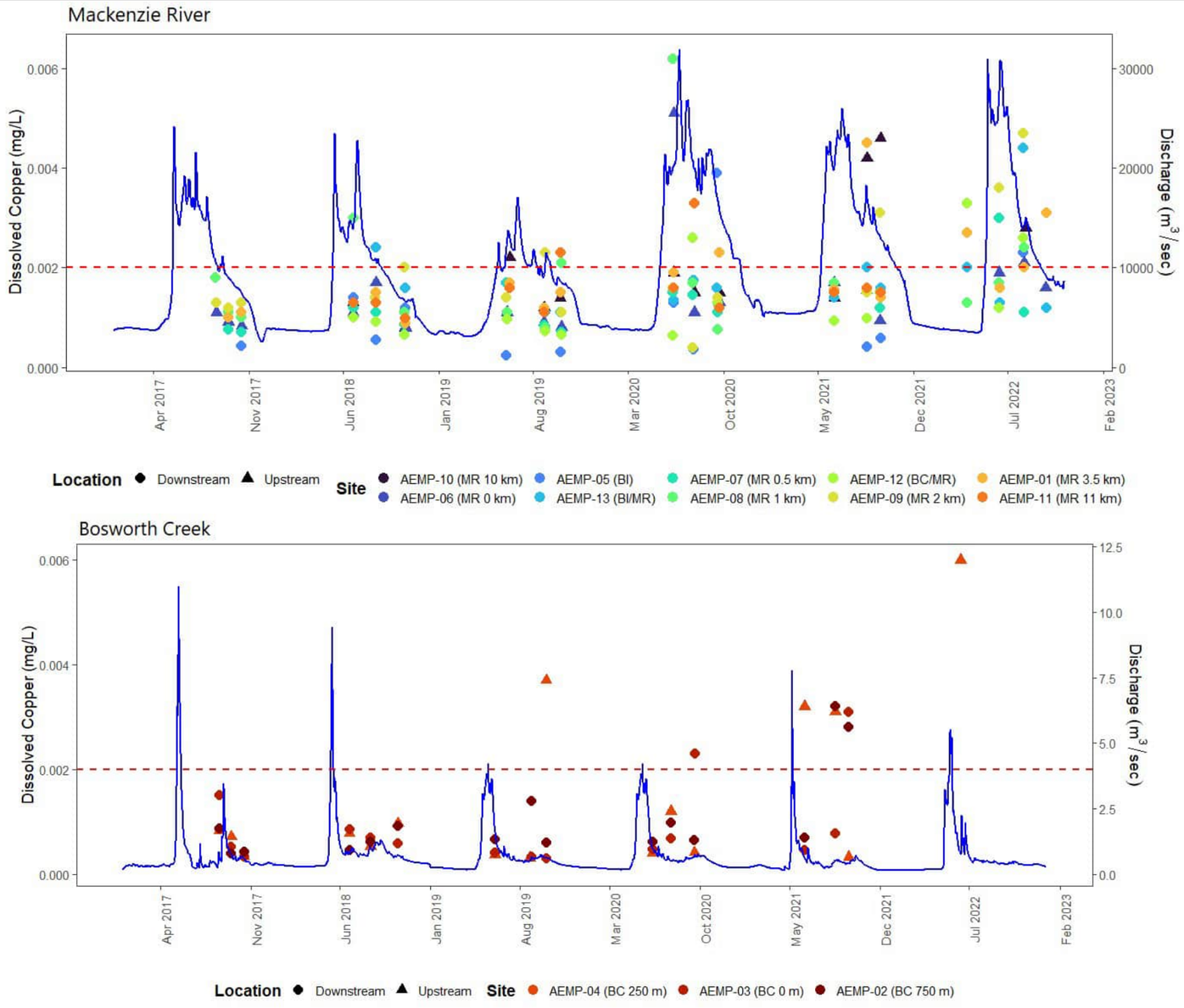
TOTAL CHROMIUM DATA SUMMARY (2017 - 2022)

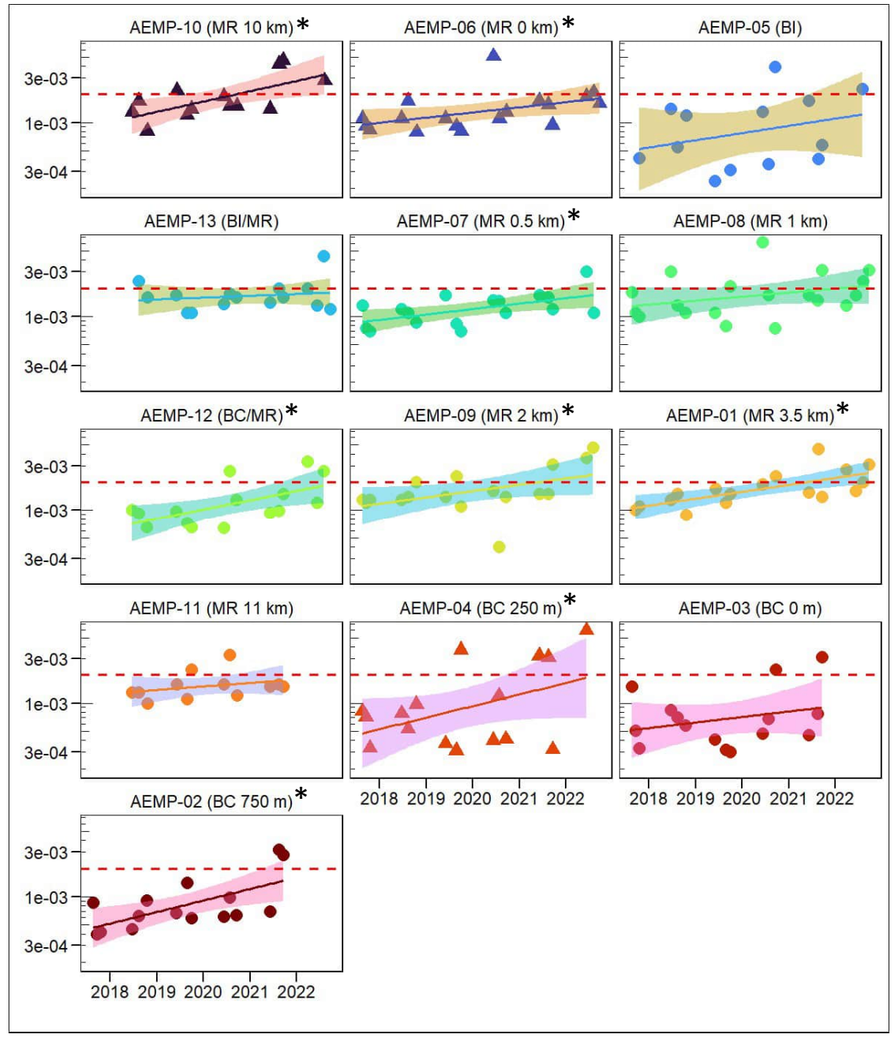
Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-16** REV **A**

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Notes:
Left - Dissolved copper (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved copper (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

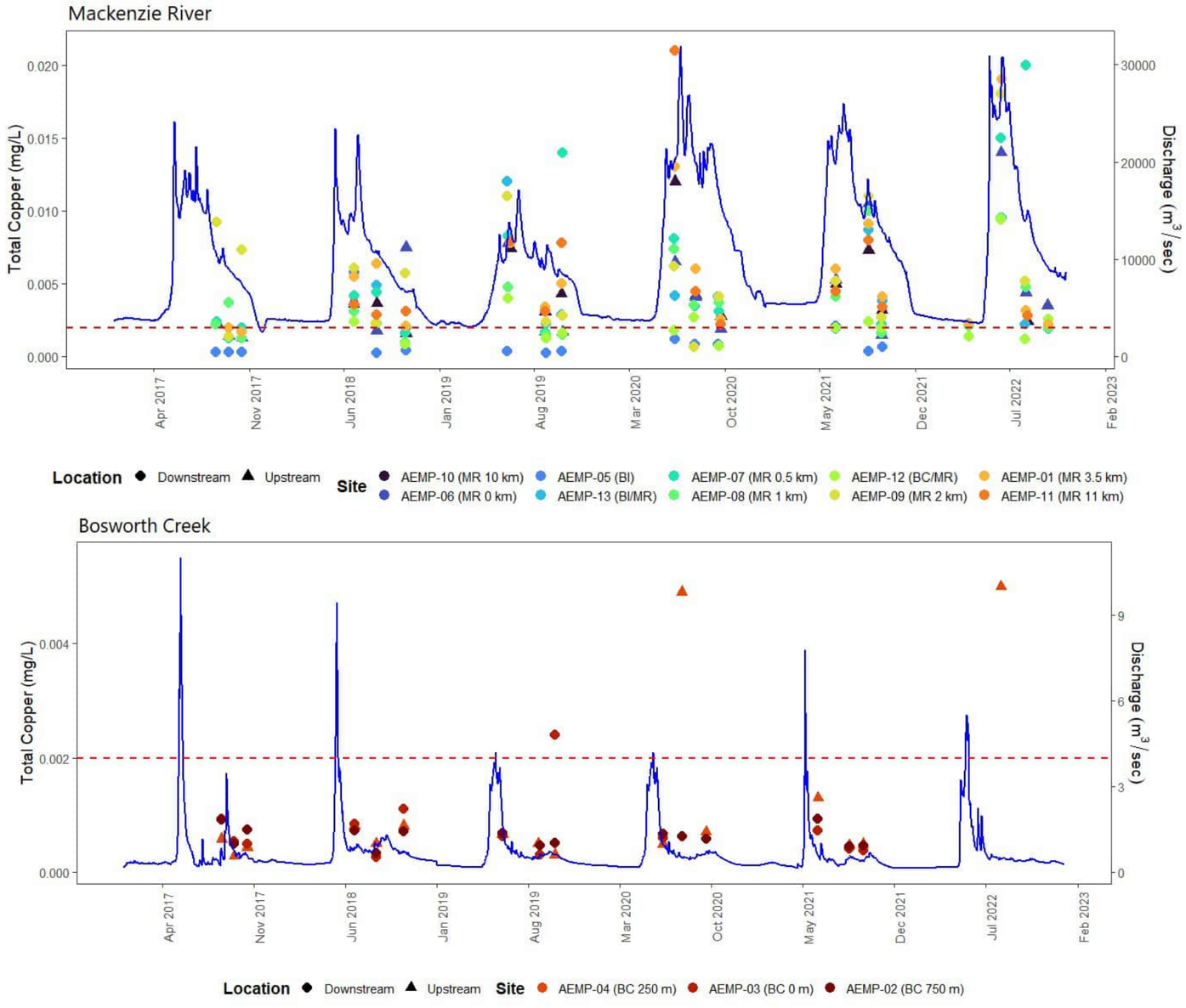
The dissolved copper concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.002 mg/L (indicated by dashed red line).

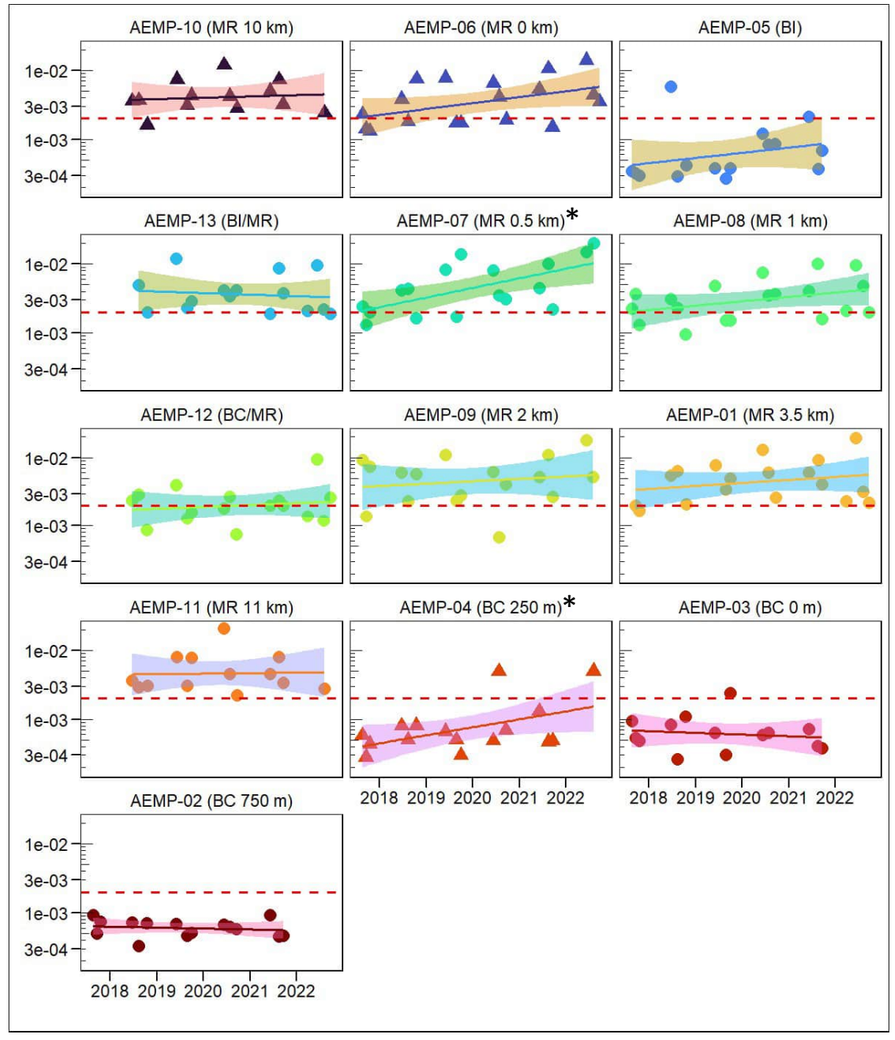
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

DISSOLVED COPPER DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-17	REV A

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Notes:
Left - Total copper (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total copper (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

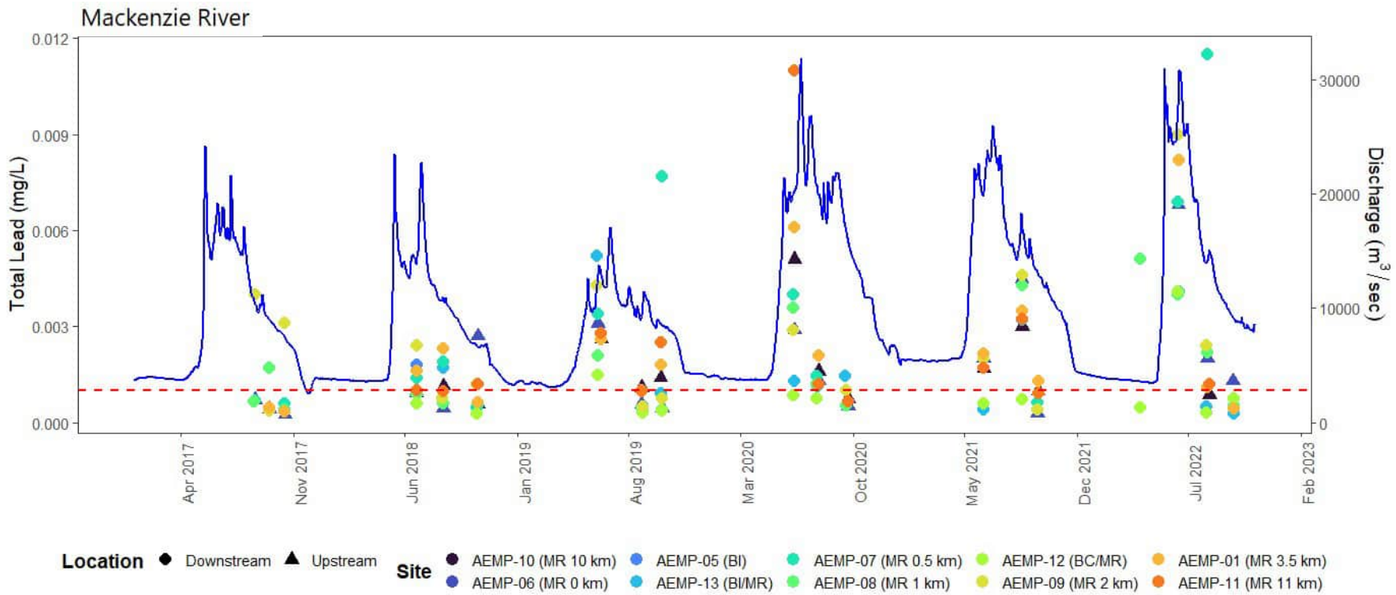
The total copper concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.002 mg/L (indicated by dashed red line).

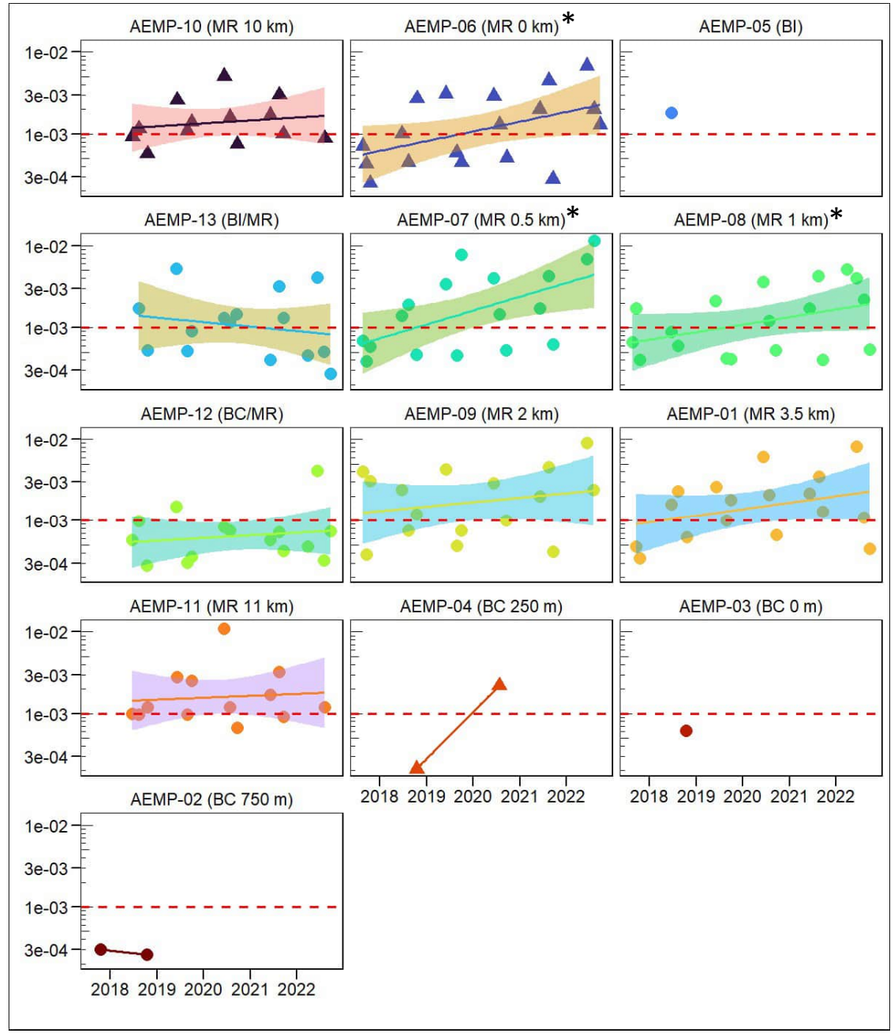
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL COPPER DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-18	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
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Notes:
Left - Total lead (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total lead (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

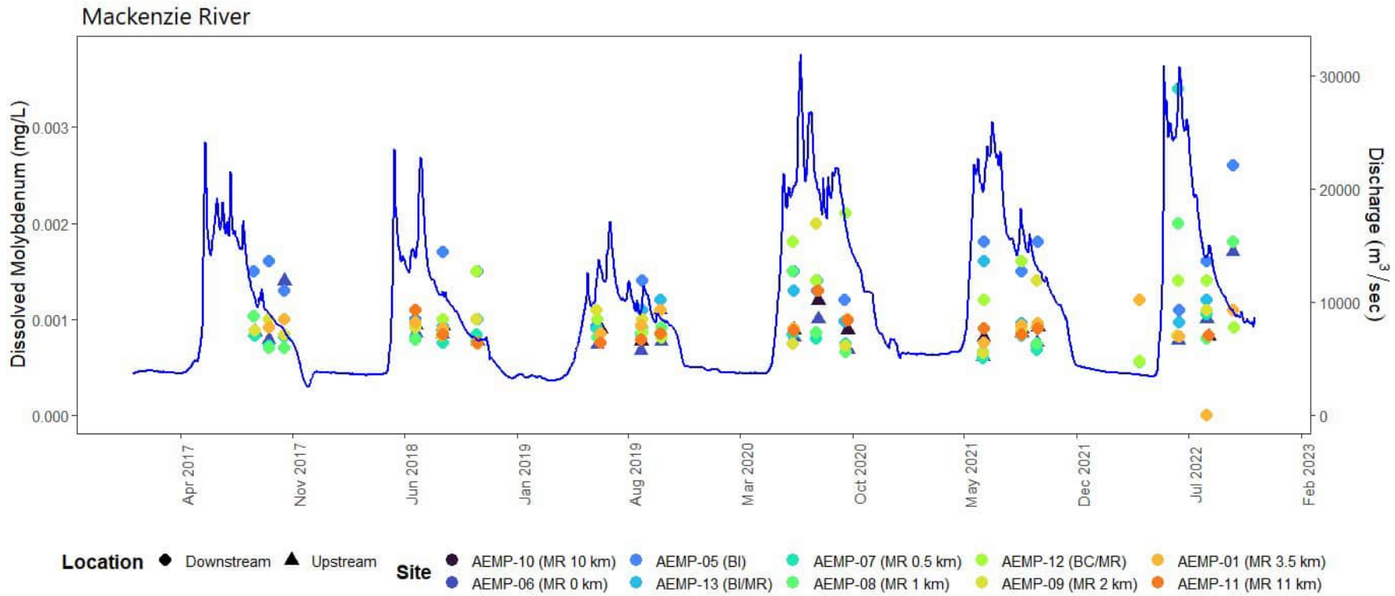
Total lead concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.001 mg/L (indicated by the dashed red line). Note that the FWAL guideline is dependent on hardness and is 0.007 mg/L when hardness is greater than 180 mg/L.

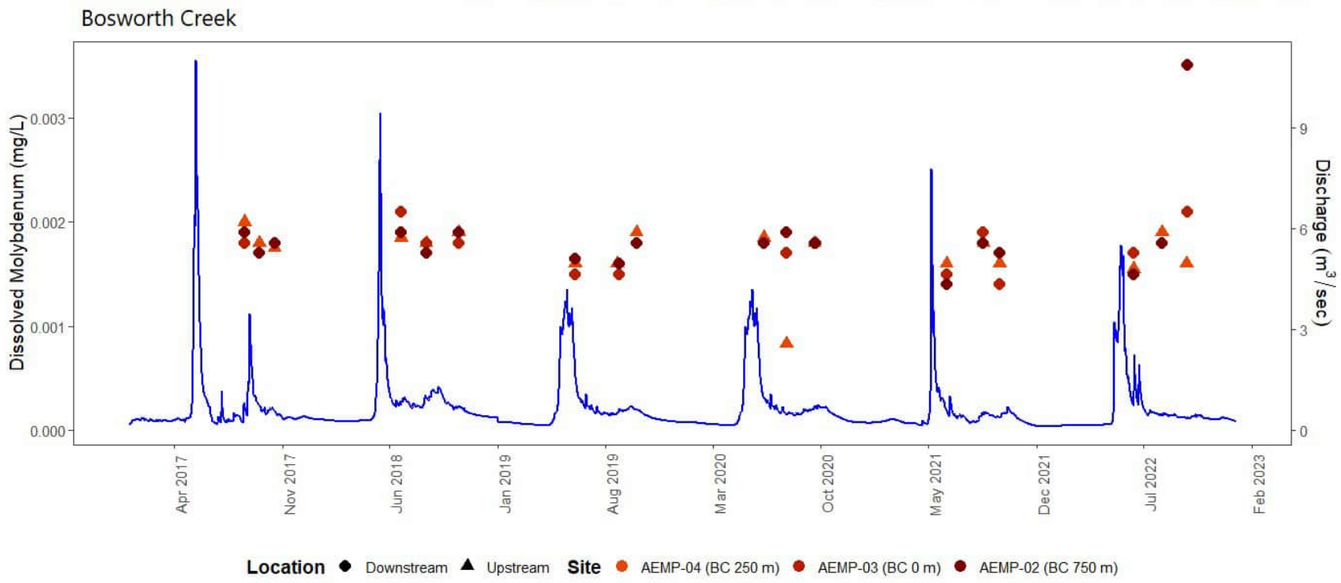
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

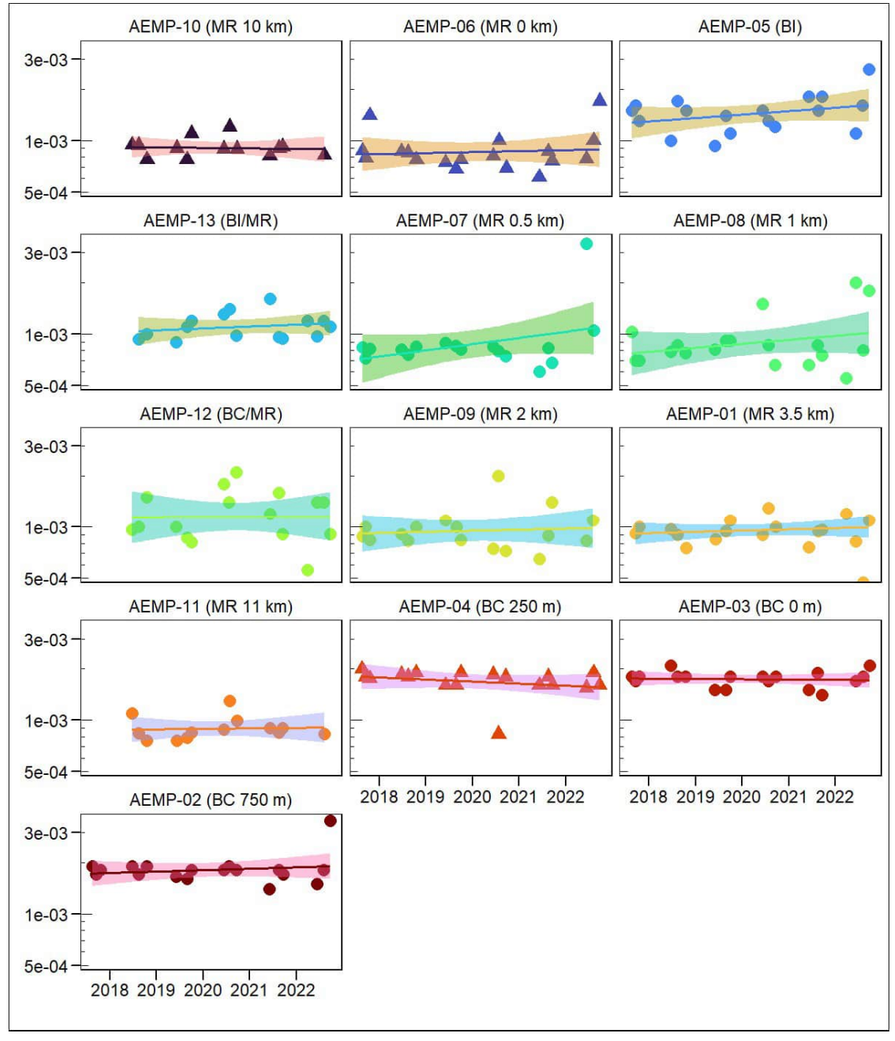
TOTAL LEAD DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-19	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
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Notes:
Left - Dissolved molybdenum (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved molybdenum (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

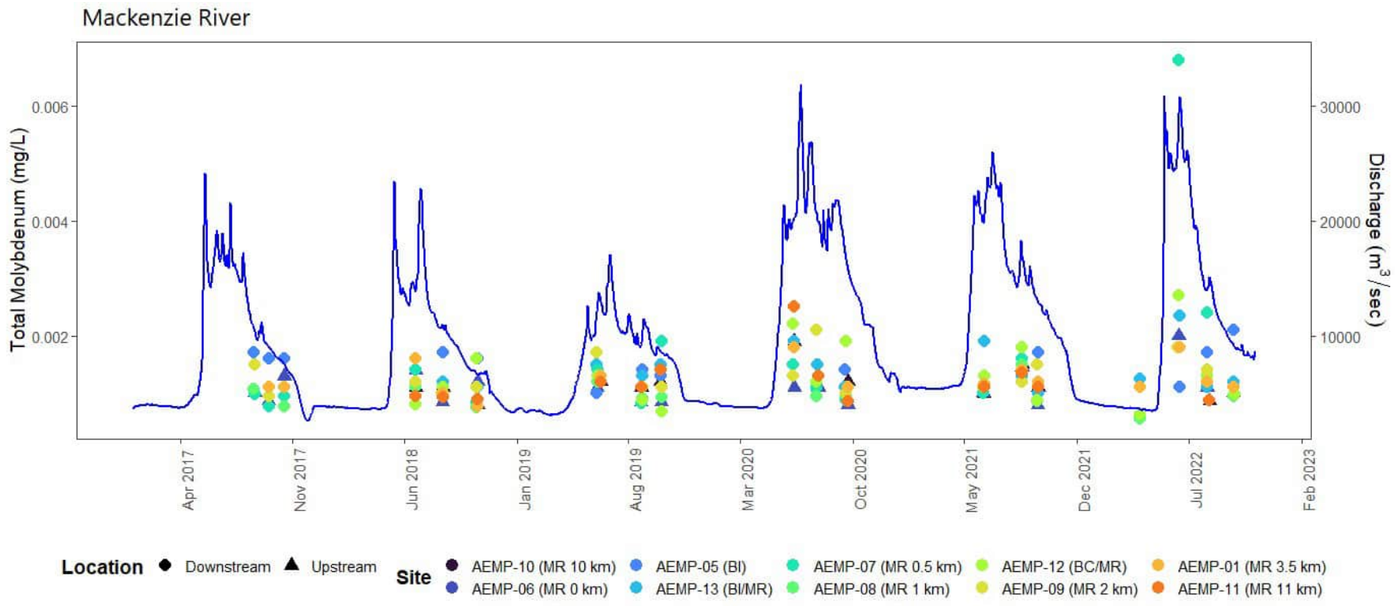
The dissolved molybdenum concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.073 mg/L.

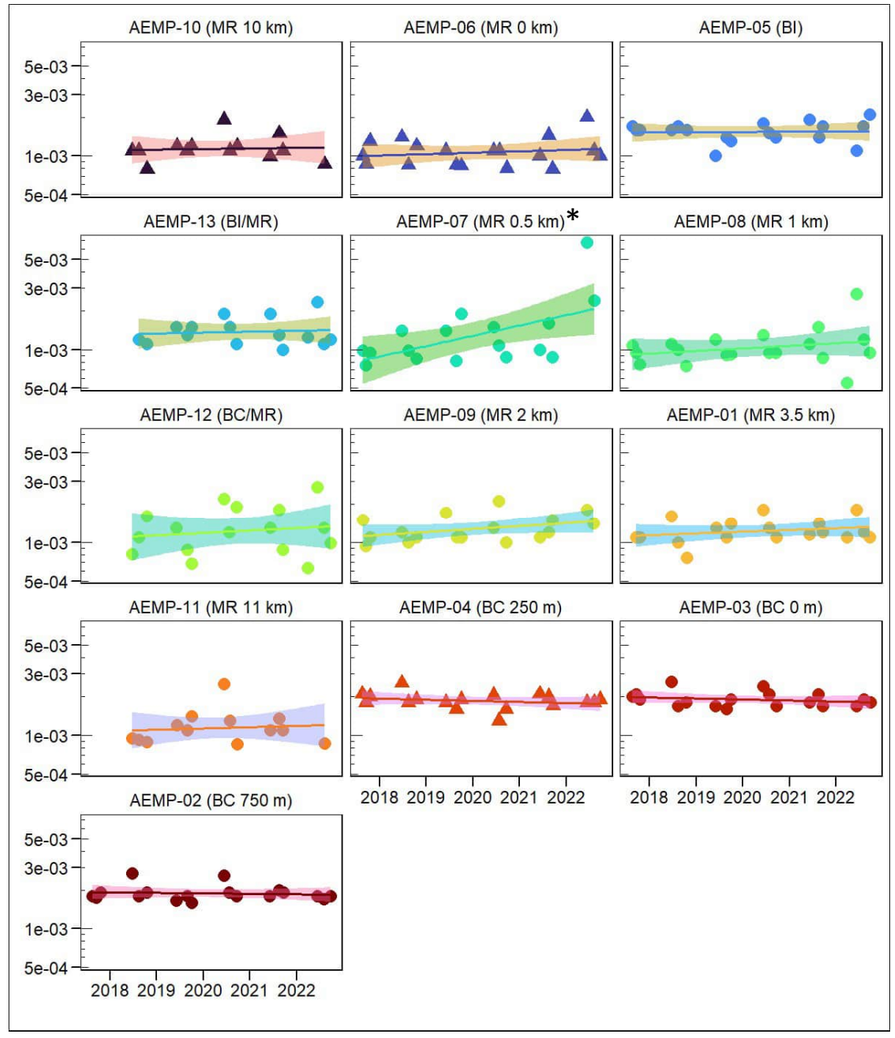
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

DISSOLVED MOLYBDENUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-20	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
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Notes:
Left - Total molybdenum (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total molybdenum (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

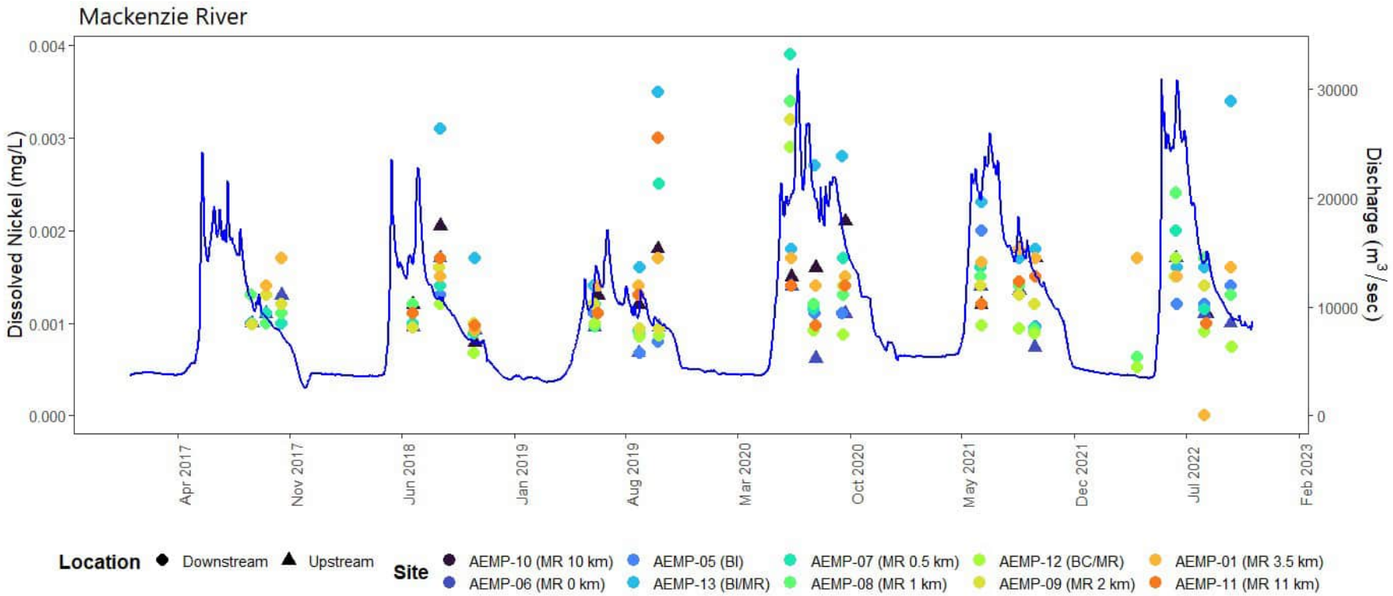
The total molybdenum concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.073 mg/L.

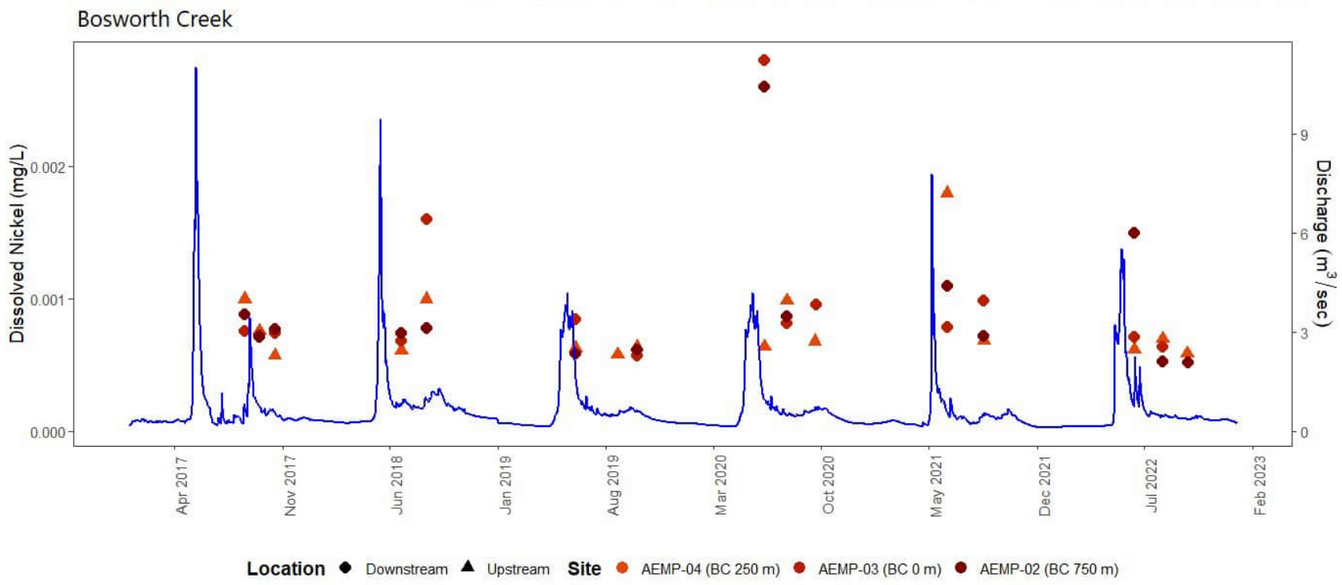
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

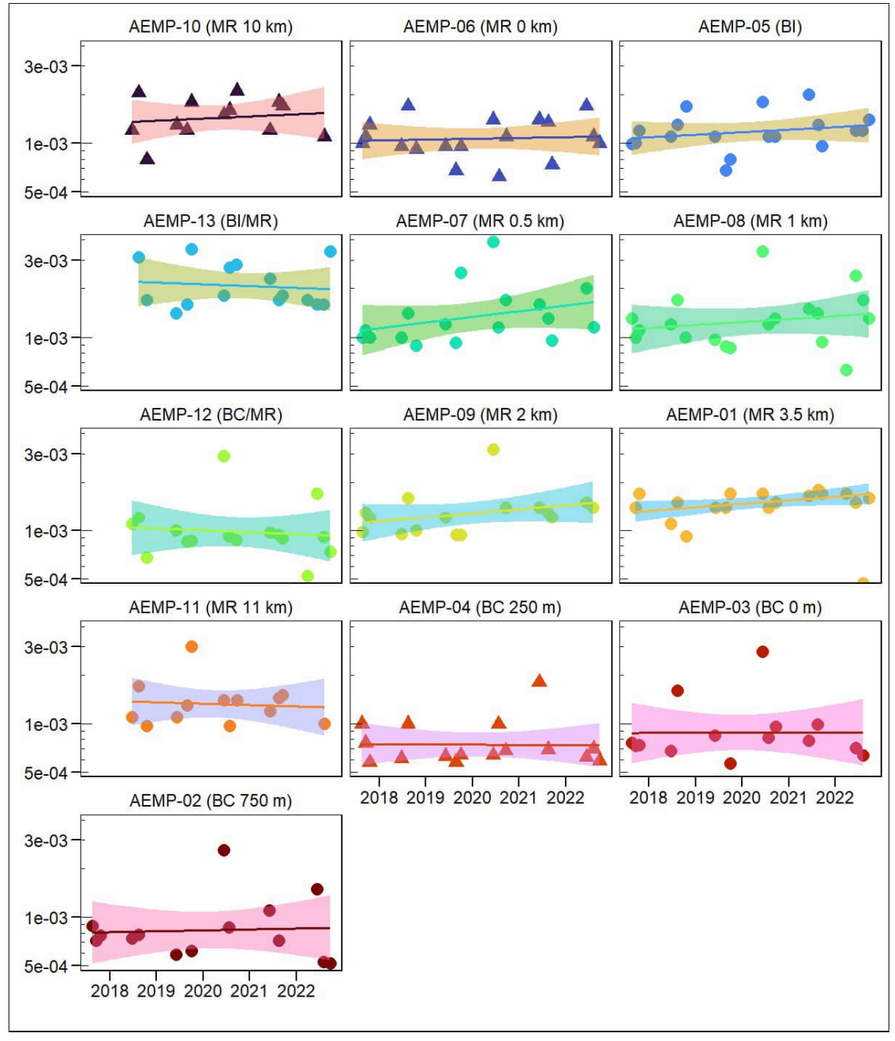
TOTAL MOLYBDENUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-21	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
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Notes:
Left - Dissolved nickel (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved nickel (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

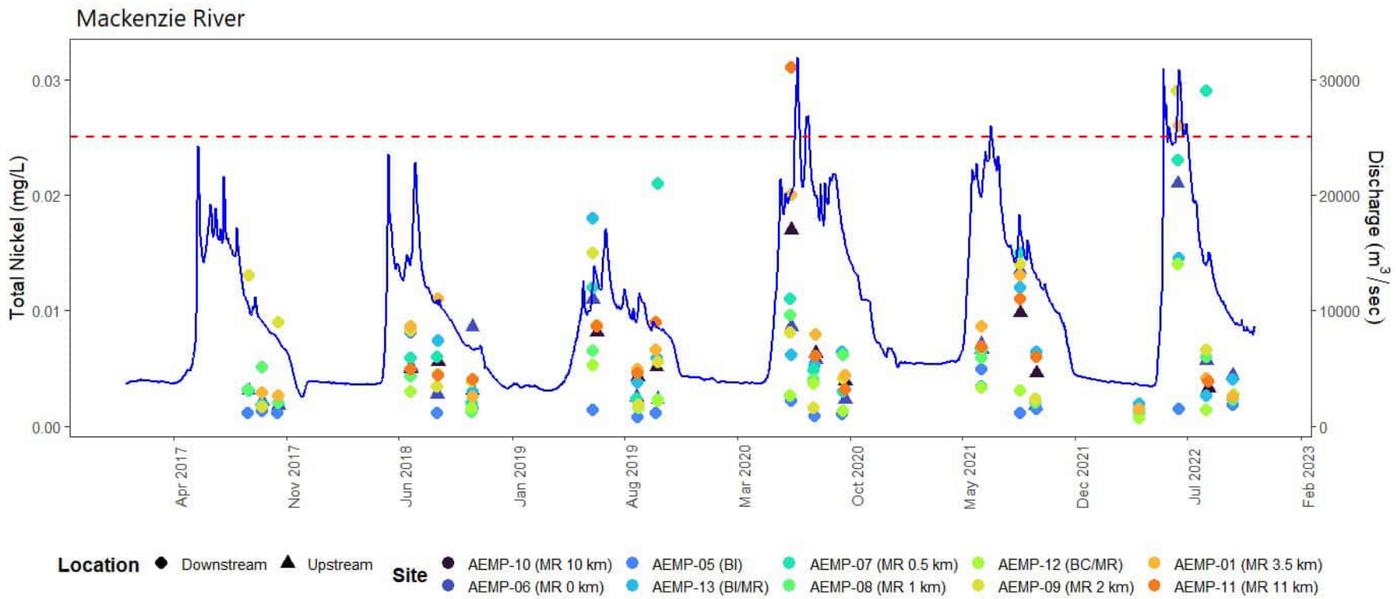
The dissolved nickel concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.025 mg/L.

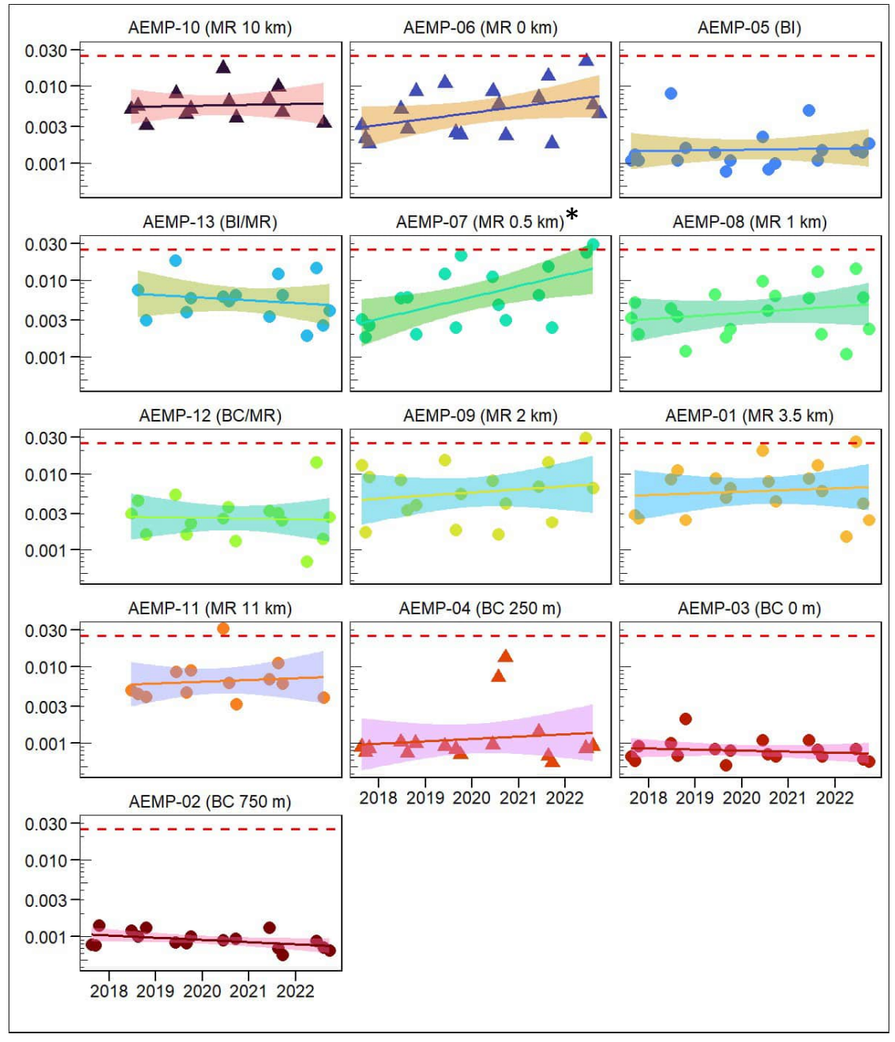
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

DISSOLVED NICKEL DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-22	REV A

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Notes:
Left - Total nickel (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total nickel (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

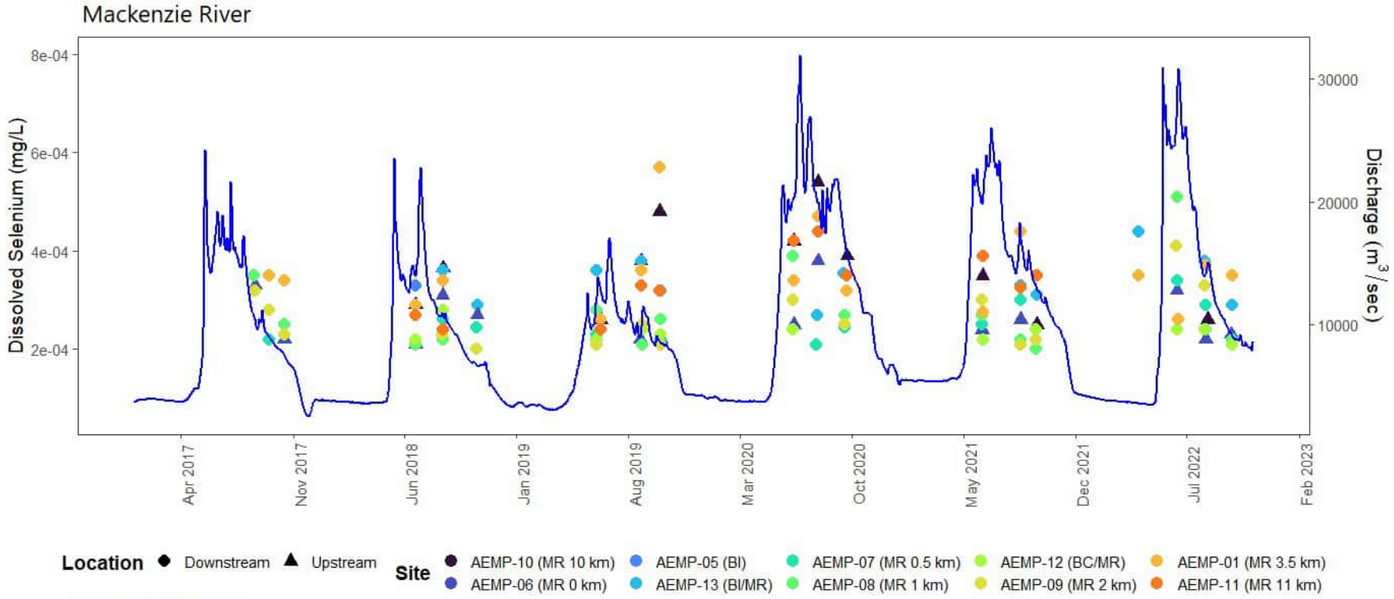
The total nickel concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.025 mg/L (indicated by dashed red line).

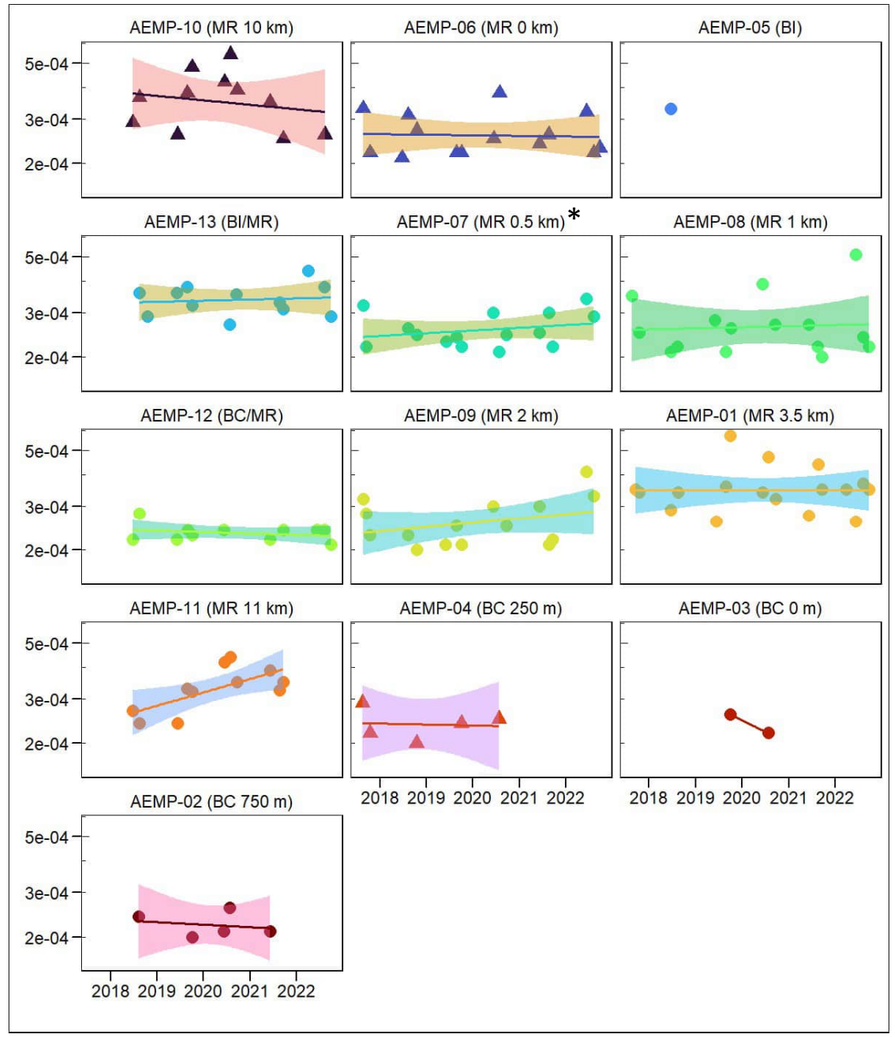
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AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL NICKEL DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: **AE-23**	REV **A**

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Notes:
Left - Dissolved selenium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved selenium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

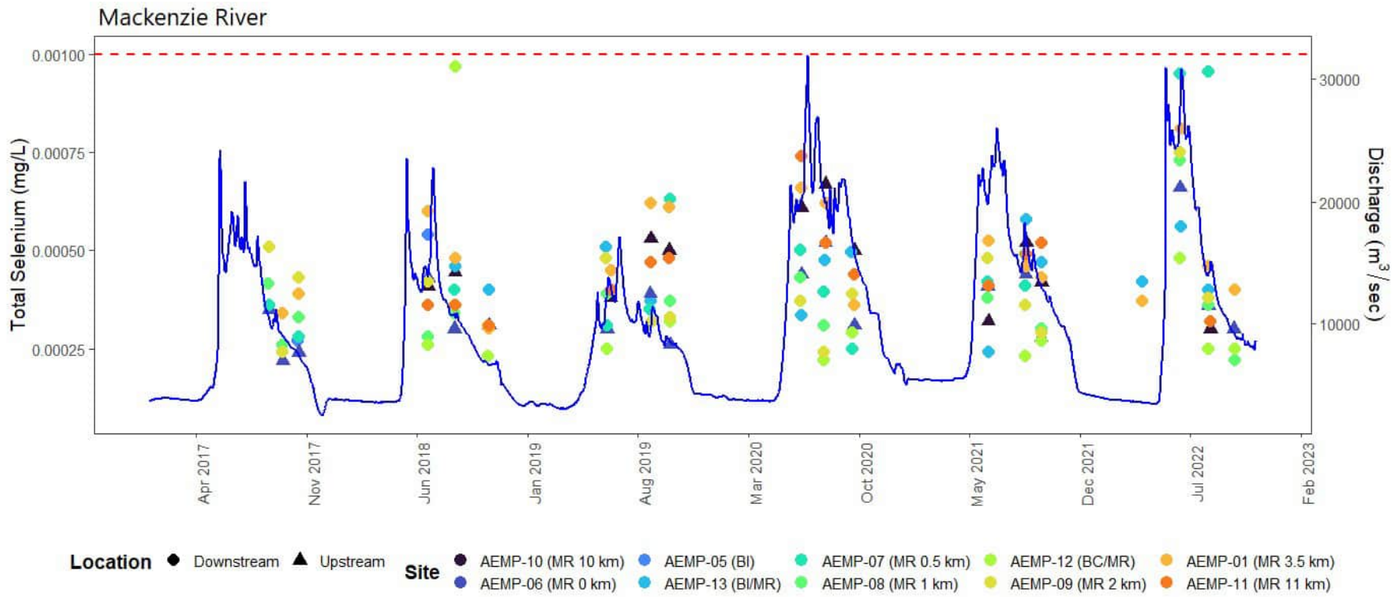
The dissolved selenium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.001 mg/L.

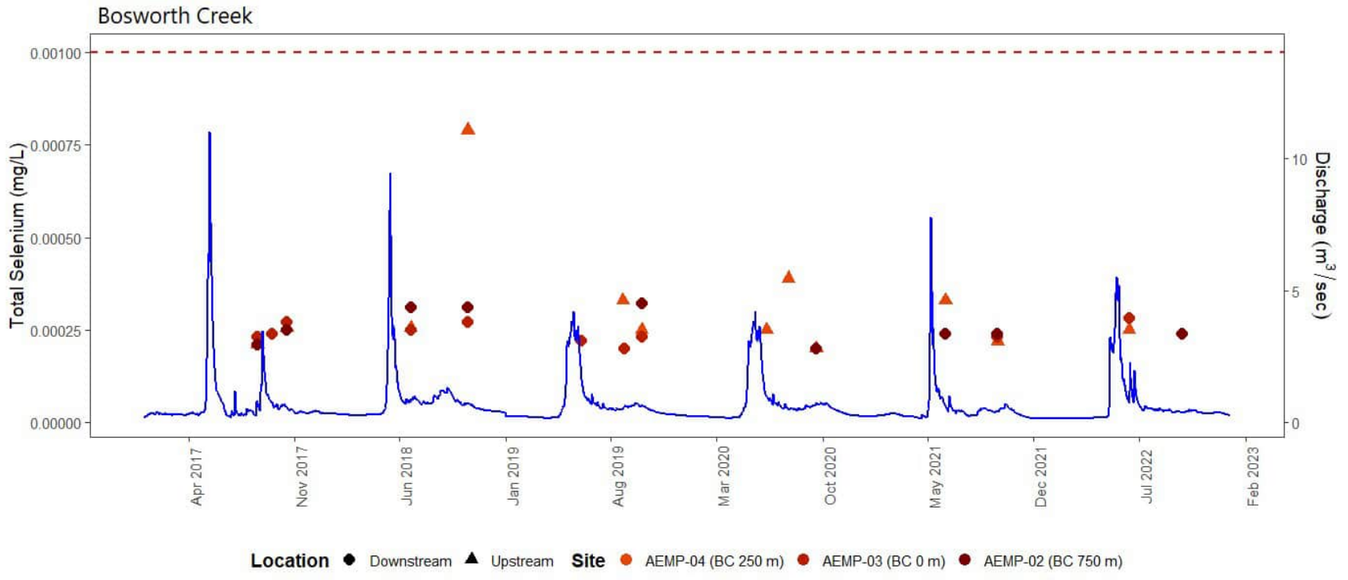
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

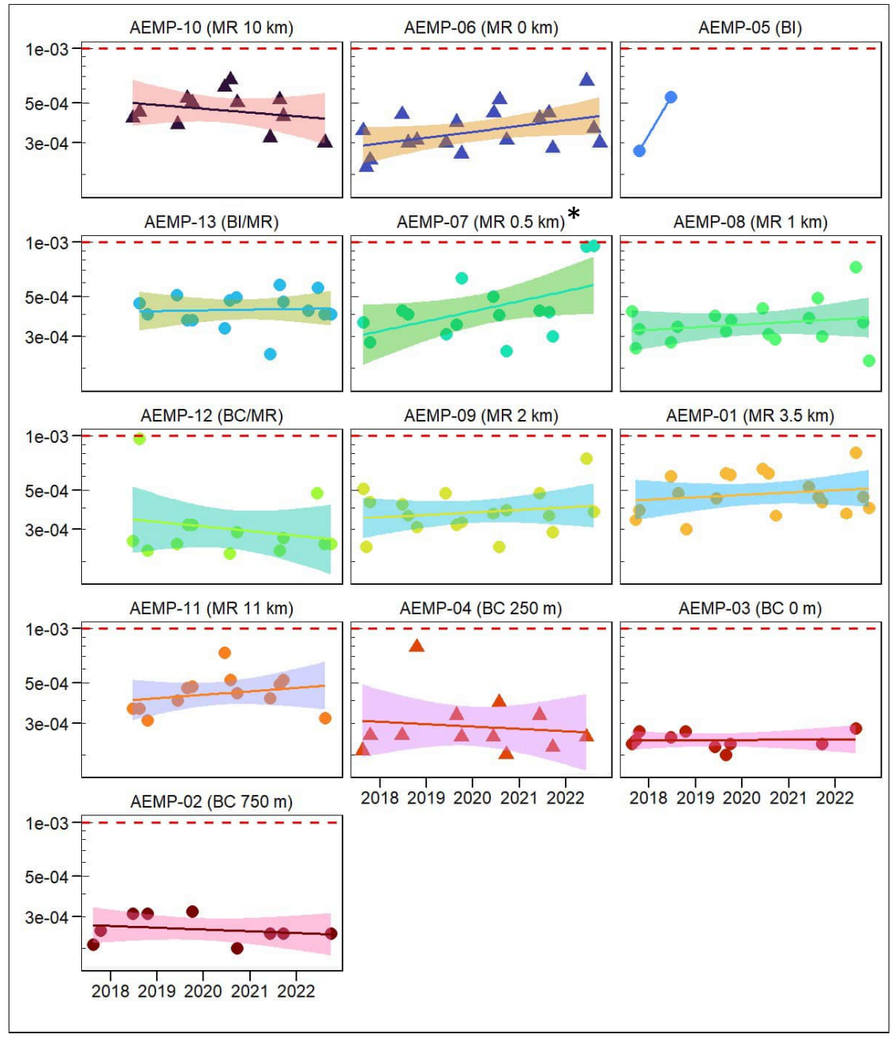
DISSOLVED SELENIUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-24	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing"







Notes:
Left - Total selenium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total selenium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

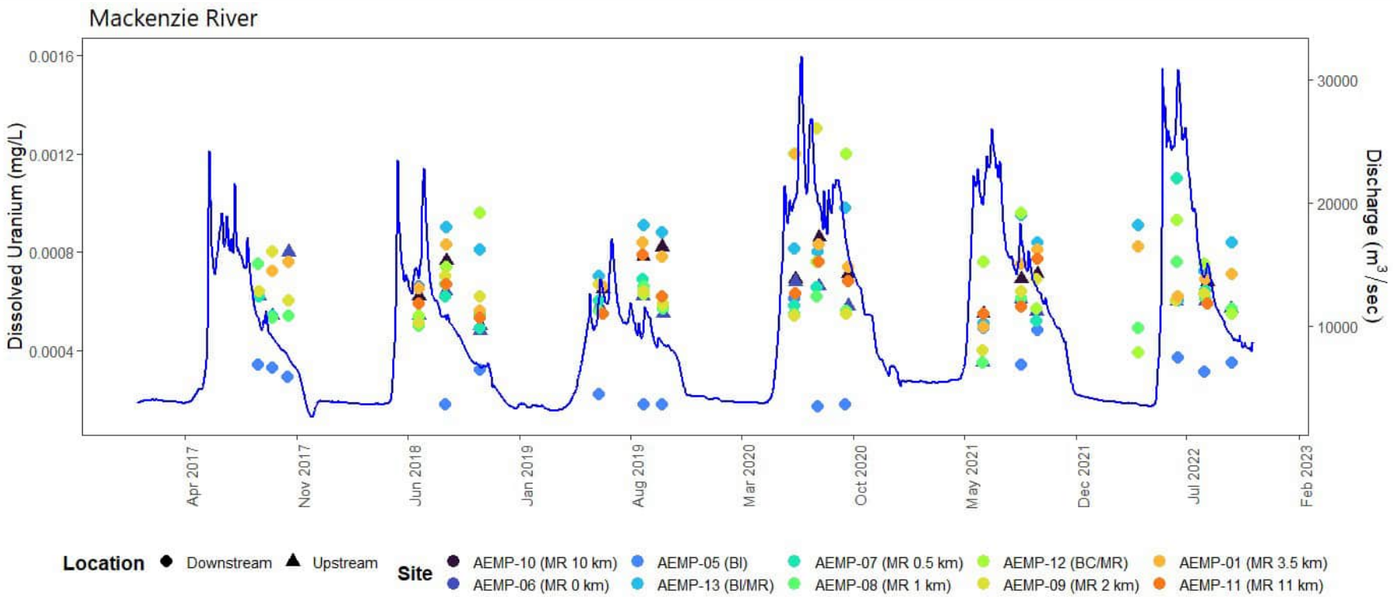
The total selenium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.001 mg/L (indicated by dashed red line).

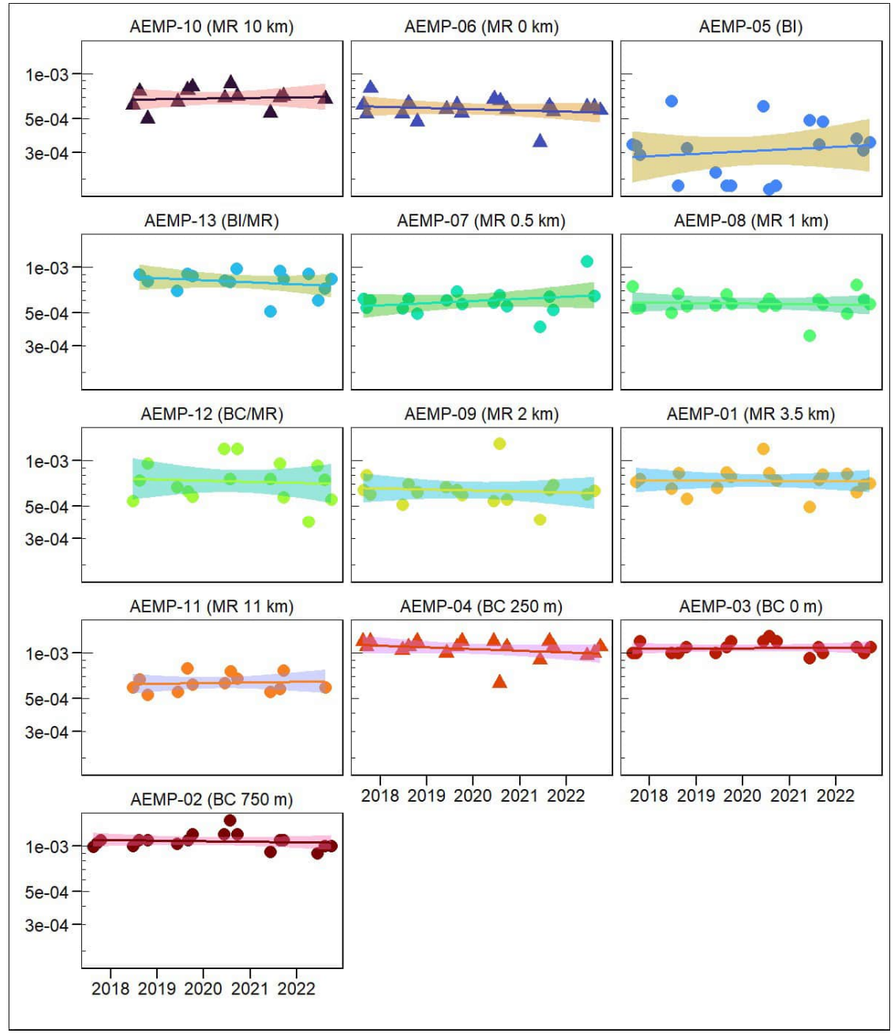
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL SELENIUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-25	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing"





Notes:
Left - Dissolved uranium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Dissolved uranium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

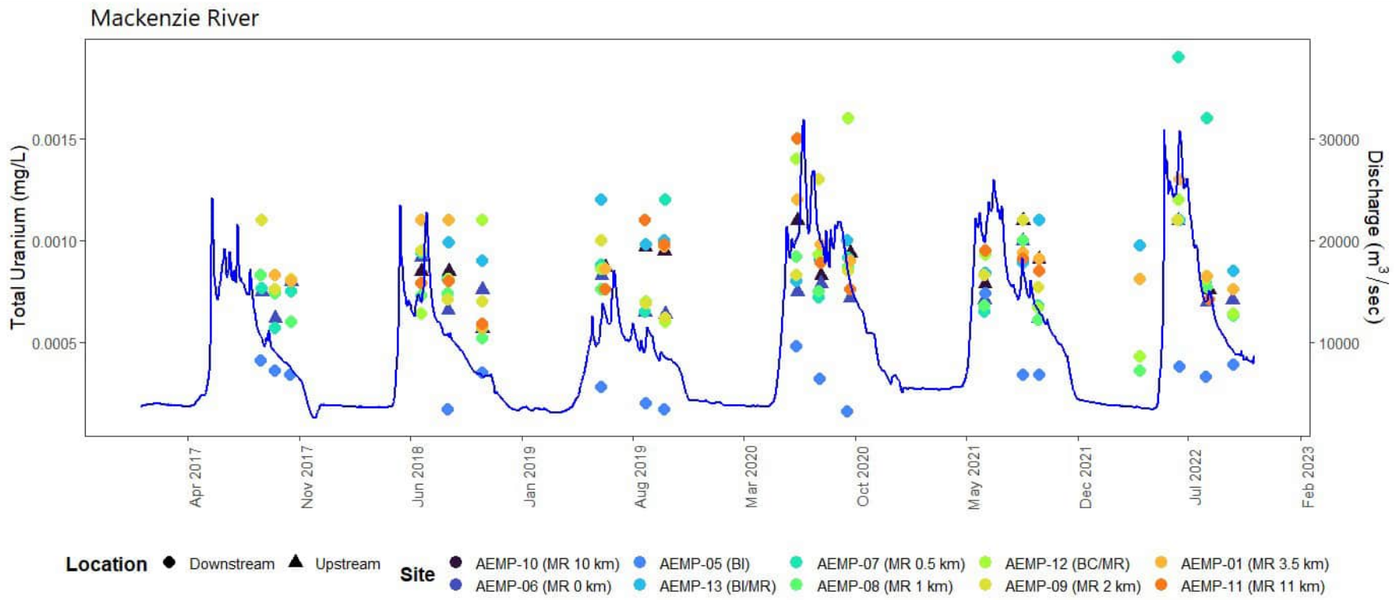
The dissolved uranium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.015 mg/L.

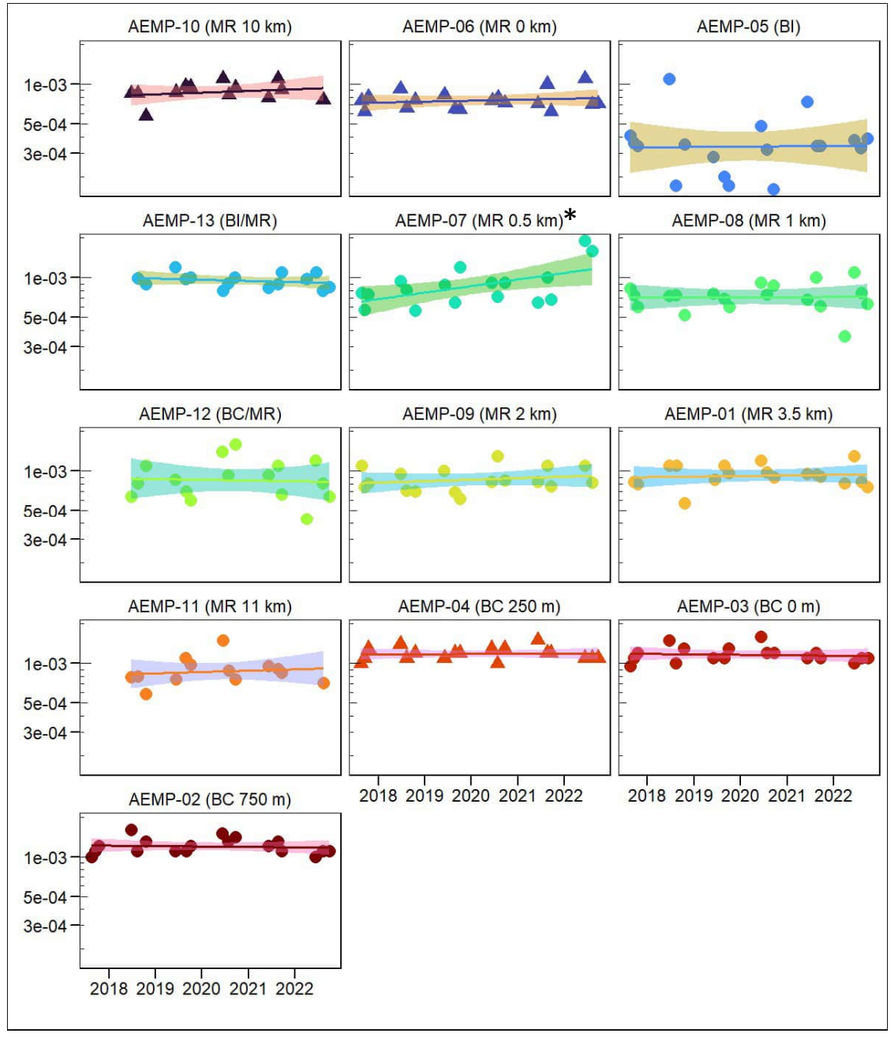
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

DISSOLVED URANIUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-26	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing"





Notes:
Left - Total uranium (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total uranium (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

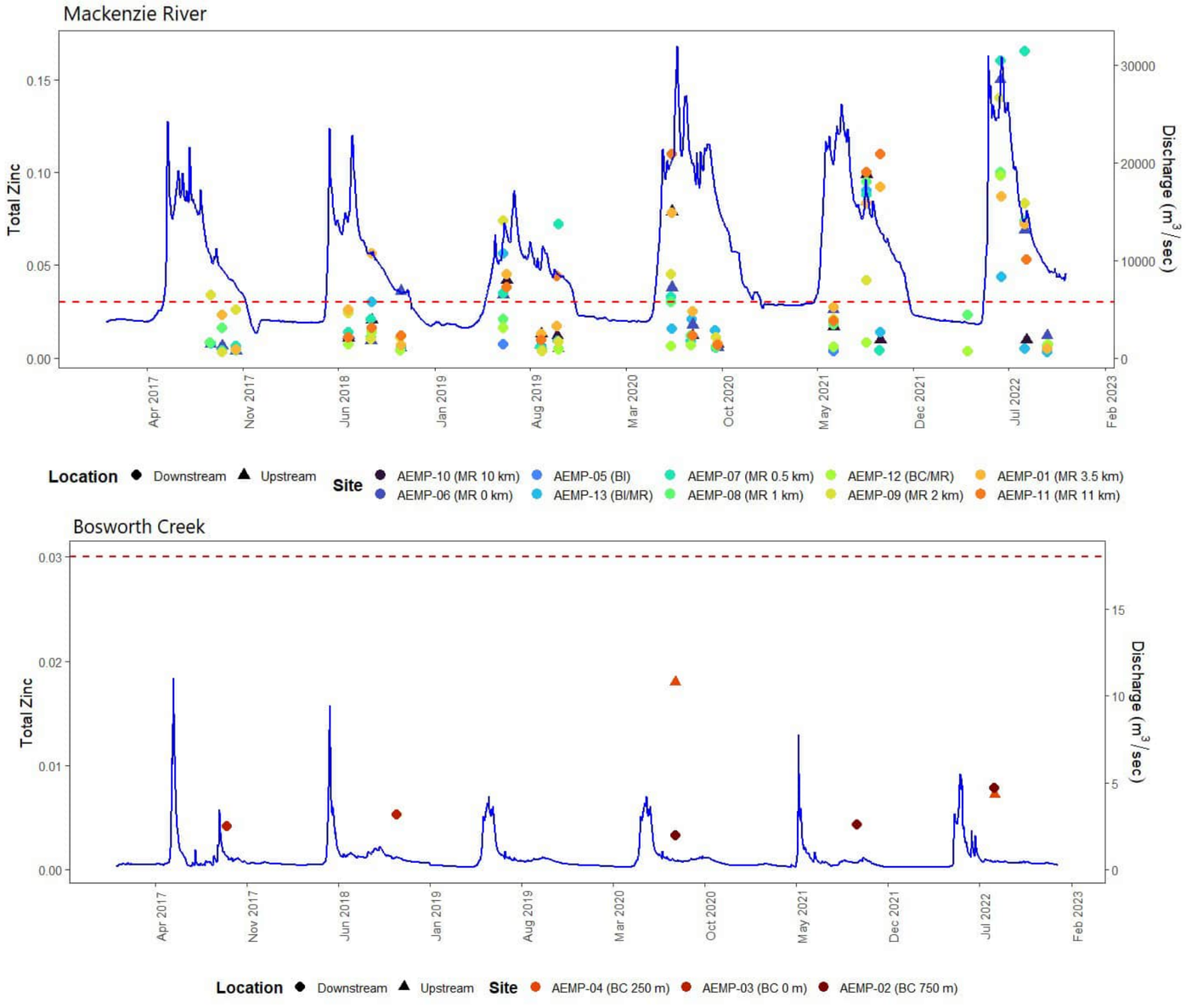
The total uranium concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are below the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.015 mg/L.

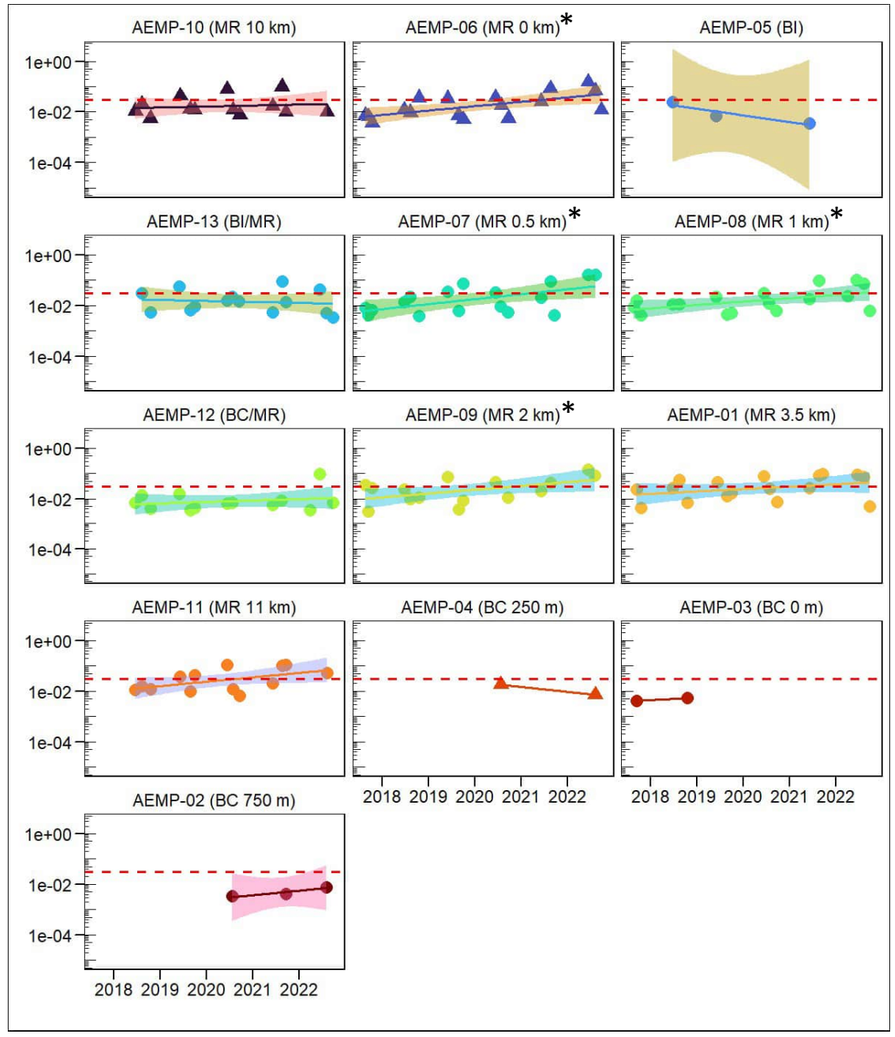
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL URANIUM DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22200	
		FIGURE: AE-27	REV A

"This drawing is prepared for the use of our customer as specified in the accompanying report
Worley Canada Services Ltd. assumes no liability to any other party for any representations contained in this drawing"





Notes:
Left - Total zinc (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total zinc (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

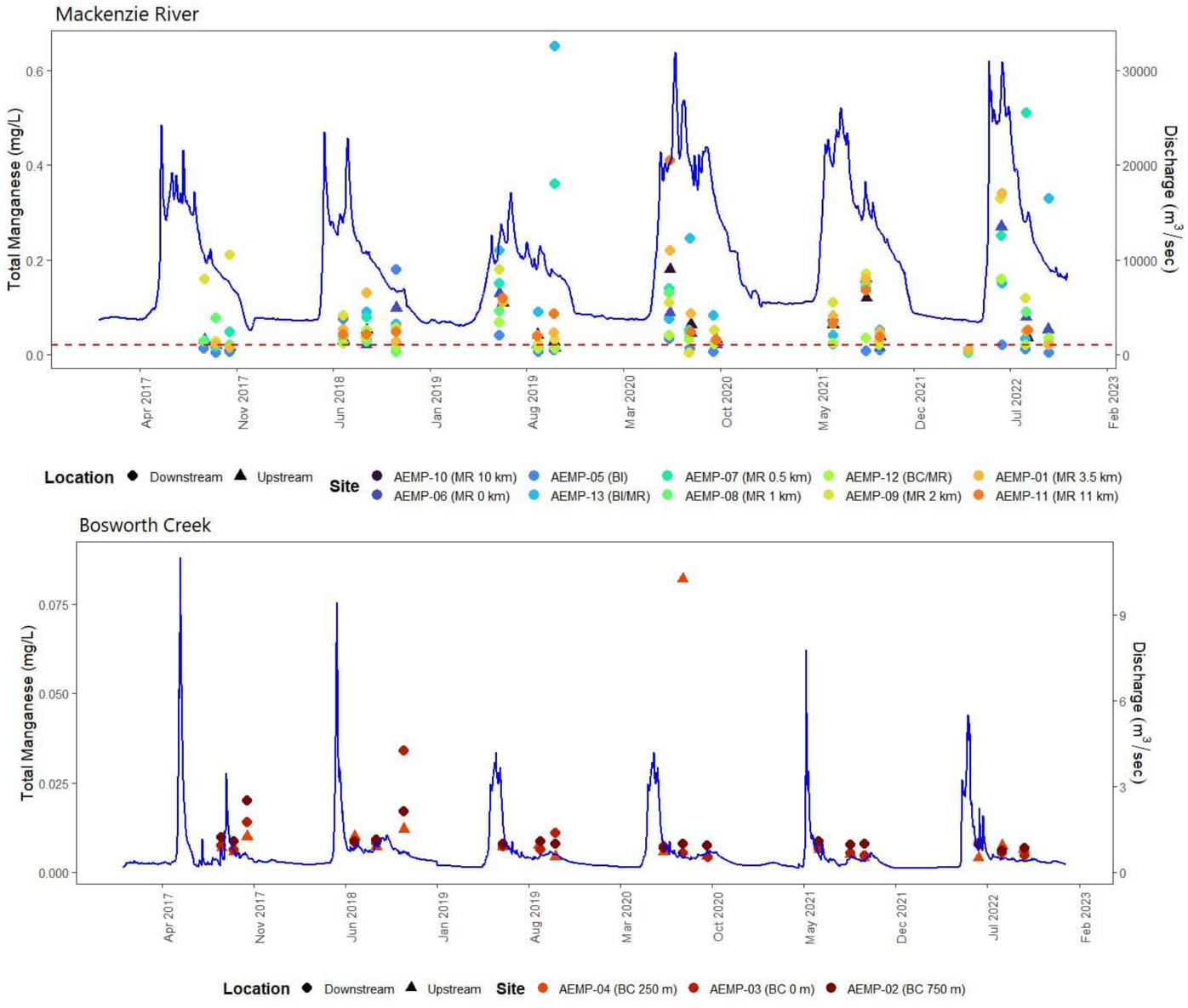
The zinc concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek documented by the AEMP are compared with the CCME Freshwater Aquatic Life Guideline (FWAL) of 0.03 mg/L (indicated by dashed red line).

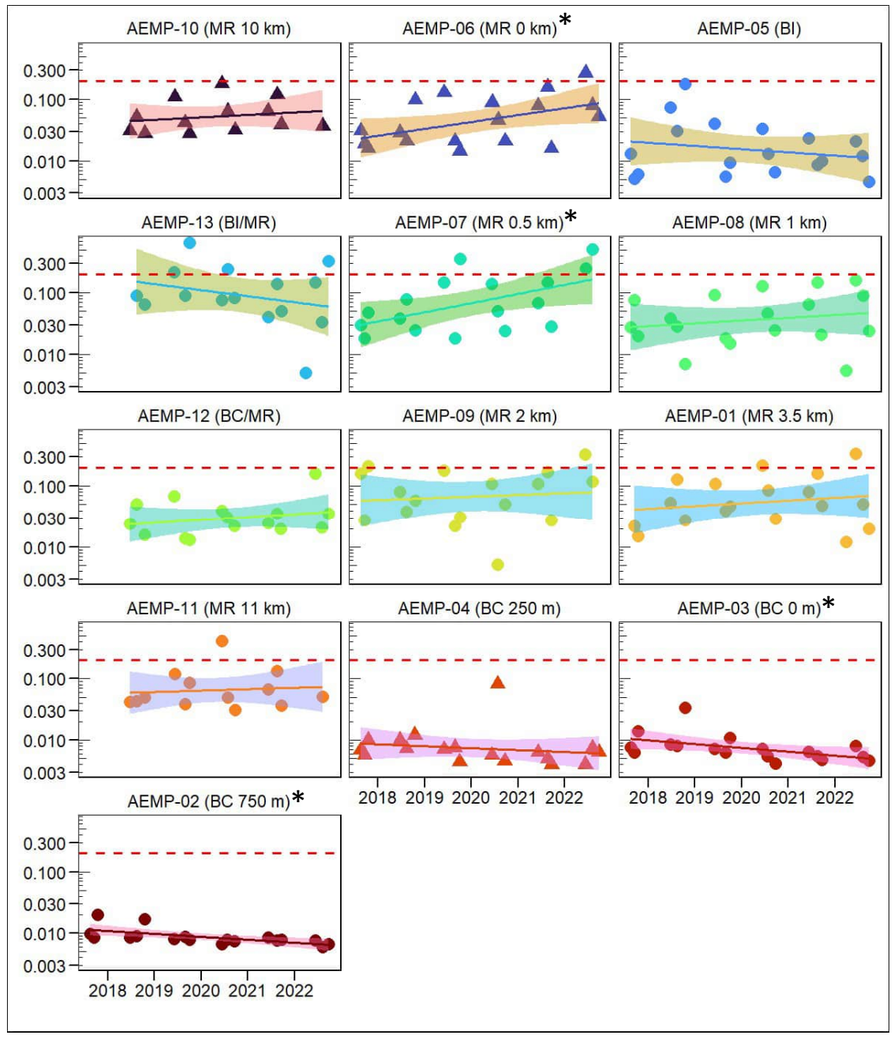
IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL ZINC DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM
		Worley Project No. 417085-42051-22400	
		FIGURE: AE-28	REV A

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Notes:
Left - Total manganese (mg/L) in surface water from the Mackenzie River (MR), Bear Island (BI), and Bosworth Creek (BC) from 2017 to 2022 with Mackenzie River and Bosworth Creek discharge measured by the Water Survey of Canada (Mackenzie River at Norman Wells [10KA001], Bosworth Creek near Norman Wells [10KA007]).
Right - Total manganese (mg/L) measured in surface water samples collected during the AEMP from 2017 to 2022 with ordinary least squares regression (OLS) trend line. Shading indicates the 95% confidence limit of the trend line for each site.
Sampling locations are organized from upstream to downstream with distances from the upstream most site adjacent to Norman Wells (AEMP-06) provided in brackets for each site.
* indicates that the trend shown in the associated plot is statistically significant based on OLS regression and/or Mann-Kendall trend analysis.

The total manganese concentrations documented in the Mackenzie River, Bear Island, and Bosworth Creek by the AEMP are compared with the CCME Water Quality Guideline for the Protection of Agriculture (Irrigation) of 0.2 mg/L (indicated by dashed red line).

IMPERIAL
AQUATIC EFFECTS MONITORING PROGRAM
NORMAN WELLS, NT

TOTAL MANGANESE DATA SUMMARY (2017 - 2022)

Date: 21-Feb-2023	Drawn by: GY	Edited by: NT	App'd by: CM

Worley Project No. 417085-42051-22200

FIGURE: **AE-29** REV **A**

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Appendix F
Laboratory Analysis Reports

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299510

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/04/11
Report #: R3159125
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221458
Received: 2022/04/02, 08:30

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
pH @25°C (1, 5)	3	AB SOP-00005	SM 23 4500-H+B m
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 6)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299510

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/04/11
Report #: R3159125
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221458
Received: 2022/04/02, 08:30

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(6) TOC present in the sample should be considered as non-purgeable TOC.

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Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299510

Attention: Alex Haigh

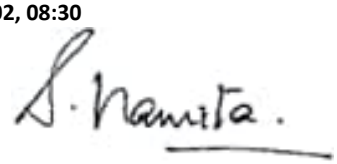
Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/04/11
Report #: R3159125
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221458
Received: 2022/04/02, 08:30

Encryption Key



Namita Sahni
Customer Solutions Representative
11 Apr 2022 15:31:25

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AQZ102	AQZ103	AQZ104		
Sampling Date		2022/03/31 11:30	2022/03/31 08:30	2022/03/31 09:15		
COC Number		299510	299510	299510		
	UNITS	**AEMP-01**	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A541908
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A542934
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A542934
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A542934
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A542934
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A542934
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A542299
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A542299
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A542934
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	87	88	86		A541908
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	95	97	98		A542934
4-Bromofluorobenzene (sur.)	%	103	104	108		A542934
D4-1,2-Dichloroethane (sur.)	%	132	133	136		A542934

RDL = Reportable Detection Limit

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AQZ102	AQZ103	AQZ104			AQZ104		
Sampling Date		2022/03/31 11:30	2022/03/31 08:30	2022/03/31 09:15			2022/03/31 09:15		
COC Number		299510	299510	299510			299510		
	UNITS	**AEMP-01**	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**	**AEMP-12 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Nitrate (N)	mg/L	0.18	0.19	0.20	0.010	A542304			
Nitrate (NO3)	mg/L	0.78	0.83	0.86	0.044	A542303			
Nitrite (NO2)	mg/L	<0.033	<0.033	<0.033	0.033	A542303			
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.23	0.19	0.18	0.020	A542307			
Nutrients									
Dissolved Nitrite (N)	mg/L	<0.010	<0.010	<0.010	0.010	A542989	<0.010	0.010	A542989
Dissolved Nitrate plus Nitrite (N)	mg/L	0.18	0.19	0.20	0.010	A542989	0.20	0.010	A542989
Total Nitrogen (N)	mg/L	0.40	0.38	0.38	0.020	A545246			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-DISS (WATER)

Bureau Veritas ID		AQZ102		AQZ103	AQZ104		
Sampling Date		2022/03/31 11:30		2022/03/31 08:30	2022/03/31 09:15		
COC Number		299510		299510	299510		
	UNITS	**AEMP-01**	**QC Batch**	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Elements							
Dissolved Cadmium (Cd)	mg/L	<0.000020	A542300	0.00016	<0.000020	0.000020	A542300
Dissolved Mercury (Hg)	ug/L	0.0051	A545814	<0.0019	<0.0019	0.0019	A545814
Dissolved Aluminum (Al)	mg/L	0.0054	A543304	0.019	0.0061	0.0030	A543304
Dissolved Antimony (Sb)	mg/L	<0.00060	A543304	<0.00060	<0.00060	0.00060	A543304
Dissolved Arsenic (As)	mg/L	0.00040	A543304	0.00026	0.00021	0.00020	A543304
Dissolved Barium (Ba)	mg/L	0.061	A543626	0.032	0.031	0.010	A543626
Dissolved Beryllium (Be)	mg/L	<0.0010	A543304	<0.0010	<0.0010	0.0010	A543304
Dissolved Boron (B)	mg/L	<0.020	A543626	<0.020	<0.020	0.020	A543626
Dissolved Calcium (Ca)	mg/L	45	A543626	25	24	0.30	A543626
Dissolved Chromium (Cr)	mg/L	0.0017	A543304	<0.0010	0.0050	0.0010	A543304
Dissolved Cobalt (Co)	mg/L	<0.00030	A543304	<0.00030	<0.00030	0.00030	A543304
Dissolved Copper (Cu)	mg/L	0.0027	A543304	0.0013	0.0033	0.00020	A543304
Dissolved Iron (Fe)	mg/L	<0.060	A543626	<0.060	<0.060	0.060	A543626
Dissolved Lead (Pb)	mg/L	0.019	A546128	0.00021	0.058	0.00020	A543304
Dissolved Lithium (Li)	mg/L	<0.020	A543626	<0.020	<0.020	0.020	A543626
Dissolved Magnesium (Mg)	mg/L	12	A543626	9.1	8.5	0.20	A543626
Dissolved Manganese (Mn)	mg/L	<0.0040	A543626	<0.0040	<0.0040	0.0040	A543626
Dissolved Molybdenum (Mo)	mg/L	0.0012	A543304	0.00055	0.00056	0.00020	A543304
Dissolved Nickel (Ni)	mg/L	0.0017	A543304	0.00063	0.00052	0.00050	A543304
Dissolved Phosphorus (P)	mg/L	<0.10	A543626	<0.10	<0.10	0.10	A543626
Dissolved Potassium (K)	mg/L	1.4	A543626	0.93	0.90	0.30	A543626
Dissolved Selenium (Se)	mg/L	0.00035	A543304	<0.00020	<0.00020	0.00020	A543304
Dissolved Silicon (Si)	mg/L	2.5	A543626	1.5	1.5	0.10	A543626
Dissolved Silver (Ag)	mg/L	<0.00010	A543304	<0.00010	<0.00010	0.00010	A543304
Dissolved Sodium (Na)	mg/L	13	A543626	8.3	8.1	0.50	A543626
Dissolved Strontium (Sr)	mg/L	0.29	A543626	0.21	0.18	0.020	A543626
Dissolved Sulphur (S)	mg/L	16	A543626	9.0	8.1	0.20	A543626
Dissolved Thallium (Tl)	mg/L	<0.00020	A543304	<0.00020	<0.00020	0.00020	A543304
Dissolved Tin (Sn)	mg/L	<0.0010	A543304	<0.0010	0.0010	0.0010	A543304
Dissolved Titanium (Ti)	mg/L	<0.0010	A543304	0.0018	<0.0010	0.0010	A543304
Dissolved Uranium (U)	mg/L	0.00082	A543304	0.00049	0.00039	0.00010	A543304
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-DISS (WATER)

Bureau Veritas ID		AQZ102		AQZ103	AQZ104		
Sampling Date		2022/03/31 11:30		2022/03/31 08:30	2022/03/31 09:15		
COC Number		299510		299510	299510		
	UNITS	**AEMP-01**	**QC Batch**	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Dissolved Vanadium (V)	mg/L	<0.0010	A543304	<0.0010	<0.0010	0.0010	A543304
Dissolved Zinc (Zn)	mg/L	0.013	A546128	0.0042	0.030	0.0030	A543304
RDL = Reportable Detection Limit							

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		AQZ102	AQZ103			AQZ104		
Sampling Date		2022/03/31 11:30	2022/03/31 08:30			2022/03/31 09:15		
COC Number		299510	299510			299510		
	UNITS	**AEMP-01**	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Elements								
Total Cadmium (Cd)	mg/L	0.000024	0.000038	0.000020	A542301	0.000028	0.000020	A542301
Total Mercury (Hg)	ug/L	0.0022	0.0032	0.0019	A545737	0.0031	0.0019	A545737
Total Aluminum (Al)	mg/L	0.10	0.027	0.0030	A543640	0.043	0.0030	A548549
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A543640	<0.00060	0.00060	A548549
Total Arsenic (As)	mg/L	0.00047	0.00026	0.00020	A543640	0.00036	0.00020	A548549
Total Barium (Ba)	mg/L	0.059	0.034	0.010	A543700	0.036	0.010	A542929
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A543640	<0.0010	0.0010	A548549
Total Boron (B)	mg/L	<0.020	<0.020	0.020	A543700	<0.020	0.020	A542929
Total Calcium (Ca)	mg/L	42	36	0.30	A543700	24	0.30	A542929
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A543640	<0.0010	0.0010	A548549
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A543640	<0.00030	0.00030	A548549
Total Copper (Cu)	mg/L	0.0023	0.0021	0.00040	A543640	0.0014	0.00060	A548549
Total Iron (Fe)	mg/L	0.67	0.061	0.060	A543700	0.073	0.060	A542929
Total Lead (Pb)	mg/L	<0.00020	0.0051	0.00020	A543640	0.00048	0.00020	A548549
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A543700	<0.020	0.020	A542929
Total Magnesium (Mg)	mg/L	12	10	0.20	A543700	8.9	0.20	A542929
Total Manganese (Mn)	mg/L	0.012	0.0055	0.0040	A543700	<0.0040	0.0040	A542929
Total Molybdenum (Mo)	mg/L	0.0011	0.00055	0.00020	A543640	0.00063	0.00020	A548549
Total Nickel (Ni)	mg/L	0.0015	0.0011	0.00050	A543640	0.00070	0.00050	A548549
Total Phosphorus (P)	mg/L	<0.10	0.16	0.10	A543700	<0.10	0.10	A542929
Total Potassium (K)	mg/L	1.3	1.0	0.30	A543700	0.91	0.30	A542929
Total Selenium (Se)	mg/L	0.00037	<0.00020	0.00020	A543640	<0.00020	0.00020	A548549
Total Silicon (Si)	mg/L	2.9	1.6	0.10	A543700	1.7	0.10	A542929
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A543640	<0.00010	0.00010	A548549
Total Sodium (Na)	mg/L	12	9.5	0.50	A543700	7.8	0.50	A542929
Total Strontium (Sr)	mg/L	0.27	0.22	0.020	A543700	0.18	0.020	A542929
Total Sulphur (S)	mg/L	14	62	0.20	A543700	8.0	0.20	A542929
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A543640	<0.00020	0.00020	A548549
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A543640	<0.0010	0.0010	A548549
Total Titanium (Ti)	mg/L	0.0020	<0.0010	0.0010	A543640	0.0015	0.0010	A548549
Total Uranium (U)	mg/L	0.00081	0.00036	0.00010	A543640	0.00043	0.00010	A548549
RDL = Reportable Detection Limit								

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		AQZ102	AQZ103			AQZ104		
Sampling Date		2022/03/31 11:30	2022/03/31 08:30			2022/03/31 09:15		
COC Number		299510	299510			299510		
	UNITS	**AEMP-01**	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A543640	0.0011	0.0010	A548549
Total Zinc (Zn)	mg/L	<0.0030	0.023	0.0030	A543640	0.0036	0.0030	A548549
RDL = Reportable Detection Limit								

Bureau Veritas ID		AQZ104		
Sampling Date		2022/03/31 09:15		
COC Number		299510		
	UNITS	**AEMP-12 Lab-Dup**	**RDL**	**QC Batch**
Elements				
Total Barium (Ba)	mg/L	0.036	0.010	A542929
Total Boron (B)	mg/L	<0.020	0.020	A542929
Total Calcium (Ca)	mg/L	25	0.30	A542929
Total Iron (Fe)	mg/L	0.073	0.060	A542929
Total Lithium (Li)	mg/L	<0.020	0.020	A542929
Total Magnesium (Mg)	mg/L	9.0	0.20	A542929
Total Manganese (Mn)	mg/L	<0.0040	0.0040	A542929
Total Phosphorus (P)	mg/L	<0.10	0.10	A542929
Total Potassium (K)	mg/L	0.92	0.30	A542929
Total Silicon (Si)	mg/L	1.7	0.10	A542929
Total Sodium (Na)	mg/L	7.9	0.50	A542929
Total Strontium (Sr)	mg/L	0.19	0.020	A542929
Total Sulphur (S)	mg/L	8.1	0.20	A542929
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate				

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Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AQZ102			AQZ102			AQZ103		
Sampling Date		2022/03/31 11:30			2022/03/31 11:30			2022/03/31 08:30		
COC Number		299510			299510			299510		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**	**AEMP-01 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Calculated Parameters										
Sulphide (as H2S)	mg/L	0.0060	0.0020	A542284				<0.0020	0.0020	A542284
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A542025				<2.0 (1)	2.0	A542025
Chemical Oxygen Demand	mg/L	14	10	A543753				<10	10	A543753
Misc. Inorganics										
Dissolved Organic Carbon (C)	mg/L	6.4	0.50	A544030				3.6	0.50	A544030
pH	pH	8.02	N/A	A542793				7.94	N/A	A542793
Total Organic Carbon (C)	mg/L	5.6	0.50	A543711				3.2	0.50	A543711
Total Dissolved Solids	mg/L	210	10	A543157				120	10	A543157
Total Suspended Solids	mg/L	3.5	1.0	A543301				<1.0	1.0	A543301
Anions										
Total Sulphide	mg/L	0.0057	0.0018	A544803				<0.0018	0.0018	A544803
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A543821	<0.015	0.015	A543821	<0.015	0.015	A543821
Misc. Organics										
Total Oil and grease	mg/L	<2.0	2.0	A543026				<2.0	2.0	A543026
Physical Properties										
True Colour	PtCo units	13	2.0	A542291				4.5	2.0	A542291
Physical Properties										
Turbidity	NTU	7.0	0.10	A542271				2.0	0.10	A542271

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AQZ104		
Sampling Date		2022/03/31 09:15		
COC Number		299510		
	UNITS	**AEMP-12**	**RDL**	**QC Batch**
Calculated Parameters				
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A542284
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A542025
Chemical Oxygen Demand	mg/L	21	10	A543753
Misc. Inorganics				
Dissolved Organic Carbon (C)	mg/L	3.0	0.50	A544030
pH	pH	7.94	N/A	A542793
Total Organic Carbon (C)	mg/L	2.7	0.50	A543711
Total Dissolved Solids	mg/L	110	10	A543157
Total Suspended Solids	mg/L	3.8	1.0	A543301
Anions				
Total Sulphide	mg/L	<0.0018	0.0018	A544803
Nutrients				
Total Ammonia (N)	mg/L	<0.015	0.015	A543815
Misc. Organics				
Total Oil and grease	mg/L	<2.0	2.0	A543026
Physical Properties				
True Colour	PtCo units	4.4	2.0	A542291
Physical Properties				
Turbidity	NTU	2.8	0.10	A542271

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: AQZ102
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A542025	2022/04/03	2022/04/07	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A542300	N/A	2022/04/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A542301	N/A	2022/04/06	Automated Statchk
COD by Colorimeter	M/PROB	A543753	N/A	2022/04/05	Jennifer Mee
True Colour	SPEC/COL	A542291	N/A	2022/04/03	Serena Tian
Carbon (DOC)	TECH	A544030	N/A	2022/04/06	Ming Dong
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A541908	2022/04/04	2022/04/04	Clujd Astudillo
Sulphide (as H2S)	CALC	A542284	N/A	2022/04/06	Automated Statchk
Mercury (Dissolved) by CV	CV	A545814	2022/04/06	2022/04/07	Jason Bao
Mercury (Total) by CV	CV	A545737	2022/04/06	2022/04/07	Jason Bao
Elements by ICP - Dissolved	ICPA	A543626	N/A	2022/04/05	Ilonka Kovac
Elements by ICP - Total	ICPA	A543700	2022/04/05	2022/04/05	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A543304	N/A	2022/04/05	Maria Fernanda Paez
Elements by ICPMS - Total	ICPM	A543640	2022/04/05	2022/04/05	Maria Fernanda Paez
Ammonia-N (Total)	KONE	A543821	N/A	2022/04/05	Zafar Iqbal
Nitrate and Nitrite	CALC	A542303	N/A	2022/04/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner
Nitrate (as N)	CALC	A542304	2022/04/04	2022/04/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A543026	2022/04/06	2022/04/06	Junyan Ban
pH @25°C	AT/ALK	A542793	N/A	2022/04/04	Tracy (Jing) Ling
Total Sulphide	SPEC	A544803	N/A	2022/04/06	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A543157	2022/04/04	2022/04/04	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A542307	N/A	2022/04/07	Automated Statchk
Nitrogen (Total)	AC/COL	A545246	2022/04/06	2022/04/07	Fadia Mostafa
Carbon (Total Organic)	TECH	A543711	N/A	2022/04/06	Ming Dong
Total Suspended Solids (NFR)	BAL	A543301	2022/04/04	2022/04/04	Haydee Estilong
Turbidity	TURB	A542271	N/A	2022/04/03	Kiara Garrido

Bureau Veritas ID: AQZ102 Dup
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N (Total)	KONE	A543821	N/A	2022/04/05	Zafar Iqbal

Bureau Veritas ID: AQZ103
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A542025	2022/04/03	2022/04/07	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh

Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: AQZ103
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A542300	N/A	2022/04/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A542301	N/A	2022/04/06	Automated Statchk
COD by Colorimeter	M/PROB	A543753	N/A	2022/04/05	Jennifer Mee
True Colour	SPEC/COL	A542291	N/A	2022/04/03	Serena Tian
Carbon (DOC)	TECH	A544030	N/A	2022/04/06	Ming Dong
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A541908	2022/04/04	2022/04/04	Clujd Astudillo
Sulphide (as H2S)	CALC	A542284	N/A	2022/04/06	Automated Statchk
Mercury (Dissolved) by CV	CV	A545814	2022/04/06	2022/04/07	Jason Bao
Mercury (Total) by CV	CV	A545737	2022/04/06	2022/04/07	Jason Bao
Elements by ICP - Dissolved	ICPA	A543626	N/A	2022/04/05	Ilonka Kovac
Elements by ICP - Total	ICPA	A543700	2022/04/05	2022/04/05	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A543304	N/A	2022/04/05	Maria Fernanda Paez
Elements by ICPMS - Total	ICPM	A543640	2022/04/05	2022/04/06	Maria Fernanda Paez
Ammonia-N (Total)	KONE	A543821	N/A	2022/04/05	Zafar Iqbal
Nitrate and Nitrite	CALC	A542303	N/A	2022/04/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner
Nitrate (as N)	CALC	A542304	2022/04/04	2022/04/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A543026	2022/04/06	2022/04/06	Junyan Ban
pH @25°C	AT/ALK	A542793	N/A	2022/04/04	Tracy (Jing) Ling
Total Sulphide	SPEC	A544803	N/A	2022/04/06	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A543157	2022/04/04	2022/04/04	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A542307	N/A	2022/04/07	Automated Statchk
Nitrogen (Total)	AC/COL	A545246	2022/04/06	2022/04/07	Fadia Mostafa
Carbon (Total Organic)	TECH	A543711	N/A	2022/04/06	Ming Dong
Total Suspended Solids (NFR)	BAL	A543301	2022/04/04	2022/04/04	Haydee Estilong
Turbidity	TURB	A542271	N/A	2022/04/03	Kiara Garrido

Bureau Veritas ID: AQZ104
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A542025	2022/04/03	2022/04/07	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A542300	N/A	2022/04/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A542301	N/A	2022/04/06	Automated Statchk
COD by Colorimeter	M/PROB	A543753	N/A	2022/04/05	Jennifer Mee
True Colour	SPEC/COL	A542291	N/A	2022/04/03	Serena Tian
Carbon (DOC)	TECH	A544030	N/A	2022/04/06	Ming Dong
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A541908	2022/04/04	2022/04/04	Clujd Astudillo
Sulphide (as H2S)	CALC	A542284	N/A	2022/04/06	Automated Statchk
Mercury (Dissolved) by CV	CV	A545814	2022/04/06	2022/04/07	Jason Bao

Bureau Veritas Job #: C221458
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: AQZ104
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Total) by CV	CV	A545737	2022/04/06	2022/04/07	Jason Bao
Elements by ICP - Dissolved	ICPA	A543626	N/A	2022/04/05	Ilonka Kovac
Elements by ICP - Total	ICPA	A542929	2022/04/04	2022/04/04	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A543304	N/A	2022/04/05	Maria Fernanda Paez
Elements by ICPMS - Total	ICPM	A548549	2022/04/11	2022/04/11	Karen Graham
Ammonia-N (Total)	KONE	A543815	N/A	2022/04/05	Zafar Iqbal
Nitrate and Nitrite	CALC	A542303	N/A	2022/04/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner
Nitrate (as N)	CALC	A542304	2022/04/04	2022/04/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A543026	2022/04/06	2022/04/06	Junyan Ban
pH @25°C	AT/ALK	A542793	N/A	2022/04/04	Tracy (Jing) Ling
Total Sulphide	SPEC	A544803	N/A	2022/04/06	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A543157	2022/04/04	2022/04/04	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A542307	N/A	2022/04/07	Automated Statchk
Nitrogen (Total)	AC/COL	A545246	2022/04/06	2022/04/07	Fadia Mostafa
Carbon (Total Organic)	TECH	A543711	N/A	2022/04/06	Ming Dong
Total Suspended Solids (NFR)	BAL	A543301	2022/04/04	2022/04/04	Haydee Estilong
Turbidity	TURB	A542271	N/A	2022/04/03	Kiara Garrido

Bureau Veritas ID: AQZ104 Dup
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICP - Total	ICPA	A542929	2022/04/04	2022/04/04	Mohammad Pousti
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C
Package 2	1.0°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 1.0 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AQZ102 [AEMP-01] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AQZ103 [AEMP-08] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AQZ104 [AEMP-12] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AQZ102, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A541908	CAU	Method Blank	O-TERPHENYL (sur.)	2022/04/04		88	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/04/04	<0.10		mg/L	
A542025	PK8	Method Blank	Biochemical Oxygen Demand	2022/04/07	<2.0		mg/L	
A542271	KGA	Method Blank	Turbidity	2022/04/03	<0.10		NTU	
A542291	STI	Method Blank	True Colour	2022/04/03	<2.0		PtCo units	
A542929	MPU	Method Blank	Total Iron (Fe)	2022/04/04	<0.060		mg/L	
			Total Lithium (Li)	2022/04/04	<0.020		mg/L	
			Total Magnesium (Mg)	2022/04/04	<0.20		mg/L	
			Total Manganese (Mn)	2022/04/04	<0.0040		mg/L	
			Total Potassium (K)	2022/04/04	<0.30		mg/L	
			Total Sodium (Na)	2022/04/04	<0.50		mg/L	
			Total Strontium (Sr)	2022/04/04	<0.020		mg/L	
			Total Sulphur (S)	2022/04/04	<0.20		mg/L	
			Total Phosphorus (P)	2022/04/04	<0.10		mg/L	
			Total Barium (Ba)	2022/04/04	<0.010		mg/L	
			Total Silicon (Si)	2022/04/04	<0.10		mg/L	
			Total Boron (B)	2022/04/04	<0.020		mg/L	
			Total Calcium (Ca)	2022/04/04	<0.30		mg/L	
A542934	SSV	Method Blank	1,4-Difluorobenzene (sur.)	2022/04/05		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/04/05		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/04/05		97	%	50 - 140
			Benzene	2022/04/05	<0.00040		mg/L	
			Toluene	2022/04/05	<0.00040		mg/L	
			Ethylbenzene	2022/04/05	<0.00040		mg/L	
			m & p-Xylene	2022/04/05	<0.00080		mg/L	
			o-Xylene	2022/04/05	<0.00040		mg/L	
			F1 (C6-C10)	2022/04/05	<0.10		mg/L	
A542989	JFH	Method Blank	Dissolved Nitrite (N)	2022/04/04	<0.010		mg/L	
			Dissolved Nitrate plus Nitrite (N)	2022/04/04	<0.010		mg/L	
A543026	JB9	Method Blank	Total Oil and grease	2022/04/06	<2.0		mg/L	
A543157	HE1	Method Blank	Total Dissolved Solids	2022/04/04	<10		mg/L	
A543301	HE1	Method Blank	Total Suspended Solids	2022/04/04	<1.0		mg/L	
A543304	MFP	Method Blank	Dissolved Aluminum (Al)	2022/04/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/04/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/04/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/04/05	<0.00020		mg/L	
			Dissolved Lead (Pb)	2022/04/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/04/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/04/05	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/04/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/04/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/04/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/04/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/04/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/04/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/04/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/04/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/04/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/04/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/04/05	<0.0010		mg/L	
A543626	IK0	Method Blank	Dissolved Iron (Fe)	2022/04/05	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/04/05	<0.020		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Magnesium (Mg)	2022/04/05	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/04/05	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/04/05	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/04/05	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/04/05	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/04/05	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/04/05	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/04/05	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/04/05	<0.10		mg/L	
			Dissolved Boron (B)	2022/04/05	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/04/05	<0.30		mg/L	
A543640	MFP	Method Blank	Total Aluminum (Al)	2022/04/05	<0.0030		mg/L	
			Total Chromium (Cr)	2022/04/05	<0.0010		mg/L	
			Total Cobalt (Co)	2022/04/05	<0.00030		mg/L	
			Total Copper (Cu)	2022/04/05	<0.00040 (1)		mg/L	
			Total Lead (Pb)	2022/04/05	<0.00020		mg/L	
			Total Antimony (Sb)	2022/04/05	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/04/05	<0.00020		mg/L	
			Total Nickel (Ni)	2022/04/05	<0.00050		mg/L	
			Total Selenium (Se)	2022/04/05	<0.00020		mg/L	
			Total Silver (Ag)	2022/04/05	<0.00010		mg/L	
			Total Arsenic (As)	2022/04/05	<0.00020		mg/L	
			Total Thallium (Tl)	2022/04/05	<0.00020		mg/L	
			Total Tin (Sn)	2022/04/05	<0.0010		mg/L	
			Total Titanium (Ti)	2022/04/05	<0.0010		mg/L	
			Total Uranium (U)	2022/04/05	<0.00010		mg/L	
			Total Vanadium (V)	2022/04/05	<0.0010		mg/L	
			Total Zinc (Zn)	2022/04/05	<0.0030		mg/L	
			Total Beryllium (Be)	2022/04/05	<0.0010		mg/L	
A543700	IK0	Method Blank	Total Iron (Fe)	2022/04/05	<0.060		mg/L	
			Total Lithium (Li)	2022/04/05	<0.020		mg/L	
			Total Magnesium (Mg)	2022/04/05	<0.20		mg/L	
			Total Manganese (Mn)	2022/04/05	<0.0040		mg/L	
			Total Potassium (K)	2022/04/05	<0.30		mg/L	
			Total Sodium (Na)	2022/04/05	<0.50		mg/L	
			Total Strontium (Sr)	2022/04/05	<0.020		mg/L	
			Total Sulphur (S)	2022/04/05	<0.20		mg/L	
			Total Phosphorus (P)	2022/04/05	<0.10		mg/L	
			Total Barium (Ba)	2022/04/05	<0.010		mg/L	
			Total Silicon (Si)	2022/04/05	<0.10		mg/L	
			Total Boron (B)	2022/04/05	<0.020		mg/L	
			Total Calcium (Ca)	2022/04/05	<0.30		mg/L	
A543711	MDO	Method Blank	Total Organic Carbon (C)	2022/04/06	<0.50		mg/L	
A543753	JM0	Method Blank	Chemical Oxygen Demand	2022/04/05	<10		mg/L	
A543815	ZI	Method Blank	Total Ammonia (N)	2022/04/05	<0.015		mg/L	
A543821	ZI	Method Blank	Total Ammonia (N)	2022/04/05	<0.015		mg/L	
A544030	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/04/06	<0.50		mg/L	
A544803	BYM	Method Blank	Total Sulphide	2022/04/06	<0.0018		mg/L	
A545246	FM0	Method Blank	Total Nitrogen (N)	2022/04/06	<0.020		mg/L	
A545737	JAB	Method Blank	Total Mercury (Hg)	2022/04/07	<0.0019		ug/L	
A545814	JAB	Method Blank	Dissolved Mercury (Hg)	2022/04/07	<0.0019		ug/L	
A546128	MFP	Method Blank	Dissolved Lead (Pb)	2022/04/07	<0.00020		mg/L	

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			Dissolved Zinc (Zn)	2022/04/07	<0.0030		mg/L	
A548549	KGR	Method Blank	Total Aluminum (Al)	2022/04/11	<0.0030		mg/L	
			Total Chromium (Cr)	2022/04/11	<0.0010		mg/L	
			Total Cobalt (Co)	2022/04/11	<0.00030		mg/L	
			Total Copper (Cu)	2022/04/11	<0.00060 (2)		mg/L	
			Total Lead (Pb)	2022/04/11	<0.00020		mg/L	
			Total Antimony (Sb)	2022/04/11	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/04/11	<0.00020		mg/L	
			Total Nickel (Ni)	2022/04/11	<0.00050		mg/L	
			Total Selenium (Se)	2022/04/11	<0.00020		mg/L	
			Total Silver (Ag)	2022/04/11	<0.00010		mg/L	
			Total Arsenic (As)	2022/04/11	<0.00020		mg/L	
			Total Thallium (Tl)	2022/04/11	<0.00020		mg/L	
			Total Tin (Sn)	2022/04/11	<0.0010		mg/L	
			Total Titanium (Ti)	2022/04/11	<0.0010		mg/L	
			Total Uranium (U)	2022/04/11	<0.00010		mg/L	
			Total Vanadium (V)	2022/04/11	<0.0010		mg/L	
			Total Zinc (Zn)	2022/04/11	<0.0030		mg/L	
			Total Beryllium (Be)	2022/04/11	<0.0010		mg/L	
A543821	ZI	RPD [AQZ102-15]	Total Ammonia (N)	2022/04/05	NC		%	20
A542929	MPU	RPD [AQZ104-08]	Total Iron (Fe)	2022/04/04	0		%	20
			Total Lithium (Li)	2022/04/04	NC		%	20
			Total Magnesium (Mg)	2022/04/04	1.9		%	20
			Total Manganese (Mn)	2022/04/04	NC		%	20
			Total Potassium (K)	2022/04/04	0.51		%	20
			Total Sodium (Na)	2022/04/04	1.2		%	20
			Total Strontium (Sr)	2022/04/04	2.2		%	20
			Total Sulphur (S)	2022/04/04	0.99		%	20
			Total Phosphorus (P)	2022/04/04	NC		%	20
			Total Barium (Ba)	2022/04/04	1.9		%	20
			Total Silicon (Si)	2022/04/04	1.2		%	20
			Total Boron (B)	2022/04/04	NC		%	20
			Total Calcium (Ca)	2022/04/04	1.6		%	20
A542989	JFH	RPD [AQZ104-02]	Dissolved Nitrite (N)	2022/04/04	NC		%	20
			Dissolved Nitrate plus Nitrite (N)	2022/04/04	0.66		%	20
A542934	SSV	Matrix Spike [AQZ102-12]	1,4-Difluorobenzene (sur.)	2022/04/05		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/04/05		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/04/05		97	%	50 - 140
			Benzene	2022/04/05		104	%	50 - 140
			Toluene	2022/04/05		101	%	50 - 140
			Ethylbenzene	2022/04/05		102	%	50 - 140
			m & p-Xylene	2022/04/05		102	%	50 - 140
			o-Xylene	2022/04/05		108	%	50 - 140
			F1 (C6-C10)	2022/04/05		99	%	60 - 140
A542989	JFH	Matrix Spike [AQZ104-02]	Dissolved Nitrite (N)	2022/04/04		97	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2022/04/04		104	%	80 - 120
A543640	MFP	Matrix Spike [AQZ103-08]	Total Aluminum (Al)	2022/04/06		100	%	80 - 120
			Total Chromium (Cr)	2022/04/06		102	%	80 - 120
			Total Cobalt (Co)	2022/04/06		102	%	80 - 120
			Total Copper (Cu)	2022/04/06		102	%	80 - 120
			Total Lead (Pb)	2022/04/06		100	%	80 - 120
			Total Antimony (Sb)	2022/04/06		115	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Molybdenum (Mo)	2022/04/06		105	%	80 - 120
			Total Nickel (Ni)	2022/04/06		101	%	80 - 120
			Total Selenium (Se)	2022/04/06		102	%	80 - 120
			Total Silver (Ag)	2022/04/06		102	%	80 - 120
			Total Arsenic (As)	2022/04/06		101	%	80 - 120
			Total Thallium (Tl)	2022/04/06		101	%	80 - 120
			Total Tin (Sn)	2022/04/06		105	%	80 - 120
			Total Titanium (Ti)	2022/04/06		104	%	80 - 120
			Total Uranium (U)	2022/04/06		103	%	80 - 120
			Total Vanadium (V)	2022/04/06		104	%	80 - 120
			Total Zinc (Zn)	2022/04/06		103	%	80 - 120
			Total Beryllium (Be)	2022/04/06		103	%	80 - 120
A543821	ZI	Matrix Spike [AQZ102-15]	Total Ammonia (N)	2022/04/05		102	%	80 - 120
A541908	CAU	LCS	O-TERPHENYL (sur.)	2022/04/04		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/04/04		86	%	60 - 140
A542025	PK8	LCS	Biochemical Oxygen Demand	2022/04/07		94	%	85 - 115
A542271	KGA	LCS	Turbidity	2022/04/03		103	%	80 - 120
A542291	STI	LCS	True Colour	2022/04/03		106	%	80 - 120
A542793	JLD	LCS	pH	2022/04/04		100	%	97 - 103
A542929	MPU	LCS	Total Iron (Fe)	2022/04/04		104	%	80 - 120
			Total Lithium (Li)	2022/04/04		98	%	80 - 120
			Total Magnesium (Mg)	2022/04/04		97	%	80 - 120
			Total Manganese (Mn)	2022/04/04		101	%	80 - 120
			Total Potassium (K)	2022/04/04		98	%	80 - 120
			Total Sodium (Na)	2022/04/04		96	%	80 - 120
			Total Strontium (Sr)	2022/04/04		92	%	80 - 120
			Total Sulphur (S)	2022/04/04		95	%	80 - 120
			Total Phosphorus (P)	2022/04/04		93	%	80 - 120
			Total Barium (Ba)	2022/04/04		94	%	80 - 120
			Total Silicon (Si)	2022/04/04		97	%	80 - 120
			Total Boron (B)	2022/04/04		94	%	80 - 120
			Total Calcium (Ca)	2022/04/04		95	%	80 - 120
A542934	SSV	LCS	1,4-Difluorobenzene (sur.)	2022/04/05		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/04/05		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/04/05		96	%	50 - 140
			Benzene	2022/04/05		107	%	60 - 130
			Toluene	2022/04/05		101	%	60 - 130
			Ethylbenzene	2022/04/05		102	%	60 - 130
			m & p-Xylene	2022/04/05		102	%	60 - 130
			o-Xylene	2022/04/05		107	%	60 - 130
			F1 (C6-C10)	2022/04/05		100	%	60 - 140
A542989	JFH	LCS	Dissolved Nitrite (N)	2022/04/04		106	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2022/04/04		104	%	80 - 120
A543026	JB9	LCS	Total Oil and grease	2022/04/06		95	%	70 - 130
A543157	HE1	LCS	Total Dissolved Solids	2022/04/04		90	%	80 - 120
A543301	HE1	LCS	Total Suspended Solids	2022/04/04		99	%	80 - 120
A543304	MFP	LCS	Dissolved Aluminum (Al)	2022/04/04		105	%	80 - 120
			Dissolved Chromium (Cr)	2022/04/04		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/04/04		101	%	80 - 120
			Dissolved Copper (Cu)	2022/04/04		102	%	80 - 120
			Dissolved Lead (Pb)	2022/04/04		98	%	80 - 120
			Dissolved Antimony (Sb)	2022/04/04		102	%	80 - 120

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			Dissolved Molybdenum (Mo)	2022/04/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/04/04		102	%	80 - 120
			Dissolved Selenium (Se)	2022/04/04		105	%	80 - 120
			Dissolved Silver (Ag)	2022/04/04		96	%	80 - 120
			Dissolved Arsenic (As)	2022/04/04		100	%	80 - 120
			Dissolved Thallium (Tl)	2022/04/04		96	%	80 - 120
			Dissolved Tin (Sn)	2022/04/04		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/04/04		103	%	80 - 120
			Dissolved Uranium (U)	2022/04/04		98	%	80 - 120
			Dissolved Vanadium (V)	2022/04/04		101	%	80 - 120
			Dissolved Zinc (Zn)	2022/04/04		99	%	80 - 120
			Dissolved Beryllium (Be)	2022/04/04		97	%	80 - 120
A543626	IK0	LCS	Dissolved Iron (Fe)	2022/04/05		107	%	80 - 120
			Dissolved Lithium (Li)	2022/04/05		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/04/05		98	%	80 - 120
			Dissolved Manganese (Mn)	2022/04/05		104	%	80 - 120
			Dissolved Potassium (K)	2022/04/05		100	%	80 - 120
			Dissolved Sodium (Na)	2022/04/05		98	%	80 - 120
			Dissolved Strontium (Sr)	2022/04/05		98	%	80 - 120
			Dissolved Sulphur (S)	2022/04/05		99	%	80 - 120
			Dissolved Phosphorus (P)	2022/04/05		98	%	80 - 120
			Dissolved Barium (Ba)	2022/04/05		98	%	80 - 120
			Dissolved Silicon (Si)	2022/04/05		96	%	80 - 120
			Dissolved Boron (B)	2022/04/05		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/04/05		97	%	80 - 120
A543640	MFP	LCS	Total Aluminum (Al)	2022/04/05		113	%	80 - 120
			Total Chromium (Cr)	2022/04/05		100	%	80 - 120
			Total Cobalt (Co)	2022/04/05		99	%	80 - 120
			Total Copper (Cu)	2022/04/05		99	%	80 - 120
			Total Lead (Pb)	2022/04/05		98	%	80 - 120
			Total Antimony (Sb)	2022/04/05		109	%	80 - 120
			Total Molybdenum (Mo)	2022/04/05		100	%	80 - 120
			Total Nickel (Ni)	2022/04/05		98	%	80 - 120
			Total Selenium (Se)	2022/04/05		98	%	80 - 120
			Total Silver (Ag)	2022/04/05		99	%	80 - 120
			Total Arsenic (As)	2022/04/05		97	%	80 - 120
			Total Thallium (Tl)	2022/04/05		98	%	80 - 120
			Total Tin (Sn)	2022/04/05		101	%	80 - 120
			Total Titanium (Ti)	2022/04/05		100	%	80 - 120
			Total Uranium (U)	2022/04/05		101	%	80 - 120
			Total Vanadium (V)	2022/04/05		99	%	80 - 120
			Total Zinc (Zn)	2022/04/05		94	%	80 - 120
			Total Beryllium (Be)	2022/04/05		102	%	80 - 120
A543700	IK0	LCS	Total Iron (Fe)	2022/04/05		109	%	80 - 120
			Total Lithium (Li)	2022/04/05		102	%	80 - 120
			Total Magnesium (Mg)	2022/04/05		104	%	80 - 120
			Total Manganese (Mn)	2022/04/05		106	%	80 - 120
			Total Potassium (K)	2022/04/05		104	%	80 - 120
			Total Sodium (Na)	2022/04/05		103	%	80 - 120
			Total Strontium (Sr)	2022/04/05		100	%	80 - 120
			Total Sulphur (S)	2022/04/05		102	%	80 - 120
			Total Phosphorus (P)	2022/04/05		99	%	80 - 120

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			Total Barium (Ba)	2022/04/05		101	%	80 - 120
			Total Silicon (Si)	2022/04/05		101	%	80 - 120
			Total Boron (B)	2022/04/05		105	%	80 - 120
			Total Calcium (Ca)	2022/04/05		100	%	80 - 120
A543711	MDO	LCS	Total Organic Carbon (C)	2022/04/06		111	%	80 - 120
A543753	JM0	LCS	Chemical Oxygen Demand	2022/04/05		104	%	80 - 120
A543815	ZI	LCS	Total Ammonia (N)	2022/04/05		104	%	80 - 120
A543821	ZI	LCS	Total Ammonia (N)	2022/04/05		102	%	80 - 120
A544030	MDO	LCS	Dissolved Organic Carbon (C)	2022/04/06		106	%	80 - 120
A544803	BYM	LCS	Total Sulphide	2022/04/06		105	%	80 - 120
A545246	FM0	LCS	Total Nitrogen (N)	2022/04/06		114	%	80 - 120
A545737	JAB	LCS	Total Mercury (Hg)	2022/04/07		109	%	80 - 120
A545814	JAB	LCS	Dissolved Mercury (Hg)	2022/04/07		102	%	80 - 120
A546128	MFP	LCS	Dissolved Lead (Pb)	2022/04/07		108	%	80 - 120
			Dissolved Zinc (Zn)	2022/04/07		108	%	80 - 120
A548549	KGR	LCS	Total Aluminum (Al)	2022/04/11		97	%	80 - 120
			Total Chromium (Cr)	2022/04/11		102	%	80 - 120
			Total Cobalt (Co)	2022/04/11		101	%	80 - 120
			Total Copper (Cu)	2022/04/11		102	%	80 - 120
			Total Lead (Pb)	2022/04/11		96	%	80 - 120
			Total Antimony (Sb)	2022/04/11		108	%	80 - 120
			Total Molybdenum (Mo)	2022/04/11		105	%	80 - 120
			Total Nickel (Ni)	2022/04/11		100	%	80 - 120
			Total Selenium (Se)	2022/04/11		99	%	80 - 120
			Total Silver (Ag)	2022/04/11		100	%	80 - 120
			Total Arsenic (As)	2022/04/11		95	%	80 - 120
			Total Thallium (Tl)	2022/04/11		101	%	80 - 120
			Total Tin (Sn)	2022/04/11		102	%	80 - 120
			Total Titanium (Ti)	2022/04/11		107	%	80 - 120
			Total Uranium (U)	2022/04/11		99	%	80 - 120
			Total Vanadium (V)	2022/04/11		102	%	80 - 120
			Total Zinc (Zn)	2022/04/11		97	%	80 - 120
			Total Beryllium (Be)	2022/04/11		91	%	80 - 120
A545246	FM0	SRM	Total Nitrogen (N)	2022/04/06		106	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Copper RDL raised due to background levels.

(2) Cu RDL raised to 0.0006 due to background level.

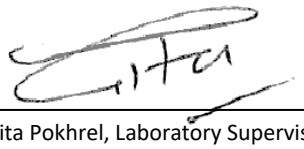
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Bureau Veritas Job #: C221458
Report Date: 2022/04/11

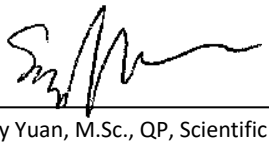
Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

VALIDATION SIGNATURE PAGE

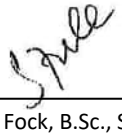
The analytical data and all QC contained in this report were reviewed and validated by:



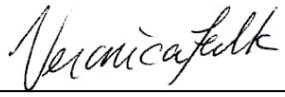
Gita Pokhrel, Laboratory Supervisor



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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Logiciel Propriétaire de Bureau Veritas

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Maxxam
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Toll Free: (800) 386-7247

033

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

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Page 1 of 1

C of C # 299510

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: ~~Alex Haigh~~ Advisian
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: ~~205 105 Quarry Park Blvd SE~~ 150 - 205 Quarry Park Blvd SE Calgary, AB T2C-3E7	Address: 150-205 Quarry Park Blvd SE Calgary AB T2C-3E7
Email: alex.haigh@advisian.com	Email: Alex.haigh@advisian.com
Ph: 587 897 6249	Ph: 587 897 6249
Sampler Name (Print): Tino Ngulube/ Stacy Gibb	Consultant Project #: 417085-42051-22200

ANALYSIS REQUESTED

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	BOD	PAH	Sulphide	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☐ DIS ☑	MERCURY TOTAL ☑ DISSOLVED ☑	SALINITY ~~SOIL~~ TSS	FERTILIZER SOIL TDS	FERTILIZER WATER TOC	NUTRIENTS ~~SOIL~~ COD	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	O&G	Ammonia-N Total	Nitrogen (Nitrite-Nitrate)	Turbidity	DOC	TKN	True Color	Limited Sample BTEX	Limited Simple General
1	AEMP-01		X			17	2022/03/31	11:30	X		X	X	X	X								X	X	X	X	X	X	X		X	X	X	X	X	X	X		X
2	AEMP-08		X			16		8:30	X		X	X	X	X								X	X	X	X	X	X	X		X	X	X	X	X	X	X		
3	AEMP-12		X			17	↓	9:15	↓		X	X	X	X								X	X	X	X	X	X	X		X	X	X	X	X	X	X		
4																						X	X	X	X	X	X		X	X	X	X	X	X	X		
5																																								
6																																								
7																																								
8																																								
9																																								
10																																								

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051 TES AZ6wi36

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FWAL ☐ Other

SPECIAL INSTRUCTIONS: Also email results to: canada.chemistry@advisian.com Headspace and/or sediment may be present. Please proceed with analysis

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C		
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					
				5 (1)	5 (2)	6 (3)

	YES	NO	COOLER ID # mcgi	TEMP °C		
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					
				i (1)	2 (2)	0 (3)

	YES	NO	COOLER ID #	TEMP °C		
SEAL PRESENT						
SEAL INTACT						
COOLING MEDIA PRESENT						
				(1)	(2)	(3)

RELINQUISHED BY:	DATE:	TIME (24 HR)	RECEIVED BY:	DATE:	TIME (24 HR)
1.	Stacy Gibb	2022/04/01	11:00	1. Deji Wu			
2. D	DEJI WU	2022/04/02	10:00	2. AS	Adcm Fishleigh	2022/04/02	08:30
3.				3.		2022/04/02	14:24

LAB USE ONLY
MAXXAM JOB # C221458
SAMPLES
LABELED BY: LCC
VERIFIED BY: FMV

OC-1010 (06/2016) IOL-AB

White: Maxxam Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299507

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/04/11
Report #: R3159093
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221459
Received: 2022/04/02, 08:30

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Laboratory Method	Analytical Method
Send Part to Archive (1)	1		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	4	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	4		Auto Calc
Cadmium - low level CCME - Dissolved (1)	1		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) -Lab Filtered (1, 2)	1	AB SOP-00087	MMCW 119 1996 m
Carbon (DOC) (1, 2)	1	AB SOP-00087	MMCW 119 1996 m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	4	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Filtration (DOC) (1)	1		
Sulphide (as H2S) (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	1	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	1	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	1	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
pH @25°C (1, 5)	2	AB SOP-00005	SM 23 4500-H+B m
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 6)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m

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Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299507

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/04/11
Report #: R3159093
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221459
Received: 2022/04/02, 08:30

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Laboratory Method	Analytical Method
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(6) TOC present in the sample should be considered as non-purgeable TOC.

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Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299507

Attention: Alex Haigh

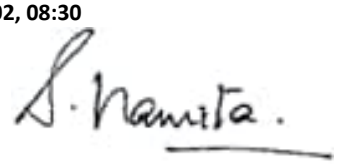
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Report Date: 2022/04/11
Report #: R3159093
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C221459
Received: 2022/04/02, 08:30

Encryption Key



Namita Sahni
Customer Solutions Representative
11 Apr 2022 15:30:14

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AQZ105	AQZ106	AQZ107	AQZ108		
Sampling Date		2022/03/31 10:30	2022/03/31 12:00	2022/03/31 12:00	2022/03/31 13:00		
COC Number		299507	299507	299507	299507		
	UNITS	**AEMP-13**	**2022-DUP1**	**2022-DUP3- FIELD BLANK**	**2022-DUP4 TRIP BLANK**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon							
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	0.10	A543241
Volatiles							
Benzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.00040	A542934
Toluene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.00040	A542934
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.00040	A542934
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	<0.00080	0.00080	A542934
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	0.00040	A542934
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	<0.00089	0.00089	A542299
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10	0.10	A542299
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	<0.10	0.10	A542934
Extraction Surrogate Recovery (%)							
O-TERPHENYL (sur.)	%	96	96	94	97		A543241
Instrument Surrogate Recovery (%)							
1,4-Difluorobenzene (sur.)	%	96	93	93	94		A542934
4-Bromofluorobenzene (sur.)	%	103	99	102	103		A542934
D4-1,2-Dichloroethane (sur.)	%	131	130	130	132		A542934
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AQZ105	AQZ106		
Sampling Date		2022/03/31 10:30	2022/03/31 12:00		
COC Number		299507	299507		
	UNITS	**AEMP-13**	**2022-DUP1**	**RDL**	**QC Batch**
Calculated Parameters					
Nitrate (N)	mg/L	0.16	0.20	0.010	A542304
Nitrate (NO3)	mg/L	0.69	0.88	0.044	A542303
Nitrite (NO2)	mg/L	<0.033	<0.033	0.033	A542303
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.25	0.21	0.020	A542307
Nutrients					
Dissolved Nitrite (N)	mg/L	<0.010	<0.010	0.010	A542989
Dissolved Nitrate plus Nitrite (N)	mg/L	0.16	0.20	0.010	A542989
Total Nitrogen (N)	mg/L	0.40	0.40	0.020	A545246
RDL = Reportable Detection Limit					

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Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-DISS (WATER)

Bureau Veritas ID		AQZ105			AQZ105		
Sampling Date		2022/03/31 10:30			2022/03/31 10:30		
COC Number		299507			299507		
	UNITS	**AEMP-13**	**RDL**	**QC Batch**	**AEMP-13 Lab-Dup**	**RDL**	**QC Batch**
Elements							
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A542300			
Dissolved Mercury (Hg)	ug/L	<0.0019	0.0019	A545814			
Dissolved Aluminum (Al)	mg/L	0.013	0.0030	A543304			
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A543304			
Dissolved Arsenic (As)	mg/L	0.00030	0.00020	A543304			
Dissolved Barium (Ba)	mg/L	0.062	0.010	A543626			
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A543304			
Dissolved Boron (B)	mg/L	<0.020	0.020	A543626			
Dissolved Calcium (Ca)	mg/L	48	0.30	A543626			
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A543304			
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A543304			
Dissolved Copper (Cu)	mg/L	0.0020	0.00020	A543304			
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A543626			
Dissolved Lead (Pb)	mg/L	0.0014	0.00020	A548603	0.0013	0.00020	A548603
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A543626			
Dissolved Magnesium (Mg)	mg/L	13	0.20	A543626			
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	A543626			
Dissolved Molybdenum (Mo)	mg/L	0.0012	0.00020	A543304			
Dissolved Nickel (Ni)	mg/L	0.0017	0.00050	A543304			
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A543626			
Dissolved Potassium (K)	mg/L	1.4	0.30	A543626			
Dissolved Selenium (Se)	mg/L	0.00044	0.00020	A543304			
Dissolved Silicon (Si)	mg/L	2.5	0.10	A543626			
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A543304			
Dissolved Sodium (Na)	mg/L	13	0.50	A543626			
Dissolved Strontium (Sr)	mg/L	0.35	0.020	A543626			
Dissolved Sulphur (S)	mg/L	19	0.20	A543626			
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A543304			
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A543304			
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A543304			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-DISS (WATER)

Bureau Veritas ID		AQZ105			AQZ105		
Sampling Date		2022/03/31 10:30			2022/03/31 10:30		
COC Number		299507			299507		
	UNITS	**AEMP-13**	**RDL**	**QC Batch**	**AEMP-13 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Uranium (U)	mg/L	0.00091	0.00010	A543304			
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A543304			
Dissolved Zinc (Zn)	mg/L	0.0031	0.0030	A543304			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		AQZ105	AQZ106		
Sampling Date		2022/03/31 10:30	2022/03/31 12:00		
COC Number		299507	299507		
	UNITS	**AEMP-13**	**2022-DUP1**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.000029	0.000027	0.000020	A542301
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A545737
Total Aluminum (Al)	mg/L	0.12	0.11	0.0030	A543640
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A543640
Total Arsenic (As)	mg/L	0.00048	0.00049	0.00020	A543640
Total Barium (Ba)	mg/L	0.063	0.061	0.010	A543700
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A543640
Total Boron (B)	mg/L	<0.020	<0.020	0.020	A543700
Total Calcium (Ca)	mg/L	47	46	0.30	A543700
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A543640
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A543640
Total Copper (Cu)	mg/L	0.0020	0.0022	0.00040	A543640
Total Iron (Fe)	mg/L	0.19	0.19	0.060	A543700
Total Lead (Pb)	mg/L	<0.00020	0.00046	0.00020	A543640
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A543700
Total Magnesium (Mg)	mg/L	13	13	0.20	A543700
Total Manganese (Mn)	mg/L	0.0051	0.0048	0.0040	A543700
Total Molybdenum (Mo)	mg/L	0.0013	0.0012	0.00020	A543640
Total Nickel (Ni)	mg/L	0.0019	0.0019	0.00050	A543640
Total Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A543700
Total Potassium (K)	mg/L	1.4	1.3	0.30	A543700
Total Selenium (Se)	mg/L	0.00043	0.00041	0.00020	A543640
Total Silicon (Si)	mg/L	2.8	2.7	0.10	A543700
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A543640
Total Sodium (Na)	mg/L	13	13	0.50	A543700
Total Strontium (Sr)	mg/L	0.33	0.32	0.020	A543700
Total Sulphur (S)	mg/L	17	17	0.20	A543700
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A543640
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A543640
Total Titanium (Ti)	mg/L	0.0022	0.0030	0.0010	A543640
Total Uranium (U)	mg/L	0.00097	0.00098	0.00010	A543640
RDL = Reportable Detection Limit					

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		AQZ105	AQZ106		
Sampling Date		2022/03/31 10:30	2022/03/31 12:00		
COC Number		299507	299507		
	UNITS	**AEMP-13**	**2022-DUP1**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A543640
Total Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0030	A543640
RDL = Reportable Detection Limit					

Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AQZ105			AQZ106		
Sampling Date		2022/03/31 10:30			2022/03/31 12:00		
COC Number		299507			299507		
	UNITS	**AEMP-13**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Calculated Parameters							
Sulphide (as H2S)	mg/L	0.0026	0.0020	A542284	0.0026	0.0020	A542284
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A542025	<2.0 (1)	2.0	A542025
Chemical Oxygen Demand	mg/L	14	10	A543753	13	10	A543753
Misc. Inorganics							
Dissolved Organic Carbon (C)	mg/L	6.8	0.50	A544030			
pH	pH	7.83	N/A	A542793	8.02	N/A	A542793
Total Organic Carbon (C)	mg/L	5.7	0.50	A543711	5.2	0.50	A543711
Total Dissolved Solids	mg/L	140	10	A543157	190	10	A543157
Total Suspended Solids	mg/L	12	0.97	A545738	6.2	1.0	A545738
Lab Filtered Inorganics							
Dissolved Organic Carbon (C)	mg/L				5.1	0.50	A543734
Anions							
Total Sulphide	mg/L	0.0025	0.0018	A544803	0.0025	0.0018	A544803
Nutrients							
Total Ammonia (N)	mg/L	<0.015	0.015	A543821	<0.015	0.015	A543815
Misc. Organics							
Total Oil and grease	mg/L	<2.0	2.0	A543026	<2.0	2.0	A543026
Physical Properties							
True Colour	PtCo units	12	2.0	A542291	13	2.0	A542291
Physical Properties							
Turbidity	NTU	15	0.10	A542271	12	0.10	A542271

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: AQZ105
Sample ID: AEMP-13
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A542025	2022/04/03	2022/04/07	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A542300	N/A	2022/04/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A542301	N/A	2022/04/06	Automated Statchk
COD by Colorimeter	M/PROB	A543753	N/A	2022/04/05	Jennifer Mee
True Colour	SPEC/COL	A542291	N/A	2022/04/03	Serena Tian
Carbon (DOC)	TECH	A544030	N/A	2022/04/06	Ming Dong
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A543241	2022/04/05	2022/04/06	Seyedsajjad Hosseini
Sulphide (as H2S)	CALC	A542284	N/A	2022/04/06	Automated Statchk
Mercury (Dissolved) by CV	CV	A545814	2022/04/06	2022/04/07	Jason Bao
Mercury (Total) by CV	CV	A545737	2022/04/06	2022/04/07	Jason Bao
Elements by ICP - Dissolved	ICPA	A543626	N/A	2022/04/05	Ilonka Kovac
Elements by ICP - Total	ICPA	A543700	2022/04/05	2022/04/05	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A543304	N/A	2022/04/05	Maria Fernanda Paez
Elements by ICPMS - Total	ICPM	A543640	2022/04/05	2022/04/05	Maria Fernanda Paez
Ammonia-N (Total)	KONE	A543821	N/A	2022/04/05	Zafar Iqbal
Nitrate and Nitrite	CALC	A542303	N/A	2022/04/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner
Nitrate (as N)	CALC	A542304	2022/04/04	2022/04/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A543026	2022/04/06	2022/04/06	Junyan Ban
pH @25°C	AT/ALK	A542793	N/A	2022/04/04	Tracy (Jing) Ling
Total Sulphide	SPEC	A544803	N/A	2022/04/06	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A543157	2022/04/04	2022/04/04	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A542307	N/A	2022/04/07	Automated Statchk
Nitrogen (Total)	AC/COL	A545246	2022/04/06	2022/04/07	Fadia Mostafa
Carbon (Total Organic)	TECH	A543711	N/A	2022/04/06	Ming Dong
Total Suspended Solids (NFR)	BAL	A545738	2022/04/06	2022/04/06	Kiara Garrido
Turbidity	TURB	A542271	N/A	2022/04/03	Kiara Garrido

Bureau Veritas ID: AQZ105 Dup
Sample ID: AEMP-13
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS - Dissolved	ICPM	A548603	N/A	2022/04/11	Karen Graham

Bureau Veritas ID: AQZ106
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A542025	2022/04/03	2022/04/07	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh

Bureau Veritas Job #: C221459
Report Date: 2022/04/11

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: AQZ106
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A542301	N/A	2022/04/06	Automated Statchk
COD by Colorimeter	M/PROB	A543753	N/A	2022/04/05	Jennifer Mee
True Colour	SPEC/COL	A542291	N/A	2022/04/03	Serena Tian
Carbon (DOC) -Lab Filtered	TECH	A543734	N/A	2022/04/05	Ming Dong
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A543241	2022/04/05	2022/04/05	Seyedsajjad Hosseini
Sulphide (as H2S)	CALC	A542284	N/A	2022/04/06	Automated Statchk
Mercury (Total) by CV	CV	A545737	2022/04/06	2022/04/07	Jason Bao
Elements by ICP - Total	ICPA	A543700	2022/04/05	2022/04/05	Ilonka Kovac
Elements by ICPMS - Total	ICPM	A543640	2022/04/05	2022/04/05	Maria Fernanda Paez
Ammonia-N (Total)	KONE	A543815	N/A	2022/04/05	Zafar Iqbal
Nitrate and Nitrite	CALC	A542303	N/A	2022/04/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A542989	N/A	2022/04/04	Jacqueline Fahrner
Nitrate (as N)	CALC	A542304	2022/04/04	2022/04/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A543026	2022/04/06	2022/04/06	Junyan Ban
pH @25°C	AT/ALK	A542793	N/A	2022/04/04	Tracy (Jing) Ling
Total Sulphide	SPEC	A544803	N/A	2022/04/06	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A543157	2022/04/04	2022/04/04	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A542307	N/A	2022/04/07	Automated Statchk
Nitrogen (Total)	AC/COL	A545246	2022/04/06	2022/04/07	Fadia Mostafa
Carbon (Total Organic)	TECH	A543711	N/A	2022/04/06	Ming Dong
Total Suspended Solids (NFR)	BAL	A545738	2022/04/06	2022/04/06	Kiara Garrido
Turbidity	TURB	A542271	N/A	2022/04/03	Kiara Garrido

Bureau Veritas ID: AQZ107
Sample ID: 2022-DUP3- FIELD BLANK
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A543241	2022/04/05	2022/04/05	Seyedsajjad Hosseini

Bureau Veritas ID: AQZ108
Sample ID: 2022-DUP4 TRIP BLANK
Matrix: Water

Collected: 2022/03/31
Relinquished: 2022/04/01
Received: 2022/04/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A542934	N/A	2022/04/06	Steven Shieh
F1-BTEX	CALC/MS	A542299	N/A	2022/04/06	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A543241	2022/04/05	2022/04/05	Seyedsajjad Hosseini

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C
Package 2	4.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 4.3 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AQZ105 [AEMP-13] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AQZ106 [2022-DUP1] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AQZ105, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A542025	PK8	Method Blank	Biochemical Oxygen Demand	2022/04/07	<2.0		mg/L	
A542271	KGA	Method Blank	Turbidity	2022/04/03	<0.10		NTU	
A542291	STI	Method Blank	True Colour	2022/04/03	<2.0		PtCo units	
A542934	SSV	Method Blank	1,4-Difluorobenzene (sur.)	2022/04/05		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/04/05		95	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/04/05		97	%	50 - 140
			Benzene	2022/04/05	<0.00040		mg/L	
			Toluene	2022/04/05	<0.00040		mg/L	
			Ethylbenzene	2022/04/05	<0.00040		mg/L	
			m & p-Xylene	2022/04/05	<0.00080		mg/L	
			o-Xylene	2022/04/05	<0.00040		mg/L	
			F1 (C6-C10)	2022/04/05	<0.10		mg/L	
A542989	JFH	Method Blank	Dissolved Nitrite (N)	2022/04/04	<0.010		mg/L	
			Dissolved Nitrate plus Nitrite (N)	2022/04/04	<0.010		mg/L	
A543026	JB9	Method Blank	Total Oil and grease	2022/04/06	<2.0		mg/L	
A543157	HE1	Method Blank	Total Dissolved Solids	2022/04/04	<10		mg/L	
A543241	SEH	Method Blank	O-TERPHENYL (sur.)	2022/04/06		90	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/04/06	<0.10		mg/L	
A543304	MFP	Method Blank	Dissolved Aluminum (Al)	2022/04/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/04/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/04/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/04/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/04/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/04/05	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/04/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/04/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/04/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/04/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/04/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/04/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/04/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/04/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/04/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/04/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/04/05	<0.0010		mg/L	
A543626	IK0	Method Blank	Dissolved Iron (Fe)	2022/04/05	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/04/05	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/04/05	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/04/05	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/04/05	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/04/05	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/04/05	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/04/05	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/04/05	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/04/05	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/04/05	<0.10		mg/L	
			Dissolved Boron (B)	2022/04/05	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/04/05	<0.30		mg/L	
A543640	MFP	Method Blank	Total Aluminum (Al)	2022/04/05	<0.0030		mg/L	
			Total Chromium (Cr)	2022/04/05	<0.0010		mg/L	
			Total Cobalt (Co)	2022/04/05	<0.00030		mg/L	
			Total Copper (Cu)	2022/04/05	<0.00040 (1)		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lead (Pb)	2022/04/05	<0.00020		mg/L	
			Total Antimony (Sb)	2022/04/05	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/04/05	<0.00020		mg/L	
			Total Nickel (Ni)	2022/04/05	<0.00050		mg/L	
			Total Selenium (Se)	2022/04/05	<0.00020		mg/L	
			Total Silver (Ag)	2022/04/05	<0.00010		mg/L	
			Total Arsenic (As)	2022/04/05	<0.00020		mg/L	
			Total Thallium (Tl)	2022/04/05	<0.00020		mg/L	
			Total Tin (Sn)	2022/04/05	<0.0010		mg/L	
			Total Titanium (Ti)	2022/04/05	<0.0010		mg/L	
			Total Uranium (U)	2022/04/05	<0.00010		mg/L	
			Total Vanadium (V)	2022/04/05	<0.0010		mg/L	
			Total Zinc (Zn)	2022/04/05	<0.0030		mg/L	
			Total Beryllium (Be)	2022/04/05	<0.0010		mg/L	
A543700	IK0	Method Blank	Total Iron (Fe)	2022/04/05	<0.060		mg/L	
			Total Lithium (Li)	2022/04/05	<0.020		mg/L	
			Total Magnesium (Mg)	2022/04/05	<0.20		mg/L	
			Total Manganese (Mn)	2022/04/05	<0.0040		mg/L	
			Total Potassium (K)	2022/04/05	<0.30		mg/L	
			Total Sodium (Na)	2022/04/05	<0.50		mg/L	
			Total Strontium (Sr)	2022/04/05	<0.020		mg/L	
			Total Sulphur (S)	2022/04/05	<0.20		mg/L	
			Total Phosphorus (P)	2022/04/05	<0.10		mg/L	
			Total Barium (Ba)	2022/04/05	<0.010		mg/L	
			Total Silicon (Si)	2022/04/05	<0.10		mg/L	
			Total Boron (B)	2022/04/05	<0.020		mg/L	
			Total Calcium (Ca)	2022/04/05	<0.30		mg/L	
A543711	MDO	Method Blank	Total Organic Carbon (C)	2022/04/06	<0.50		mg/L	
A543734	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/04/05	<0.50		mg/L	
A543753	JM0	Method Blank	Chemical Oxygen Demand	2022/04/05	<10		mg/L	
A543815	ZI	Method Blank	Total Ammonia (N)	2022/04/05	<0.015		mg/L	
A543821	ZI	Method Blank	Total Ammonia (N)	2022/04/05	<0.015		mg/L	
A544030	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/04/06	<0.50		mg/L	
A544803	BYM	Method Blank	Total Sulphide	2022/04/06	<0.0018		mg/L	
A545246	FM0	Method Blank	Total Nitrogen (N)	2022/04/06	<0.020		mg/L	
A545737	JAB	Method Blank	Total Mercury (Hg)	2022/04/07	<0.0019		ug/L	
A545738	KGA	Method Blank	Total Suspended Solids	2022/04/06	<1.0		mg/L	
A545814	JAB	Method Blank	Dissolved Mercury (Hg)	2022/04/07	<0.0019		ug/L	
A548603	KGR	Method Blank	Dissolved Lead (Pb)	2022/04/11	<0.00020		mg/L	
A548603	KGR	RPD [AQZ105-07]	Dissolved Lead (Pb)	2022/04/11	4.1		%	20
A543700	IK0	Matrix Spike [AQZ105-08]	Total Iron (Fe)	2022/04/05		108	%	80 - 120
			Total Lithium (Li)	2022/04/05		101	%	80 - 120
			Total Magnesium (Mg)	2022/04/05		102	%	80 - 120
			Total Manganese (Mn)	2022/04/05		105	%	80 - 120
			Total Potassium (K)	2022/04/05		103	%	80 - 120
			Total Sodium (Na)	2022/04/05		102	%	80 - 120
			Total Strontium (Sr)	2022/04/05		96	%	80 - 120
			Total Sulphur (S)	2022/04/05		101	%	80 - 120
			Total Phosphorus (P)	2022/04/05		97	%	80 - 120
			Total Barium (Ba)	2022/04/05		97	%	80 - 120
			Total Silicon (Si)	2022/04/05		100	%	80 - 120
			Total Boron (B)	2022/04/05		103	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Calcium (Ca)	2022/04/05		NC	%	80 - 120
A548603	KGR	Matrix Spike [AQZ105-07]	Dissolved Lead (Pb)	2022/04/11		92	%	80 - 120
A542025	PK8	LCS	Biochemical Oxygen Demand	2022/04/07		94	%	85 - 115
A542271	KGA	LCS	Turbidity	2022/04/03		103	%	80 - 120
A542291	STI	LCS	True Colour	2022/04/03		106	%	80 - 120
A542793	JLD	LCS	pH	2022/04/04		100	%	97 - 103
A542934	SSV	LCS	1,4-Difluorobenzene (sur.)	2022/04/05		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/04/05		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/04/05		96	%	50 - 140
			Benzene	2022/04/05		107	%	60 - 130
			Toluene	2022/04/05		101	%	60 - 130
			Ethylbenzene	2022/04/05		102	%	60 - 130
			m & p-Xylene	2022/04/05		102	%	60 - 130
			o-Xylene	2022/04/05		107	%	60 - 130
			F1 (C6-C10)	2022/04/05		100	%	60 - 140
A542989	JFH	LCS	Dissolved Nitrite (N)	2022/04/04		106	%	80 - 120
			Dissolved Nitrate plus Nitrite (N)	2022/04/04		104	%	80 - 120
A543026	JB9	LCS	Total Oil and grease	2022/04/06		95	%	70 - 130
A543157	HE1	LCS	Total Dissolved Solids	2022/04/04		90	%	80 - 120
A543241	SEH	LCS	O-TERPHENYL (sur.)	2022/04/05		99	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/04/05		101	%	60 - 140
A543304	MFP	LCS	Dissolved Aluminum (Al)	2022/04/04		105	%	80 - 120
			Dissolved Chromium (Cr)	2022/04/04		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/04/04		101	%	80 - 120
			Dissolved Copper (Cu)	2022/04/04		102	%	80 - 120
			Dissolved Antimony (Sb)	2022/04/04		102	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/04/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/04/04		102	%	80 - 120
			Dissolved Selenium (Se)	2022/04/04		105	%	80 - 120
			Dissolved Silver (Ag)	2022/04/04		96	%	80 - 120
			Dissolved Arsenic (As)	2022/04/04		100	%	80 - 120
			Dissolved Thallium (Tl)	2022/04/04		96	%	80 - 120
			Dissolved Tin (Sn)	2022/04/04		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/04/04		103	%	80 - 120
			Dissolved Uranium (U)	2022/04/04		98	%	80 - 120
			Dissolved Vanadium (V)	2022/04/04		101	%	80 - 120
			Dissolved Zinc (Zn)	2022/04/04		99	%	80 - 120
			Dissolved Beryllium (Be)	2022/04/04		97	%	80 - 120
A543626	IK0	LCS	Dissolved Iron (Fe)	2022/04/05		107	%	80 - 120
			Dissolved Lithium (Li)	2022/04/05		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/04/05		98	%	80 - 120
			Dissolved Manganese (Mn)	2022/04/05		104	%	80 - 120
			Dissolved Potassium (K)	2022/04/05		100	%	80 - 120
			Dissolved Sodium (Na)	2022/04/05		98	%	80 - 120
			Dissolved Strontium (Sr)	2022/04/05		98	%	80 - 120
			Dissolved Sulphur (S)	2022/04/05		99	%	80 - 120
			Dissolved Phosphorus (P)	2022/04/05		98	%	80 - 120
			Dissolved Barium (Ba)	2022/04/05		98	%	80 - 120
			Dissolved Silicon (Si)	2022/04/05		96	%	80 - 120
			Dissolved Boron (B)	2022/04/05		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/04/05		97	%	80 - 120
A543640	MFP	LCS	Total Aluminum (Al)	2022/04/05		113	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Chromium (Cr)	2022/04/05		100	%	80 - 120
			Total Cobalt (Co)	2022/04/05		99	%	80 - 120
			Total Copper (Cu)	2022/04/05		99	%	80 - 120
			Total Lead (Pb)	2022/04/05		98	%	80 - 120
			Total Antimony (Sb)	2022/04/05		109	%	80 - 120
			Total Molybdenum (Mo)	2022/04/05		100	%	80 - 120
			Total Nickel (Ni)	2022/04/05		98	%	80 - 120
			Total Selenium (Se)	2022/04/05		98	%	80 - 120
			Total Silver (Ag)	2022/04/05		99	%	80 - 120
			Total Arsenic (As)	2022/04/05		97	%	80 - 120
			Total Thallium (Tl)	2022/04/05		98	%	80 - 120
			Total Tin (Sn)	2022/04/05		101	%	80 - 120
			Total Titanium (Ti)	2022/04/05		100	%	80 - 120
			Total Uranium (U)	2022/04/05		101	%	80 - 120
			Total Vanadium (V)	2022/04/05		99	%	80 - 120
			Total Zinc (Zn)	2022/04/05		94	%	80 - 120
			Total Beryllium (Be)	2022/04/05		102	%	80 - 120
A543700	IK0	LCS	Total Iron (Fe)	2022/04/05		109	%	80 - 120
			Total Lithium (Li)	2022/04/05		102	%	80 - 120
			Total Magnesium (Mg)	2022/04/05		104	%	80 - 120
			Total Manganese (Mn)	2022/04/05		106	%	80 - 120
			Total Potassium (K)	2022/04/05		104	%	80 - 120
			Total Sodium (Na)	2022/04/05		103	%	80 - 120
			Total Strontium (Sr)	2022/04/05		100	%	80 - 120
			Total Sulphur (S)	2022/04/05		102	%	80 - 120
			Total Phosphorus (P)	2022/04/05		99	%	80 - 120
			Total Barium (Ba)	2022/04/05		101	%	80 - 120
			Total Silicon (Si)	2022/04/05		101	%	80 - 120
			Total Boron (B)	2022/04/05		105	%	80 - 120
			Total Calcium (Ca)	2022/04/05		100	%	80 - 120
A543711	MDO	LCS	Total Organic Carbon (C)	2022/04/06		111	%	80 - 120
A543734	MDO	LCS	Dissolved Organic Carbon (C)	2022/04/05		103	%	80 - 120
A543753	JM0	LCS	Chemical Oxygen Demand	2022/04/05		104	%	80 - 120
A543815	ZI	LCS	Total Ammonia (N)	2022/04/05		104	%	80 - 120
A543821	ZI	LCS	Total Ammonia (N)	2022/04/05		102	%	80 - 120
A544030	MDO	LCS	Dissolved Organic Carbon (C)	2022/04/06		106	%	80 - 120
A544803	BYM	LCS	Total Sulphide	2022/04/06		105	%	80 - 120
A545246	FM0	LCS	Total Nitrogen (N)	2022/04/06		114	%	80 - 120
A545737	JAB	LCS	Total Mercury (Hg)	2022/04/07		109	%	80 - 120
A545738	KGA	LCS	Total Suspended Solids	2022/04/06		100	%	80 - 120
A545814	JAB	LCS	Dissolved Mercury (Hg)	2022/04/07		102	%	80 - 120
A548603	KGR	LCS	Dissolved Lead (Pb)	2022/04/11		88	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A545246	FM0	SRM	Total Nitrogen (N)	2022/04/06		106	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

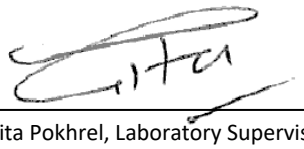
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

(1) Copper RDL raised due to background levels.

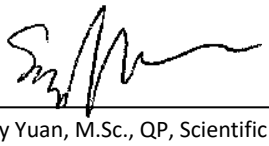
Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

VALIDATION SIGNATURE PAGE

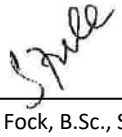
The analytical data and all QC contained in this report were reviewed and validated by:



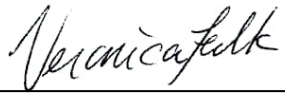
Gita Pokhrel, Laboratory Supervisor



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

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A Bureau Veritas Group Company

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Toll Free: (800) 386-7247

034

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

73

C of C # 299507

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: Advisian
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150 - 205 Quarry Park Blvd SE Calgary, AB T2C - 3E7	Address: 150-205 Quarry Park Blvd SE Calgary AB T2C - 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897 6249
Sampler Name (Print): Tino Ngulube / Stacy Gibb	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	ANALYSIS REQUESTED: VOC BOD	PAH Sulphide	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON) Metals Total	TEXTURE (% SAND, SILT, CLAY) Mercury total	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☑ DIS ☑	MERCURY TOTAL ☑ DISSOLVED ☑	SALINITY-SOIL TDS	FERTILIZER-SOIL TSS	FERTILIZER-WATER T+C	NUTRIENTS-SOIL COD	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC-GLASS-II LANDFILL PKG O&G	Ammonia-N Total	Nitrogen (N+N+E - Nitrate)	Turbidity	DOC	TKN	True Color	Limited Sample BTEX	Limited Sample General
1	AEMP-13		X			17	2022/03/31	10:30	X		X	X	X							X	X	X	X	X	X			X	X	X	X	X		
2	2022-Dup1		X			12	2022/03/31	12:00			X	X	X				X	X				X	X	X	X			X	X	X	X	X	X	X
3	2022-Dup3-FIELD BLANK				X	4	2022/03/31	12:00					X																					
4	2022-Dup4-TRIP BLANK				X	4	2022/03/31	13:00					X																					
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FWAL ☐ Other

SPECIAL INSTRUCTIONS: Also email results to: canada.chemistry@advisian.com Headspace analysis on sediment may be present Please proceed with analysis IES AZ16436

JARS USED & NOT SUBMITTED Enter N/A for Water: N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT						
SEAL INTACT						
COOLING MEDIA PRESENT						

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	Stacy Gibb	2022/04/01	11:00	1. Deji Wu		2022/04/02	08:30
2.	DEJI WU	2022/04/02	10:14	2.	Adamishleigh	2022/04/02	14:24
3.				3.			

LAB USE ONLY
MAXXAM JOB # C221459

SAMPLES
LABELED BY: CC
VERIFIED BY: FMV

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292888

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190326
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241300
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	2		Auto Calc
PAH in Water by GC/MS (1)	2	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	2	AB SOP-00005	SM 23 4500-H+B m

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292888

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190326
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241300
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

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Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292888

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190326
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241300

Received: 2022/06/14, 17:26

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Danielle Boisvert
Customer Solutions Representative
22 Jun 2022 17:52:02

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVA564			AVA564			AVA565		
Sampling Date		2022/06/12 13:00			2022/06/12 13:00			2022/06/12 13:40		
COC Number		292888			292888			292888		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A610834				<0.10	0.10	A610834
Volatiles										
Benzene	mg/L	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222
Toluene	mg/L	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222
Ethylbenzene	mg/L	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222
m & p-Xylene	mg/L	<0.00080	0.00080	A613222	<0.00080	0.00080	A613222	<0.00080	0.00080	A613222
o-Xylene	mg/L	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222	<0.00040	0.00040	A613222
Xylenes (Total)	mg/L	<0.00089	0.00089	A611159				<0.00089	0.00089	A611159
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A611159				<0.10	0.10	A611159
F1 (C6-C10)	mg/L	<0.10	0.10	A613222	<0.10	0.10	A613222	<0.10	0.10	A613222
Extraction Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	98		A610834				97		A610834
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	108		A613222	107		A613222	106		A613222
4-Bromofluorobenzene (sur.)	%	96		A613222	97		A613222	97		A613222
D4-1,2-Dichloroethane (sur.)	%	101		A613222	102		A613222	100		A613222

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVA564	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40		
COC Number		292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**RDL**	**QC Batch**
Calculated Parameters					
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.42	0.50	0.10	A609774
Nutrients					
Total Nitrogen (N)	mg/L	0.48 (1)	0.55 (1)	0.10	A615583

RDL = Reportable Detection Limit

(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA564	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40		
COC Number		292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.00039	0.00045	0.000020	A610723
Total Aluminum (Al)	mg/L	5.5	5.1	0.0030	A614665
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A614665
Total Arsenic (As)	mg/L	0.0065	0.0067	0.00020	A614665
Total Barium (Ba)	mg/L	0.20	0.18	0.010	A614669
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A614665
Total Boron (B)	mg/L	<0.020	<0.020	0.020	A614669
Total Calcium (Ca)	mg/L	45	44	0.30	A614669
Total Chromium (Cr)	mg/L	0.010	0.0091	0.0010	A614665
Total Cobalt (Co)	mg/L	0.0066	0.0066	0.00030	A614665
Total Copper (Cu)	mg/L	0.014	0.015	0.0010	A614665
Total Iron (Fe)	mg/L	16	14	0.060	A614669
Total Lead (Pb)	mg/L	0.0068	0.0069	0.00020	A614665
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A614669
Total Magnesium (Mg)	mg/L	13	13	0.20	A614669
Total Manganese (Mn)	mg/L	0.27	0.25	0.0040	A614669
Total Molybdenum (Mo)	mg/L	0.0020	0.0068	0.00020	A614665
Total Nickel (Ni)	mg/L	0.021	0.023	0.00050	A614665
Total Phosphorus (P)	mg/L	0.31	0.28	0.10	A614669
Total Potassium (K)	mg/L	2.5	2.4	0.30	A614669
Total Selenium (Se)	mg/L	0.00066	0.00095	0.00020	A614665
Total Silicon (Si)	mg/L	9.1	8.0	0.10	A614669
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A614665
Total Sodium (Na)	mg/L	5.1	6.1	0.50	A614669
Total Strontium (Sr)	mg/L	0.19	0.19	0.020	A614669
Total Sulphur (S)	mg/L	9.7	11	0.20	A614669
Total Thallium (Tl)	mg/L	<0.00020	0.00030	0.00020	A614665
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A614665
Total Titanium (Ti)	mg/L	0.056	0.055	0.0010	A614665
Total Uranium (U)	mg/L	0.0011	0.0019	0.00010	A614665
Total Vanadium (V)	mg/L	0.016	0.017	0.0010	A614665
RDL = Reportable Detection Limit					

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA564	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40		
COC Number		292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.15	0.16	0.0030	A614665
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA564			AVA564			AVA565		
Sampling Date		2022/06/12 13:00			2022/06/12 13:00			2022/06/12 13:40		
COC Number		292888			292888			292888		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	100	0.50	A610897				120	0.50	A610897
Ion Balance (% Difference)	%	1.1	N/A	A610854				1.4	N/A	A611160
Nitrate (N)	mg/L	0.059	0.010	A610960				0.050	0.010	A610960
Nitrate (NO3)	mg/L	0.26	0.044	A611066				0.22	0.044	A611066
Nitrite (NO2)	mg/L	<0.033	0.033	A611066				<0.033	0.033	A611066
Sulphide (as H2S)	mg/L	0.015	0.010	A611067				0.034	0.010	A611067
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A612080				<2.0	2.0	A612080
Chemical Oxygen Demand	mg/L	89	10	A613005				40	10	A613005
Elements										
Dissolved Cadmium (Cd)	mg/L	0.000023	0.000020	A610806				0.000026	0.000020	A610806
Misc. Inorganics										
Conductivity	uS/cm	220	2.0	A612539				250	2.0	A612539
Dissolved Organic Carbon (C)	mg/L	7.3	0.50	A614774				7.8	0.50	A614774
pH	pH	7.45	N/A	A612538				7.64	N/A	A612538
Total Organic Carbon (C)	mg/L	6.3	0.50	A614777				6.7	0.50	A614777
Total Dissolved Solids	mg/L	170	10	A611370				180	10	A611370
Total Suspended Solids	mg/L	440 (1)	1.7	A613126				450 (1)	3.1	A613126
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Alkalinity (Total as CaCO3)	mg/L	76	1.0	A612532				87	1.0	A612532
Bicarbonate (HCO3)	mg/L	93	1.0	A612532				110	1.0	A612532
Carbonate (CO3)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Dissolved Fluoride (F)	mg/L	0.084	0.050	A612540				0.085	0.050	A612540
Hydroxide (OH)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Total Sulphide	mg/L	0.014 (2)	0.0090	A613216	0.012	0.0090	A613216	0.032 (2)	0.0090	A613216
Chloride (Cl)	mg/L	4.2	1.0	A614906				5.0	1.0	A614906

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.
(2) Detection limits raised due to sample matrix.

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Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA564			AVA564			AVA565		
Sampling Date		2022/06/12 13:00			2022/06/12 13:00			2022/06/12 13:40		
COC Number		292888			292888			292888		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Sulphate (SO4)	mg/L	30	1.0	A614906				36	1.0	A614906
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A614223				<0.015	0.015	A614223
Nitrite (N)	mg/L	<0.010	0.010	A612707				<0.010	0.010	A612707
Nitrate plus Nitrite (N)	mg/L	0.059	0.010	A612707				0.050	0.010	A612707
Misc. Organics										
Total Oil and grease	mg/L	<2.0	2.0	A611721				<2.0	2.0	A611721
Physical Properties										
True Colour	PtCo units	37	2.0	A612362				34	2.0	A612362
Physical Properties										
Turbidity	NTU	290 (1)	0.50	A610674				290 (1)	0.50	A610674

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVA564	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40		
COC Number		292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	A610518
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acridine	mg/L	<0.000040	<0.000040	0.000040	A610837
Anthracene	mg/L	<0.000010	<0.000010	0.000010	A610837
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Chrysene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	A610837
Fluorene	mg/L	<0.000050	<0.000050	0.000050	A610837
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
Naphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
Phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Perylene	mg/L	<0.000050	<0.000050	0.000050	A610837
Pyrene	mg/L	<0.000020	<0.000020	0.000020	A610837
Quinoline	mg/L	<0.00020	<0.00020	0.00020	A610837
Extraction Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	122	118		A610837
D8-ACENAPHTHYLENE (sur.)	%	103	109		A610837
D8-NAPHTHALENE (sur.)	%	86	100		A610837
TERPHENYL-D14 (sur.)	%	119	115		A610837
RDL = Reportable Detection Limit					

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Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVA564	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40		
COC Number		292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**RDL**	**QC Batch**
Elements					
Dissolved Mercury (Hg)	ug/L	0.0023	<0.0019	0.0019	A611839
Total Mercury (Hg)	ug/L	0.020	0.032	0.019	A611844
RDL = Reportable Detection Limit					

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA564	AVA565	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40	2022/06/12 13:40		
COC Number		292888	292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-07 Lab-Dup**	**RDL**	**QC Batch**
Elements						
Dissolved Aluminum (Al)	mg/L	0.060	0.013	0.013	0.0030	A612531
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A612531
Dissolved Arsenic (As)	mg/L	0.00044	0.00033	0.00033	0.00020	A612531
Dissolved Barium (Ba)	mg/L	0.039	0.043	0.042	0.010	A614268
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Boron (B)	mg/L	<0.020	<0.020	<0.020	0.020	A614268
Dissolved Calcium (Ca)	mg/L	28	32	33	0.30	A614268
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	0.00030	A612531
Dissolved Copper (Cu)	mg/L	0.0019	0.0030	0.0032	0.0010	A612531
Dissolved Iron (Fe)	mg/L	0.15	0.076	0.074	0.060	A614268
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A612531
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A614268
Dissolved Magnesium (Mg)	mg/L	8.1	9.4	9.5	0.20	A614268
Dissolved Manganese (Mn)	mg/L	0.0088	0.0059	0.0054	0.0040	A614268
Dissolved Molybdenum (Mo)	mg/L	0.00078	0.0034	0.0035	0.00020	A612531
Dissolved Nickel (Ni)	mg/L	0.0017	0.0020	0.0019	0.00050	A612531
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A614268
Dissolved Potassium (K)	mg/L	1.1	1.2	1.2	0.30	A614268
Dissolved Selenium (Se)	mg/L	0.00032	0.00034	0.00048	0.00020	A612531
Dissolved Silicon (Si)	mg/L	1.7	1.6	1.6	0.10	A614268
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A612531
Dissolved Sodium (Na)	mg/L	5.0	6.4	6.5	0.50	A614268
Dissolved Strontium (Sr)	mg/L	0.15	0.16	0.16	0.020	A614268
Dissolved Sulphur (S)	mg/L	9.2	12	12	0.20	A614268
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A612531
Dissolved Tin (Sn)	mg/L	<0.0010	0.0016	0.0015	0.0010	A612531
Dissolved Titanium (Ti)	mg/L	0.0025	0.0013	0.0015	0.0010	A612531
Dissolved Uranium (U)	mg/L	0.00060	0.0011	0.0011	0.00010	A612531
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C241300
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Task Order#: pending, Line Item: 10
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Site Location: NORMAN WELLS, NT
Project #: 417085-42051

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA564	AVA565	AVA565		
Sampling Date		2022/06/12 13:00	2022/06/12 13:40	2022/06/12 13:40		
COC Number		292888	292888	292888		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-07 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	0.0030	A612531

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA564
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613222	N/A	2022/06/20	Rahul Suryawanshi
F1-BTEX	CALC/MS	A611159	N/A	2022/06/21	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613005	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/17	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/17	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/20	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A612707	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A613216	N/A	2022/06/17	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A613126	2022/06/17	2022/06/17	Kiara Garrido
Turbidity	TURB	A610674	N/A	2022/06/15	Kiara Garrido

Bureau Veritas ID: AVA564 Dup
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613222	N/A	2022/06/20	Rahul Suryawanshi

Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA564 Dup
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Sulphide	SPEC	A613216	N/A	2022/06/17	Bailey Morrison

Bureau Veritas ID: AVA565
Sample ID: AEMP-07
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613222	N/A	2022/06/20	Rahul Suryawanshi
F1-BTEX	CALC/MS	A611159	N/A	2022/06/21	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613005	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/17	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/17	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/20	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A611160	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A612707	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A613216	N/A	2022/06/17	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A613126	2022/06/17	2022/06/17	Kiara Garrido
Turbidity	TURB	A610674	N/A	2022/06/15	Kiara Garrido

Bureau Veritas Job #: C241300
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA565 Dup
Sample ID: AEMP-07
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.0°C

Sample AVA564 [AEMP-06] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA565 [AEMP-07] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

MERCURY BY COLD VAPOR (WATER) Comments

Sample AVA564 [AEMP-06] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample AVA565 [AEMP-07] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA564	AEMP-06	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA564	AEMP-06	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA564	AEMP-06	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA565	AEMP-07	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA565	AEMP-07	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA565	AEMP-07	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A610674	KGA	Method Blank	Turbidity	2022/06/15	<0.10		NTU	
A610834	GG3	Method Blank	O-TERPHENYL (sur.)	2022/06/17		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17	<0.10		mg/L	
A610837	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/06/18		116	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		105	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		84	%	50 - 130
			Acenaphthene	2022/06/18	<0.00010		mg/L	
			Acenaphthylene	2022/06/18	<0.00010		mg/L	
			Acridine	2022/06/18	<0.000040		mg/L	
			Anthracene	2022/06/18	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/18	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/18	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/18	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/18	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/18	<0.000050		mg/L	
			Chrysene	2022/06/18	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/18	<0.0000075		mg/L	
			Fluoranthene	2022/06/18	<0.000010		mg/L	
			Fluorene	2022/06/18	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/18	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			Naphthalene	2022/06/18	<0.00010		mg/L	
			Phenanthrene	2022/06/18	<0.000050		mg/L	
			Perylene	2022/06/18	<0.000050		mg/L	
			Pyrene	2022/06/18	<0.000020		mg/L	
			Quinoline	2022/06/18	<0.00020		mg/L	
A611370	HE1	Method Blank	Total Dissolved Solids	2022/06/16	<10		mg/L	
A611721	JB9	Method Blank	Total Oil and grease	2022/06/16	<2.0		mg/L	
A611839	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611844	JAB	Method Blank	Total Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A612080	MTG	Method Blank	Biochemical Oxygen Demand	2022/06/21	<2.0		mg/L	
A612362	FM0	Method Blank	True Colour	2022/06/16	<2.0		PtCo units	
A612531	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/18	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/18	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/18	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/06/18	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/06/18	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/18	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/18	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/06/18	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/18	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/06/18	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/18	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/18	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/06/18	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/18	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/18	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/18	<0.0010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Zinc (Zn)	2022/06/18	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/18	<0.0010		mg/L	
A612532	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/16	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/16	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/16	<1.0		mg/L	
			Carbonate (CO3)	2022/06/16	<1.0		mg/L	
			Hydroxide (OH)	2022/06/16	<1.0		mg/L	
A612539	MEL	Method Blank	Conductivity	2022/06/16	<2.0		uS/cm	
A612540	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/16	<0.050		mg/L	
A612707	SKM	Method Blank	Nitrite (N)	2022/06/16	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/16	<0.010		mg/L	
A613005	BYM	Method Blank	Chemical Oxygen Demand	2022/06/17	<10		mg/L	
A613126	KGA	Method Blank	Total Suspended Solids	2022/06/17	<0.97		mg/L	
A613216	BYM	Method Blank	Total Sulphide	2022/06/17	<0.0018		mg/L	
A613222	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/20		107	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/20		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/20		103	%	50 - 140
			Benzene	2022/06/20	<0.00040		mg/L	
			Toluene	2022/06/20	<0.00040		mg/L	
			Ethylbenzene	2022/06/20	<0.00040		mg/L	
			m & p-Xylene	2022/06/20	<0.00080		mg/L	
			o-Xylene	2022/06/20	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/20	<0.10		mg/L	
A614223	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A614268	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/17	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/17	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/17	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/17	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/17	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/17	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/17	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/06/17	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/06/17	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/17	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/17	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/17	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/17	<0.30		mg/L	
A614665	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A614669	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A614774	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614777	MDO	Method Blank	Total Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614906	AFI	Method Blank	Chloride (Cl)	2022/06/19	<1.0		mg/L	
			Sulphate (SO4)	2022/06/19	<1.0		mg/L	
A615583	MAP	Method Blank	Total Nitrogen (N)	2022/06/20	<0.020		mg/L	
A613216	BYM	RPD [AVA564-09]	Total Sulphide	2022/06/17	NC		%	20
A613222	RSU	RPD [AVA564-15]	Benzene	2022/06/20	NC		%	30
			Toluene	2022/06/20	NC		%	30
			Ethylbenzene	2022/06/20	NC		%	30
			m & p-Xylene	2022/06/20	NC		%	30
			o-Xylene	2022/06/20	NC		%	30
			F1 (C6-C10)	2022/06/20	NC		%	30
A612531	KH2	RPD [AVA565-08]	Dissolved Aluminum (Al)	2022/06/18	2.0		%	20
			Dissolved Chromium (Cr)	2022/06/18	NC		%	20
			Dissolved Cobalt (Co)	2022/06/18	NC		%	20
			Dissolved Copper (Cu)	2022/06/18	7.0		%	20
			Dissolved Lead (Pb)	2022/06/18	NC		%	20
			Dissolved Antimony (Sb)	2022/06/18	NC		%	20
			Dissolved Molybdenum (Mo)	2022/06/18	4.4		%	20
			Dissolved Nickel (Ni)	2022/06/18	4.4		%	20
			Dissolved Selenium (Se)	2022/06/18	NC		%	20
			Dissolved Silver (Ag)	2022/06/18	NC		%	20
			Dissolved Arsenic (As)	2022/06/18	1.7		%	20
			Dissolved Thallium (Tl)	2022/06/18	NC		%	20
			Dissolved Tin (Sn)	2022/06/18	3.4		%	20
			Dissolved Titanium (Ti)	2022/06/18	7.7		%	20
			Dissolved Uranium (U)	2022/06/18	0.46		%	20
			Dissolved Vanadium (V)	2022/06/18	NC		%	20
			Dissolved Zinc (Zn)	2022/06/18	NC		%	20
			Dissolved Beryllium (Be)	2022/06/18	NC		%	20
A614268	MPU	RPD [AVA565-08]	Dissolved Iron (Fe)	2022/06/17	2.5		%	20
			Dissolved Lithium (Li)	2022/06/17	NC		%	20
			Dissolved Magnesium (Mg)	2022/06/17	0.71		%	20
			Dissolved Manganese (Mn)	2022/06/17	8.5		%	20
			Dissolved Potassium (K)	2022/06/17	1.4		%	20
			Dissolved Sodium (Na)	2022/06/17	0.26		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Strontium (Sr)	2022/06/17	0.17		%	20
			Dissolved Sulphur (S)	2022/06/17	0.98		%	20
			Dissolved Phosphorus (P)	2022/06/17	NC		%	20
			Dissolved Barium (Ba)	2022/06/17	0.66		%	20
			Dissolved Silicon (Si)	2022/06/17	0.58		%	20
			Dissolved Boron (B)	2022/06/17	NC		%	20
			Dissolved Calcium (Ca)	2022/06/17	0.35		%	20
A612531	KH2	Matrix Spike [AVA565-08]	Dissolved Aluminum (Al)	2022/06/18		97	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/18		105	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/18		103	%	80 - 120
			Dissolved Copper (Cu)	2022/06/18		104	%	80 - 120
			Dissolved Lead (Pb)	2022/06/18		102	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/18		116	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/18		109	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/18		100	%	80 - 120
			Dissolved Selenium (Se)	2022/06/18		112	%	80 - 120
			Dissolved Silver (Ag)	2022/06/18		103	%	80 - 120
			Dissolved Arsenic (As)	2022/06/18		102	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/18		100	%	80 - 120
			Dissolved Tin (Sn)	2022/06/18		104	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/18		108	%	80 - 120
			Dissolved Uranium (U)	2022/06/18		105	%	80 - 120
			Dissolved Vanadium (V)	2022/06/18		106	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/18		108	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/18		93	%	80 - 120
A613216	BYM	Matrix Spike [AVA565-09]	Total Sulphide	2022/06/17		NC	%	80 - 120
A613222	RSU	Matrix Spike [AVA565-15]	1,4-Difluorobenzene (sur.)	2022/06/20		106	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/20		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/20		100	%	50 - 140
			Benzene	2022/06/20		113	%	50 - 140
			Toluene	2022/06/20		108	%	50 - 140
			Ethylbenzene	2022/06/20		104	%	50 - 140
			m & p-Xylene	2022/06/20		103	%	50 - 140
			o-Xylene	2022/06/20		100	%	50 - 140
			F1 (C6-C10)	2022/06/20		78	%	60 - 140
A614268	MPU	Matrix Spike [AVA565-08]	Dissolved Iron (Fe)	2022/06/17		102	%	80 - 120
			Dissolved Lithium (Li)	2022/06/17		95	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/17		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/17		100	%	80 - 120
			Dissolved Potassium (K)	2022/06/17		96	%	80 - 120
			Dissolved Sodium (Na)	2022/06/17		93	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/17		92	%	80 - 120
			Dissolved Sulphur (S)	2022/06/17		102	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/17		105	%	80 - 120
			Dissolved Barium (Ba)	2022/06/17		93	%	80 - 120
			Dissolved Silicon (Si)	2022/06/17		96	%	80 - 120
			Dissolved Boron (B)	2022/06/17		94	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/17		96	%	80 - 120
A610674	KGA	LCS	Turbidity	2022/06/15		102	%	80 - 120
A610834	GG3	LCS	O-TERPHENYL (sur.)	2022/06/17		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17		97	%	60 - 140
A610837	JU2	LCS	D10-ANTHRACENE (sur.)	2022/06/18		114	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			TERPHENYL-D14 (sur.)	2022/06/18		109	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		96	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		78	%	50 - 130
			Acenaphthene	2022/06/18		91	%	50 - 130
			Acenaphthylene	2022/06/18		91	%	50 - 130
			Acridine	2022/06/18		92	%	50 - 130
			Anthracene	2022/06/18		89	%	50 - 130
			Benzo(a)anthracene	2022/06/18		103	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/18		100	%	50 - 130
			Benzo(k)fluoranthene	2022/06/18		103	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/18		113	%	50 - 130
			Benzo(c)phenanthrene	2022/06/18		106	%	50 - 130
			Benzo(a)pyrene	2022/06/18		98	%	50 - 130
			Benzo(e)pyrene	2022/06/18		93	%	50 - 130
			Chrysene	2022/06/18		102	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/18		115	%	50 - 130
			Fluoranthene	2022/06/18		96	%	50 - 130
			Fluorene	2022/06/18		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/18		111	%	50 - 130
			1-Methylnaphthalene	2022/06/18		74	%	50 - 130
			2-Methylnaphthalene	2022/06/18		90	%	50 - 130
			Naphthalene	2022/06/18		92	%	50 - 130
			Phenanthrene	2022/06/18		97	%	50 - 130
			Perylene	2022/06/18		96	%	50 - 130
			Pyrene	2022/06/18		96	%	50 - 130
			Quinoline	2022/06/18		85	%	50 - 130
A611370	HE1	LCS	Total Dissolved Solids	2022/06/16		102	%	80 - 120
A611721	JB9	LCS	Total Oil and grease	2022/06/16		105	%	70 - 130
A611839	JAB	LCS	Dissolved Mercury (Hg)	2022/06/17		96	%	80 - 120
A611844	JAB	LCS	Total Mercury (Hg)	2022/06/17		96	%	80 - 120
A612080	MTG	LCS	Biochemical Oxygen Demand	2022/06/21		93	%	85 - 115
A612362	FM0	LCS	True Colour	2022/06/16		98	%	80 - 120
A612531	KH2	LCS	Dissolved Aluminum (Al)	2022/06/18		92	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/18		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/18		97	%	80 - 120
			Dissolved Copper (Cu)	2022/06/18		100	%	80 - 120
			Dissolved Lead (Pb)	2022/06/18		95	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/18		107	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/18		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/18		97	%	80 - 120
			Dissolved Selenium (Se)	2022/06/18		107	%	80 - 120
			Dissolved Silver (Ag)	2022/06/18		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/18		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/18		93	%	80 - 120
			Dissolved Tin (Sn)	2022/06/18		99	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/18		100	%	80 - 120
			Dissolved Uranium (U)	2022/06/18		95	%	80 - 120
			Dissolved Vanadium (V)	2022/06/18		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/18		103	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/18		90	%	80 - 120
A612532	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/16		99	%	80 - 120
A612538	MEL	LCS	pH	2022/06/16		100	%	97 - 103

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A612539	MEL	LCS	Conductivity	2022/06/16		101	%	90 - 110
A612540	MEL	LCS	Dissolved Fluoride (F)	2022/06/16		93	%	80 - 120
A612707	SKM	LCS	Nitrite (N)	2022/06/16		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/16		106	%	80 - 120
A613005	BYM	LCS	Chemical Oxygen Demand	2022/06/17		101	%	80 - 120
A613126	KGA	LCS	Total Suspended Solids	2022/06/17		103	%	80 - 120
A613216	BYM	LCS	Total Sulphide	2022/06/17		104	%	80 - 120
A613222	RSU	LCS	1,4-Difluorobenzene (sur.)	2022/06/20		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/20		94	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/20		94	%	50 - 140
			Benzene	2022/06/20		107	%	60 - 130
			Toluene	2022/06/20		103	%	60 - 130
			Ethylbenzene	2022/06/20		99	%	60 - 130
			m & p-Xylene	2022/06/20		98	%	60 - 130
			o-Xylene	2022/06/20		95	%	60 - 130
			F1 (C6-C10)	2022/06/20		93	%	60 - 140
A614223	ACR	LCS	Total Ammonia (N)	2022/06/19		101	%	80 - 120
A614268	MPU	LCS	Dissolved Iron (Fe)	2022/06/17		103	%	80 - 120
			Dissolved Lithium (Li)	2022/06/17		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/17		102	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/17		101	%	80 - 120
			Dissolved Potassium (K)	2022/06/17		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/17		94	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/17		94	%	80 - 120
			Dissolved Sulphur (S)	2022/06/17		100	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/17		105	%	80 - 120
			Dissolved Barium (Ba)	2022/06/17		95	%	80 - 120
			Dissolved Silicon (Si)	2022/06/17		98	%	80 - 120
			Dissolved Boron (B)	2022/06/17		95	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/17		97	%	80 - 120
A614665	MFP	LCS	Total Aluminum (Al)	2022/06/21		101	%	80 - 120
			Total Chromium (Cr)	2022/06/21		106	%	80 - 120
			Total Cobalt (Co)	2022/06/21		107	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		104	%	80 - 120
			Total Antimony (Sb)	2022/06/21		109	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		105	%	80 - 120
			Total Nickel (Ni)	2022/06/21		106	%	80 - 120
			Total Selenium (Se)	2022/06/21		110	%	80 - 120
			Total Silver (Ag)	2022/06/21		107	%	80 - 120
			Total Arsenic (As)	2022/06/21		104	%	80 - 120
			Total Thallium (Tl)	2022/06/21		103	%	80 - 120
			Total Tin (Sn)	2022/06/21		104	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		106	%	80 - 120
			Total Beryllium (Be)	2022/06/21		102	%	80 - 120
A614669	MPU	LCS	Total Iron (Fe)	2022/06/20		111	%	80 - 120
			Total Lithium (Li)	2022/06/20		104	%	80 - 120
			Total Magnesium (Mg)	2022/06/20		101	%	80 - 120
			Total Manganese (Mn)	2022/06/20		106	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Potassium (K)	2022/06/20		100	%	80 - 120
			Total Sodium (Na)	2022/06/20		101	%	80 - 120
			Total Strontium (Sr)	2022/06/20		99	%	80 - 120
			Total Sulphur (S)	2022/06/20		99	%	80 - 120
			Total Phosphorus (P)	2022/06/20		102	%	80 - 120
			Total Barium (Ba)	2022/06/20		101	%	80 - 120
			Total Silicon (Si)	2022/06/20		104	%	80 - 120
			Total Boron (B)	2022/06/20		104	%	80 - 120
			Total Calcium (Ca)	2022/06/20		100	%	80 - 120
A614774	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/20		105	%	80 - 120
A614777	MDO	LCS	Total Organic Carbon (C)	2022/06/20		111	%	80 - 120
A614906	AFI	LCS	Chloride (Cl)	2022/06/19		100	%	80 - 120
			Sulphate (SO4)	2022/06/19		102	%	80 - 120
A615583	MAP	LCS	Total Nitrogen (N)	2022/06/20		104	%	80 - 120
A615583	MAP	SRM	Total Nitrogen (N)	2022/06/20		102	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

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Janet Gao, B.Sc., QP, Supervisor, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

Sze Yeung Fock, B.Sc., Scientific Specialist

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EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

410

C of C # 292888

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☑ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150, 205 QUARRY PARK BLVD, SE CALGARY, AB T2C 3E7	Address: 150, 205 QUARRY PARK BLVD, SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): TINO NGUBE/ALEX HAIGH	Consultant Project #: 417085-42051

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☒ DIS ☒	MERCURY: TOTAL ☑ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY: pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	O&G	FLOURIDE
1	AEMP-06		X			17	2022/06/12	13:00	X			X	X								X	X						X	X	X	X	X	X	X	X
2	AEMP-07		X			17	↓	13:40	X			X	X								X	X						X	X	X	X	X	X	X	X
3																																				
4																																				
5																																				
6																																				
7																																				
8																																				
9																																				
10																																				

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email canada.chemistry@worley.com cgeal.iordatamtrack@worley.com
Headspace and/or sediment may be present. Please proceed with analysis
IES A2601436

JARS USED & NOT SUBMITTED Enter N/A for Water: N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #				YES	NO	COOLER ID # MCAL				YES	NO	COOLER ID #			
SEAL PRESENT	✓						✓											
SEAL INTACT	✓		TEMP °C	2	4	3	✓		TEMP °C	6	5	5			TEMP °C			
COOLING MEDIA PRESENT				1	2	3	✓			1	2	3				1	2	3

LAB USE ONLY
MAXXAM JOB # C241300

SAMPLES
LABELED BY: KVT
VERIFIED BY: MBY

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	TINO NGUBE	2022/06/13	10:00	1.	Alexandre Escobar-Lopez	2022/06/14	17:26
2.				2.	Anderson Tarey	2022/06/15	06:00
3.				3.			

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292887

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/28
Report #: R3192513
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241302
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	2		Auto Calc
PAH in Water by GC/MS (1)	2	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	2	AB SOP-00005	SM 23 4500-H+B m

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Task Order#: pending
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Site#:
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Project #: 417085-42051
Your C.O.C. #: 292887

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/28
Report #: R3192513
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241302
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

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Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292887

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/28
Report #: R3192513
Version: 2 - Final

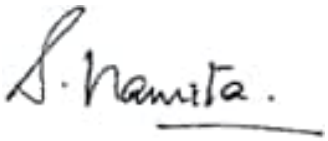
CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241302

Received: 2022/06/14, 17:26

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
28 Jun 2022 10:19:19

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVA567	AVA568		
Sampling Date		2022/06/11 14:00	2022/06/11 14:05		
COC Number		292887	292887		
	UNITS	**AEMP-04**	**2022-DUP1**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	0.10	A610834
Volatiles					
Benzene	mg/L	<0.00040	<0.00040	0.00040	A612412
Toluene	mg/L	<0.00040	<0.00040	0.00040	A612412
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	A612412
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	A612412
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	A612412
Xylenes (Total)	mg/L	<0.00089	<0.00089	0.00089	A610891
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	0.10	A610891
F1 (C6-C10)	mg/L	<0.10	<0.10	0.10	A612412
Extraction Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	102	83		A610834
Instrument Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	96	93		A612412
4-Bromofluorobenzene (sur.)	%	127	128		A612412
D4-1,2-Dichloroethane (sur.)	%	99	100		A612412
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVA567	AVA568		
Sampling Date		2022/06/11 14:00	2022/06/11 14:05		
COC Number		292887	292887		
	UNITS	**AEMP-04**	**2022-DUP1**	**RDL**	**QC Batch**
Calculated Parameters					
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.24	0.24	0.020	A609774
Nutrients					
Total Nitrogen (N)	mg/L	0.27	0.28	0.020	A615583
RDL = Reportable Detection Limit					

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Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA567		AVA568		
Sampling Date		2022/06/11 14:00		2022/06/11 14:05		
COC Number		292887		292887		
	UNITS	**AEMP-04**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	<0.000020	A610723	<0.000020	0.000020	A610723
Total Aluminum (Al)	mg/L	0.024	A615527	0.037	0.0030	A614665
Total Antimony (Sb)	mg/L	<0.00060	A615527	<0.00060	0.00060	A614665
Total Arsenic (As)	mg/L	<0.00020	A615527	0.00023	0.00020	A614665
Total Barium (Ba)	mg/L	0.074	A615538	0.073	0.010	A614669
Total Beryllium (Be)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
Total Boron (B)	mg/L	0.029	A615538	0.023	0.020	A614669
Total Calcium (Ca)	mg/L	66	A615538	66	0.30	A614669
Total Chromium (Cr)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
Total Cobalt (Co)	mg/L	<0.00030	A615527	<0.00030	0.00030	A614665
Total Copper (Cu)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
Total Iron (Fe)	mg/L	0.089	A615538	0.081	0.060	A614669
Total Lead (Pb)	mg/L	<0.00020	A615527	<0.00020	0.00020	A614665
Total Lithium (Li)	mg/L	<0.020	A615538	<0.020	0.020	A614669
Total Magnesium (Mg)	mg/L	24	A615538	24	0.20	A614669
Total Manganese (Mn)	mg/L	<0.0040	A615538	0.0040	0.0040	A614669
Total Molybdenum (Mo)	mg/L	0.0018	A615527	0.0018	0.00020	A614665
Total Nickel (Ni)	mg/L	0.00082	A615527	0.00089	0.00050	A614665
Total Phosphorus (P)	mg/L	<0.10	A615538	<0.10	0.10	A614669
Total Potassium (K)	mg/L	0.93	A615538	0.92	0.30	A614669
Total Selenium (Se)	mg/L	<0.00020	A615527	0.00025	0.00020	A614665
Total Silicon (Si)	mg/L	1.9	A615538	1.8	0.10	A614669
Total Silver (Ag)	mg/L	<0.00010	A615527	<0.00010	0.00010	A614665
Total Sodium (Na)	mg/L	15	A615538	15	0.50	A614669
Total Strontium (Sr)	mg/L	1.2	A615538	1.2	0.020	A614669
Total Sulphur (S)	mg/L	36	A615538	37	0.20	A614669
Total Thallium (Tl)	mg/L	<0.00020	A615527	<0.00020	0.00020	A614665
Total Tin (Sn)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
Total Titanium (Ti)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
Total Uranium (U)	mg/L	0.0011	A615527	0.0011	0.00010	A614665
Total Vanadium (V)	mg/L	<0.0010	A615527	<0.0010	0.0010	A614665
RDL = Reportable Detection Limit						

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Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA567		AVA568		
Sampling Date		2022/06/11 14:00		2022/06/11 14:05		
COC Number		292887		292887		
	UNITS	**AEMP-04**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	<0.0030	A615527	<0.0030	0.0030	A614665
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA567			AVA567			AVA568		
Sampling Date		2022/06/11 14:00			2022/06/11 14:00			2022/06/11 14:05		
COC Number		292887			292887			292887		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	290	0.50	A610897				290	0.50	A610897
Ion Balance (% Difference)	%	1.6	N/A	A610854				1.5	N/A	A610854
Nitrate (N)	mg/L	0.031	0.010	A610960				0.038	0.010	A610960
Nitrate (NO3)	mg/L	0.14	0.044	A611066				0.17	0.044	A611066
Nitrite (NO2)	mg/L	<0.033	0.033	A611066				<0.033	0.033	A611066
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A611067				<0.0020	0.0020	A611067
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A612080				<2.0	2.0	A612080
Chemical Oxygen Demand	mg/L	22	10	A618469	21	10	A618469	21	10	A618469
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A610806				<0.000020	0.000020	A610806
Misc. Inorganics										
Conductivity	uS/cm	580	2.0	A612539				580	2.0	A612539
Dissolved Organic Carbon (C)	mg/L	4.2	0.50	A614774				4.3	0.50	A614774
pH	pH	8.21	N/A	A612538				8.22	N/A	A612538
Total Organic Carbon (C)	mg/L	4.0	0.50	A614777				4.1	0.50	A614777
Total Dissolved Solids	mg/L	370	10	A611370				360	10	A611370
Total Suspended Solids	mg/L	1.6	0.99	A612111	1.1	1.0	A612111	<0.97	0.97	A612111
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Alkalinity (Total as CaCO3)	mg/L	160	1.0	A612532				170	1.0	A612532
Bicarbonate (HCO3)	mg/L	200	1.0	A612532				200	1.0	A612532
Carbonate (CO3)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Dissolved Fluoride (F)	mg/L	0.18	0.050	A612540				0.18	0.050	A612540
Hydroxide (OH)	mg/L	<1.0	1.0	A612532				<1.0	1.0	A612532
Total Sulphide	mg/L	<0.0018	0.0018	A612046	<0.0018	0.0018	A612046	<0.0018 (1)	0.0018	A612046
Chloride (Cl)	mg/L	19	1.0	A614906				18	1.0	A614906
Sulphate (SO4)	mg/L	120	1.0	A614906				120	1.0	A614906

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Matrix spike exceeds acceptance limits due to matrix interference.

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA567			AVA567			AVA568		
Sampling Date		2022/06/11 14:00			2022/06/11 14:00			2022/06/11 14:05		
COC Number		292887			292887			292887		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A614223				<0.015	0.015	A614223
Nitrite (N)	mg/L	<0.010	0.010	A611925				<0.010	0.010	A611925
Nitrate plus Nitrite (N)	mg/L	0.031	0.010	A611925				0.038	0.010	A611925
Misc. Organics										
Total Oil and grease	mg/L	<2.0	2.0	A611721				<2.0	2.0	A611721
Physical Properties										
True Colour	PtCo units	11	2.0	A612362				13	2.0	A612362
Physical Properties										
Turbidity	NTU	1.2	0.10	A612059				1.2	0.10	A612059

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVA567	AVA568		
Sampling Date		2022/06/11 14:00	2022/06/11 14:05		
COC Number		292887	292887		
	UNITS	**AEMP-04**	**2022-DUP1**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	A610518
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acridine	mg/L	<0.000040	<0.000040	0.000040	A610837
Anthracene	mg/L	<0.000010	<0.000010	0.000010	A610837
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Chrysene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	A610837
Fluorene	mg/L	<0.000050	<0.000050	0.000050	A610837
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
Naphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
Phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Perylene	mg/L	<0.000050	<0.000050	0.000050	A610837
Pyrene	mg/L	<0.000020	<0.000020	0.000020	A610837
Quinoline	mg/L	<0.00020	<0.00020	0.00020	A610837
Extraction Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	111	96		A610837
D8-ACENAPHTHYLENE (sur.)	%	96	84		A610837
D8-NAPHTHALENE (sur.)	%	78	67		A610837
TERPHENYL-D14 (sur.)	%	107	92		A610837
RDL = Reportable Detection Limit					

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVA567	AVA568			AVA568		
Sampling Date		2022/06/11 14:00	2022/06/11 14:05			2022/06/11 14:05		
COC Number		292887	292887			292887		
	UNITS	**AEMP-04**	**2022-DUP1**	**RDL**	**QC Batch**	**2022-DUP1 Lab-Dup**	**RDL**	**QC Batch**
Elements								
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A611839	<0.0019	0.0019	A611839
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A611844			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA567			AVA567			AVA568		
Sampling Date		2022/06/11 14:00			2022/06/11 14:00			2022/06/11 14:05		
COC Number		292887			292887			292887		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Elements										
Dissolved Aluminum (Al)	mg/L	0.016	0.0030	A620038	0.014	0.0030	A620038	<0.0030	0.0030	A612531
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A612531				<0.00060	0.00060	A612531
Dissolved Arsenic (As)	mg/L	<0.00020	0.00020	A612531				<0.00020	0.00020	A612531
Dissolved Barium (Ba)	mg/L	0.073	0.010	A614268				0.073	0.010	A614268
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A612531				<0.0010	0.0010	A612531
Dissolved Boron (B)	mg/L	0.023	0.020	A614268				0.024	0.020	A614268
Dissolved Calcium (Ca)	mg/L	71	0.30	A614268				71	0.30	A614268
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A612531				<0.0010	0.0010	A612531
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A612531				<0.00030	0.00030	A612531
Dissolved Copper (Cu)	mg/L	0.0060	0.0010	A620038	0.0059	0.0010	A620038	<0.0010	0.0010	A620038
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A614268				<0.060	0.060	A614268
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A612531				<0.00020	0.00020	A612531
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A614268				<0.020	0.020	A614268
Dissolved Magnesium (Mg)	mg/L	27	0.20	A614268				27	0.20	A614268
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	A614268				<0.0040	0.0040	A614268
Dissolved Molybdenum (Mo)	mg/L	0.0016	0.00020	A612531				0.0015	0.00020	A612531
Dissolved Nickel (Ni)	mg/L	0.00062	0.00050	A612531				<0.00050	0.00050	A612531
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A614268				<0.10	0.10	A614268
Dissolved Potassium (K)	mg/L	1.1	0.30	A614268				1.1	0.30	A614268
Dissolved Selenium (Se)	mg/L	<0.00020	0.00020	A612531				<0.00020	0.00020	A612531
Dissolved Silicon (Si)	mg/L	1.8	0.10	A614268				1.8	0.10	A614268
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A612531				<0.00010	0.00010	A612531
Dissolved Sodium (Na)	mg/L	16	0.50	A614268				16	0.50	A614268
Dissolved Strontium (Sr)	mg/L	1.2	0.020	A614268				1.2	0.020	A614268
Dissolved Sulphur (S)	mg/L	41	0.20	A614268				41	0.20	A614268
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A612531				<0.00020	0.00020	A612531
Dissolved Tin (Sn)	mg/L	0.0012	0.0010	A612531				0.0014	0.0010	A612531
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A620038	<0.0010	0.0010	A620038	<0.0010	0.0010	A612531
Dissolved Uranium (U)	mg/L	0.00095	0.00010	A612531				0.00098	0.00010	A612531
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A612531				<0.0010	0.0010	A612531

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA567			AVA567			AVA568		
Sampling Date		2022/06/11 14:00			2022/06/11 14:00			2022/06/11 14:05		
COC Number		292887			292887			292887		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	<0.0030	0.0030	A612531				<0.0030	0.0030	A612531

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA567
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A618469	N/A	2022/06/22	Amy Phan
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/17	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/16	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A615538	2022/06/20	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A620038	N/A	2022/06/23	Kevin Huang
Elements by ICPMS - Total	ICPM	A615527	2022/06/20	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A611925	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A612059	N/A	2022/06/16	Grace O'Connor

Bureau Veritas ID: AVA567 Dup
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
COD by Colorimeter	M/PROB	A618469	N/A	2022/06/22	Amy Phan

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA567 Dup
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS - Dissolved	ICPM	A620038	N/A	2022/06/23	Kevin Huang
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu

Bureau Veritas ID: AVA568
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A618469	N/A	2022/06/22	Amy Phan
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/17	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/16	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A611925	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong

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Bureau Veritas Job #: C241302
Report Date: 2022/06/28

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA568
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A612059	N/A	2022/06/16	Grace O'Connor

Bureau Veritas ID: AVA568 Dup
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 5.3 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AVA567 [AEMP-04] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA568 [2022-DUP1] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA567, Elements by ICPMS - Dissolved: Test repeated.
Sample AVA568, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA567	AEMP-04	Water	BOD	DEMA	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA567	AEMP-04	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA567	AEMP-04	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA567	AEMP-04	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA568	2022-DUP1	Water	BOD	DEMA	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA568	2022-DUP1	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA568	2022-DUP1	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA568	2022-DUP1	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A610834	GG3	Method Blank	O-TERPHENYL (sur.)	2022/06/17		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17	<0.10		mg/L	
A610837	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/06/18		116	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		105	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		84	%	50 - 130
			Acenaphthene	2022/06/18	<0.00010		mg/L	
			Acenaphthylene	2022/06/18	<0.00010		mg/L	
			Acridine	2022/06/18	<0.000040		mg/L	
			Anthracene	2022/06/18	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/18	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/18	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/18	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/18	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/18	<0.000050		mg/L	
			Chrysene	2022/06/18	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/18	<0.0000075		mg/L	
			Fluoranthene	2022/06/18	<0.000010		mg/L	
			Fluorene	2022/06/18	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/18	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			Naphthalene	2022/06/18	<0.00010		mg/L	
			Phenanthrene	2022/06/18	<0.000050		mg/L	
			Perylene	2022/06/18	<0.000050		mg/L	
			Pyrene	2022/06/18	<0.000020		mg/L	
			Quinoline	2022/06/18	<0.00020		mg/L	
A611370	HE1	Method Blank	Total Dissolved Solids	2022/06/16	<10		mg/L	
A611721	JB9	Method Blank	Total Oil and grease	2022/06/16	<2.0		mg/L	
A611839	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611844	JAB	Method Blank	Total Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611925	SKM	Method Blank	Nitrite (N)	2022/06/16	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/16	<0.010		mg/L	
A612046	BYM	Method Blank	Total Sulphide	2022/06/16	<0.0018		mg/L	
A612059	GOC	Method Blank	Turbidity	2022/06/16	<0.10		NTU	
A612080	MTG	Method Blank	Biochemical Oxygen Demand	2022/06/21	<2.0		mg/L	
A612111	LYV	Method Blank	Total Suspended Solids	2022/06/16	<0.97		mg/L	
A612362	FM0	Method Blank	True Colour	2022/06/16	<2.0		PtCo units	
A612412	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/19		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/19		128	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/19		95	%	50 - 140
			Benzene	2022/06/19	<0.00040		mg/L	
			Toluene	2022/06/19	<0.00040		mg/L	
			Ethylbenzene	2022/06/19	<0.00040		mg/L	
			m & p-Xylene	2022/06/19	<0.00080		mg/L	
			o-Xylene	2022/06/19	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/19	<0.10		mg/L	
A612531	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/18	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/18	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/18	<0.00030		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Lead (Pb)	2022/06/18	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/18	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/18	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/06/18	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/18	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/06/18	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/18	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/18	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/06/18	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/18	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/18	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/18	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/06/18	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/18	<0.0010		mg/L	
A612532	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/16	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/16	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/16	<1.0		mg/L	
			Carbonate (CO3)	2022/06/16	<1.0		mg/L	
			Hydroxide (OH)	2022/06/16	<1.0		mg/L	
A612539	MEL	Method Blank	Conductivity	2022/06/16	<2.0		uS/cm	
A612540	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/16	<0.050		mg/L	
A614223	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A614268	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/17	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/17	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/17	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/17	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/17	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/17	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/17	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/06/17	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/06/17	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/17	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/17	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/17	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/17	<0.30		mg/L	
A614665	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A614669	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A614774	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614777	MDO	Method Blank	Total Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614906	AFI	Method Blank	Chloride (Cl)	2022/06/19	<1.0		mg/L	
			Sulphate (SO4)	2022/06/19	<1.0		mg/L	
A615527	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A615538	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A615583	MAP	Method Blank	Total Nitrogen (N)	2022/06/20	<0.020		mg/L	
A618469	AP1	Method Blank	Chemical Oxygen Demand	2022/06/22	<10		mg/L	
A620038	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/23	<0.0030		mg/L	

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Copper (Cu)	2022/06/23	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/23	<0.0010		mg/L	
A612046	BYM	RPD [AVA567-09]	Total Sulphide	2022/06/16	NC		%	20
A612111	LYV	RPD [AVA567-02]	Total Suspended Solids	2022/06/16	NC		%	20
A618469	AP1	RPD [AVA567-05]	Chemical Oxygen Demand	2022/06/22	4.9		%	20
A620038	KH2	RPD [AVA567-08]	Dissolved Aluminum (Al)	2022/06/23	13		%	20
			Dissolved Copper (Cu)	2022/06/23	2.1		%	20
			Dissolved Titanium (Ti)	2022/06/23	NC		%	20
A611839	JAB	RPD [AVA568-11]	Dissolved Mercury (Hg)	2022/06/17	NC		%	20
A611839	JAB	Matrix Spike [AVA567-11]	Dissolved Mercury (Hg)	2022/06/17		97	%	80 - 120
A612046	BYM	Matrix Spike [AVA568-09]	Total Sulphide	2022/06/16		122 (1)	%	80 - 120
A612111	LYV	Matrix Spike [AVA568-02]	Total Suspended Solids	2022/06/16		109	%	80 - 120
A614669	MPU	Matrix Spike [AVA568-07]	Total Iron (Fe)	2022/06/20		110	%	80 - 120
			Total Lithium (Li)	2022/06/20		103	%	80 - 120
			Total Magnesium (Mg)	2022/06/20		103	%	80 - 120
			Total Manganese (Mn)	2022/06/20		106	%	80 - 120
			Total Potassium (K)	2022/06/20		101	%	80 - 120
			Total Sodium (Na)	2022/06/20		102	%	80 - 120
			Total Strontium (Sr)	2022/06/20		100	%	80 - 120
			Total Sulphur (S)	2022/06/20		102	%	80 - 120
			Total Phosphorus (P)	2022/06/20		103	%	80 - 120
			Total Barium (Ba)	2022/06/20		102	%	80 - 120
			Total Silicon (Si)	2022/06/20		106	%	80 - 120
			Total Boron (B)	2022/06/20		105	%	80 - 120
			Total Calcium (Ca)	2022/06/20		NC	%	80 - 120
A618469	AP1	Matrix Spike [AVA567-05]	Chemical Oxygen Demand	2022/06/22		104	%	80 - 120
A620038	KH2	Matrix Spike [AVA567-08]	Dissolved Aluminum (Al)	2022/06/23		100	%	80 - 120
			Dissolved Copper (Cu)	2022/06/23		98	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/23		101	%	80 - 120
A610834	GG3	LCS	O-TERPHENYL (sur.)	2022/06/17		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17		97	%	60 - 140
A610837	JU2	LCS	D10-ANTHRACENE (sur.)	2022/06/18		114	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		109	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		96	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		78	%	50 - 130
			Acenaphthene	2022/06/18		91	%	50 - 130
			Acenaphthylene	2022/06/18		91	%	50 - 130
			Acridine	2022/06/18		92	%	50 - 130
			Anthracene	2022/06/18		89	%	50 - 130
			Benzo(a)anthracene	2022/06/18		103	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/18		100	%	50 - 130
			Benzo(k)fluoranthene	2022/06/18		103	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/18		113	%	50 - 130
			Benzo(c)phenanthrene	2022/06/18		106	%	50 - 130
			Benzo(a)pyrene	2022/06/18		98	%	50 - 130
			Benzo(e)pyrene	2022/06/18		93	%	50 - 130
			Chrysene	2022/06/18		102	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/18		115	%	50 - 130
			Fluoranthene	2022/06/18		96	%	50 - 130
			Fluorene	2022/06/18		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/18		111	%	50 - 130
			1-Methylnaphthalene	2022/06/18		74	%	50 - 130

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2022/06/18		90	%	50 - 130
			Naphthalene	2022/06/18		92	%	50 - 130
			Phenanthrene	2022/06/18		97	%	50 - 130
			Perylene	2022/06/18		96	%	50 - 130
			Pyrene	2022/06/18		96	%	50 - 130
			Quinoline	2022/06/18		85	%	50 - 130
A611370	HE1	LCS	Total Dissolved Solids	2022/06/16		102	%	80 - 120
A611721	JB9	LCS	Total Oil and grease	2022/06/16		105	%	70 - 130
A611839	JAB	LCS	Dissolved Mercury (Hg)	2022/06/17		96	%	80 - 120
A611844	JAB	LCS	Total Mercury (Hg)	2022/06/17		96	%	80 - 120
A611925	SKM	LCS	Nitrite (N)	2022/06/16		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/16		109	%	80 - 120
A612046	BYM	LCS	Total Sulphide	2022/06/16		89	%	80 - 120
A612059	GOC	LCS	Turbidity	2022/06/16		102	%	80 - 120
A612080	MTG	LCS	Biochemical Oxygen Demand	2022/06/21		93	%	85 - 115
A612111	LYV	LCS	Total Suspended Solids	2022/06/16		98	%	80 - 120
A612362	FM0	LCS	True Colour	2022/06/16		98	%	80 - 120
A612412	WPK	LCS	1,4-Difluorobenzene (sur.)	2022/06/19		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/19		124	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/19		99	%	50 - 140
			Benzene	2022/06/19		92	%	60 - 130
			Toluene	2022/06/19		87	%	60 - 130
			Ethylbenzene	2022/06/19		86	%	60 - 130
			m & p-Xylene	2022/06/19		81	%	60 - 130
			o-Xylene	2022/06/19		75	%	60 - 130
			F1 (C6-C10)	2022/06/19		85	%	60 - 140
A612531	KH2	LCS	Dissolved Aluminum (Al)	2022/06/18		92	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/18		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/18		97	%	80 - 120
			Dissolved Lead (Pb)	2022/06/18		95	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/18		107	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/18		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/18		97	%	80 - 120
			Dissolved Selenium (Se)	2022/06/18		107	%	80 - 120
			Dissolved Silver (Ag)	2022/06/18		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/18		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/18		93	%	80 - 120
			Dissolved Tin (Sn)	2022/06/18		99	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/18		100	%	80 - 120
			Dissolved Uranium (U)	2022/06/18		95	%	80 - 120
			Dissolved Vanadium (V)	2022/06/18		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/18		103	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/18		90	%	80 - 120
A612532	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/16		99	%	80 - 120
A612538	MEL	LCS	pH	2022/06/16		100	%	97 - 103
A612539	MEL	LCS	Conductivity	2022/06/16		101	%	90 - 110
A612540	MEL	LCS	Dissolved Fluoride (F)	2022/06/16		93	%	80 - 120
A614223	ACR	LCS	Total Ammonia (N)	2022/06/19		101	%	80 - 120
A614268	MPU	LCS	Dissolved Iron (Fe)	2022/06/17		103	%	80 - 120
			Dissolved Lithium (Li)	2022/06/17		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/17		102	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/17		101	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Potassium (K)	2022/06/17		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/17		94	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/17		94	%	80 - 120
			Dissolved Sulphur (S)	2022/06/17		100	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/17		105	%	80 - 120
			Dissolved Barium (Ba)	2022/06/17		95	%	80 - 120
			Dissolved Silicon (Si)	2022/06/17		98	%	80 - 120
			Dissolved Boron (B)	2022/06/17		95	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/17		97	%	80 - 120
A614665	MFP	LCS	Total Aluminum (Al)	2022/06/21		101	%	80 - 120
			Total Chromium (Cr)	2022/06/21		106	%	80 - 120
			Total Cobalt (Co)	2022/06/21		107	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		104	%	80 - 120
			Total Antimony (Sb)	2022/06/21		109	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		105	%	80 - 120
			Total Nickel (Ni)	2022/06/21		106	%	80 - 120
			Total Selenium (Se)	2022/06/21		110	%	80 - 120
			Total Silver (Ag)	2022/06/21		107	%	80 - 120
			Total Arsenic (As)	2022/06/21		104	%	80 - 120
			Total Thallium (Tl)	2022/06/21		103	%	80 - 120
			Total Tin (Sn)	2022/06/21		104	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		106	%	80 - 120
			Total Beryllium (Be)	2022/06/21		102	%	80 - 120
A614669	MPU	LCS	Total Iron (Fe)	2022/06/20		111	%	80 - 120
			Total Lithium (Li)	2022/06/20		104	%	80 - 120
			Total Magnesium (Mg)	2022/06/20		101	%	80 - 120
			Total Manganese (Mn)	2022/06/20		106	%	80 - 120
			Total Potassium (K)	2022/06/20		100	%	80 - 120
			Total Sodium (Na)	2022/06/20		101	%	80 - 120
			Total Strontium (Sr)	2022/06/20		99	%	80 - 120
			Total Sulphur (S)	2022/06/20		99	%	80 - 120
			Total Phosphorus (P)	2022/06/20		102	%	80 - 120
			Total Barium (Ba)	2022/06/20		101	%	80 - 120
			Total Silicon (Si)	2022/06/20		104	%	80 - 120
			Total Boron (B)	2022/06/20		104	%	80 - 120
			Total Calcium (Ca)	2022/06/20		100	%	80 - 120
A614774	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/20		105	%	80 - 120
A614777	MDO	LCS	Total Organic Carbon (C)	2022/06/20		111	%	80 - 120
A614906	AFI	LCS	Chloride (Cl)	2022/06/19		100	%	80 - 120
			Sulphate (SO4)	2022/06/19		102	%	80 - 120
A615527	MFP	LCS	Total Aluminum (Al)	2022/06/21		97	%	80 - 120
			Total Chromium (Cr)	2022/06/21		107	%	80 - 120
			Total Cobalt (Co)	2022/06/21		106	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		99	%	80 - 120
			Total Antimony (Sb)	2022/06/21		105	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		103	%	80 - 120
			Total Nickel (Ni)	2022/06/21		105	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Selenium (Se)	2022/06/21		113	%	80 - 120
			Total Silver (Ag)	2022/06/21		103	%	80 - 120
			Total Arsenic (As)	2022/06/21		103	%	80 - 120
			Total Thallium (Tl)	2022/06/21		100	%	80 - 120
			Total Tin (Sn)	2022/06/21		101	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		107	%	80 - 120
			Total Beryllium (Be)	2022/06/21		103	%	80 - 120
A615538	MPU	LCS	Total Iron (Fe)	2022/06/21		105	%	80 - 120
			Total Lithium (Li)	2022/06/21		99	%	80 - 120
			Total Magnesium (Mg)	2022/06/21		98	%	80 - 120
			Total Manganese (Mn)	2022/06/21		101	%	80 - 120
			Total Potassium (K)	2022/06/21		98	%	80 - 120
			Total Sodium (Na)	2022/06/21		96	%	80 - 120
			Total Strontium (Sr)	2022/06/21		97	%	80 - 120
			Total Sulphur (S)	2022/06/21		93	%	80 - 120
			Total Phosphorus (P)	2022/06/21		93	%	80 - 120
			Total Barium (Ba)	2022/06/21		99	%	80 - 120
			Total Silicon (Si)	2022/06/21		100	%	80 - 120
			Total Boron (B)	2022/06/21		97	%	80 - 120
			Total Calcium (Ca)	2022/06/21		96	%	80 - 120
A615583	MAP	LCS	Total Nitrogen (N)	2022/06/20		104	%	80 - 120
A618469	AP1	LCS	Chemical Oxygen Demand	2022/06/22		102	%	80 - 120
A620038	KH2	LCS	Dissolved Aluminum (Al)	2022/06/23		99	%	80 - 120
			Dissolved Copper (Cu)	2022/06/23		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/23		98	%	80 - 120
A615583	MAP	SRM	Total Nitrogen (N)	2022/06/20		102	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

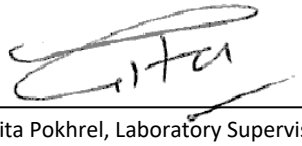
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



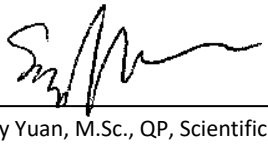
Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



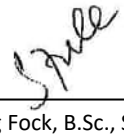
Gita Pokhrel, Laboratory Supervisor



Janet Gao, B.Sc., QP, Supervisor, Organics



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
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VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by:

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
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☑ Edmonton
9331 - 48 Street, T6B 2R4
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Fax: (780) 450-4187
Toll Free: (800) 386-7247

413

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 292887

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: ADVISIAN / WORLEY
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150 . 205 QUARRY PARK BLVD, SE CALGARY , AB T2C 3E7	Address: 150 . 205 QUARRY PARK BLVD, SE CALGARY . AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): TINO NGULUBE / ALEX HAIGH	Consultant Project #: 417085 - 42051

FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☒ DIS ☒	MERCURY: TOTAL ☑ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	O & G	FLOURIDE
1 AEMP-04		X			17	2022/06/11	14:00	X			X	X							X	X					X			X	X	X	X	X	X	X
2 2022-DUP1		X			17	2022/06/11	14:05	Y			X	Y							X	Y					X			X	X	X	X	X	X	X
3																																			
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

IOL SITE LOCATION: NORMAN WELLS / NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085 - 42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email canada.chemistry@worley.com cacct.ierdatatrack@worley.com
BOD past hold time, see email approval
IES A2601436

JARS USED & NOT SUBMITTED Enter N/A for Water: N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	3	2	-1
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # MCAL			
SEAL PRESENT	✓		TEMP °C	6	5	5
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C			
SEAL INTACT				1	2	3
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C241302

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	TINO NGULUBE	2022/06/12	10:00	1.	Alejandro Escalar-Lopez	2022/06/14	17:26
2.	Kyle VanThournout	2022/06/14	20:00	2.	Anderson Torres	2022/06/15	06:00
3.				3.			

SAMPLES
LABELED BY: KVT
VERIFIED BY: MBH

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292886

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190350
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241303
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292886

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190350
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241303
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292886

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190350
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241303

Received: 2022/06/14, 17:26

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Danielle Boisvert
Customer Solutions Representative
22 Jun 2022 18:14:32

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVA569			AVA569			AVA570		
Sampling Date		2022/06/11 11:45			2022/06/11 11:45			2022/06/11 12:10		
COC Number		292886			292886			292886		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A611514				<0.10	0.10	A611514
Volatiles										
Benzene	mg/L	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757
Toluene	mg/L	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757
Ethylbenzene	mg/L	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757
m & p-Xylene	mg/L	<0.00080	0.00080	A613757	<0.00080	0.00080	A613757	<0.00080	0.00080	A613757
o-Xylene	mg/L	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757	<0.00040	0.00040	A613757
Xylenes (Total)	mg/L	<0.00089	0.00089	A610891				<0.00089	0.00089	A610891
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A610891				<0.10	0.10	A610891
F1 (C6-C10)	mg/L	<0.10	0.10	A613757	<0.10	0.10	A613757	<0.10	0.10	A613757
Extraction Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	94		A611514				95		A611514
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	86		A613757	88		A613757	89		A613757
4-Bromofluorobenzene (sur.)	%	84		A613757	88		A613757	99		A613757
D4-1,2-Dichloroethane (sur.)	%	84		A613757	90		A613757	83		A613757

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVA571		
Sampling Date		2022/06/11 13:30		
COC Number		292886		
	UNITS	**AEMP-09**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A611514
Volatiles				
Benzene	mg/L	<0.00040	0.00040	A613757
Toluene	mg/L	<0.00040	0.00040	A613757
Ethylbenzene	mg/L	<0.00040	0.00040	A613757
m & p-Xylene	mg/L	<0.00080	0.00080	A613757
o-Xylene	mg/L	<0.00040	0.00040	A613757
Xylenes (Total)	mg/L	<0.00089	0.00089	A610891
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A610891
F1 (C6-C10)	mg/L	<0.10	0.10	A613757
Extraction Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	95		A611514
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	96		A613757
4-Bromofluorobenzene (sur.)	%	85		A613757
D4-1,2-Dichloroethane (sur.)	%	91		A613757
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVA569	AVA570		AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10		2022/06/11 13:30		
COC Number		292886	292886		292886		
	UNITS	**AEMP-02**	**AEMP-03**	**RDL**	**AEMP-09**	**RDL**	**QC Batch**
Calculated Parameters							
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.29	0.16	0.020	0.53	0.10	A609774
Nutrients							
Total Nitrogen (N)	mg/L	0.31	0.19	0.020	0.60 (1)	0.10	A615583

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA569	AVA570		AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10		2022/06/11 13:30		
COC Number		292886	292886		292886		
	UNITS	**AEMP-02**	**AEMP-03**	**QC Batch**	**AEMP-09**	**RDL**	**QC Batch**
Elements							
Total Cadmium (Cd)	mg/L	<0.000020	<0.000020	A610723	0.00035	0.000020	A610723
Total Aluminum (Al)	mg/L	0.038	0.030	A614665	7.6	0.0030	A615527
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	A614665	<0.00060	0.00060	A615527
Total Arsenic (As)	mg/L	0.00020	<0.00020	A614665	0.0085	0.00020	A615527
Total Barium (Ba)	mg/L	0.072	0.075	A614669	0.26	0.010	A615538
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	A614665	<0.0010	0.0010	A615527
Total Boron (B)	mg/L	0.025	0.024	A614669	0.030	0.020	A615538
Total Calcium (Ca)	mg/L	65	68	A614669	47	0.30	A615538
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	A614665	0.015	0.0010	A615527
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	A614665	0.0092	0.00030	A615527
Total Copper (Cu)	mg/L	<0.0010	<0.0010	A614665	0.018	0.0010	A615527
Total Iron (Fe)	mg/L	0.11	0.080	A614669	22	0.060	A615538
Total Lead (Pb)	mg/L	<0.00020	<0.00020	A614665	0.0090	0.00020	A615527
Total Lithium (Li)	mg/L	<0.020	<0.020	A614669	<0.020	0.020	A615538
Total Magnesium (Mg)	mg/L	23	24	A614669	16	0.20	A615538
Total Manganese (Mn)	mg/L	0.0076	0.0081	A614669	0.33	0.0040	A615538
Total Molybdenum (Mo)	mg/L	0.0018	0.0017	A614665	0.0018	0.00020	A615527
Total Nickel (Ni)	mg/L	0.00088	0.00085	A614665	0.029	0.00050	A615527
Total Phosphorus (P)	mg/L	<0.10	<0.10	A614669	0.38	0.10	A615538
Total Potassium (K)	mg/L	0.91	0.92	A614669	3.4	0.30	A615538
Total Selenium (Se)	mg/L	<0.00020	0.00028	A614665	0.00075	0.00020	A615527
Total Silicon (Si)	mg/L	1.8	1.9	A614669	20	0.10	A615538
Total Silver (Ag)	mg/L	<0.00010	<0.00010	A614665	0.00010	0.00010	A615527
Total Sodium (Na)	mg/L	16	16	A614669	5.3	0.50	A615538
Total Strontium (Sr)	mg/L	1.2	1.2	A614669	0.21	0.020	A615538
Total Sulphur (S)	mg/L	36	38	A614669	8.9	0.20	A615538
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	A614665	<0.00020	0.00020	A615527
Total Tin (Sn)	mg/L	<0.0010	<0.0010	A614665	<0.0010	0.0010	A615527
Total Titanium (Ti)	mg/L	<0.0010	<0.0010	A614665	0.058	0.0010	A615527
Total Uranium (U)	mg/L	0.0010	0.0010	A614665	0.0011	0.00010	A615527
Total Vanadium (V)	mg/L	<0.0010	<0.0010	A614665	0.024	0.0010	A615527
RDL = Reportable Detection Limit							

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA569	AVA570		AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10		2022/06/11 13:30		
COC Number		292886	292886		292886		
	UNITS	**AEMP-02**	**AEMP-03**	**QC Batch**	**AEMP-09**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	<0.0030	<0.0030	A614665	0.14	0.0030	A615527
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA569			AVA570		
Sampling Date		2022/06/11 11:45			2022/06/11 12:10		
COC Number		292886			292886		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	280	0.50	A610897	290	0.50	A610897
Ion Balance (% Difference)	%	0.87	N/A	A610854	1.7	N/A	A610854
Nitrate (N)	mg/L	0.026	0.010	A610960	0.033	0.010	A610960
Nitrate (NO3)	mg/L	0.11	0.044	A610807	0.15	0.044	A611066
Nitrite (NO2)	mg/L	<0.033	0.033	A610807	<0.033	0.033	A611066
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A610298	<0.0020	0.0020	A611067
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A612080	<2.0	2.0	A612080
Chemical Oxygen Demand	mg/L	16	10	A613005	11	10	A613493
Elements							
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A610806	<0.000020	0.000020	A610806
Misc. Inorganics							
Conductivity	uS/cm	580	2.0	A612539	580	2.0	A612539
Dissolved Organic Carbon (C)	mg/L	4.5	0.50	A614774	4.4	0.50	A614774
pH	pH	8.22	N/A	A612538	8.24	N/A	A612538
Total Organic Carbon (C)	mg/L	3.9	0.50	A614777	3.8	0.50	A614777
Total Dissolved Solids	mg/L	370	10	A611370	360	10	A611370
Total Suspended Solids	mg/L	<1.0	1.0	A612111	1.0	0.97	A612111
Anions							
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A612532
Alkalinity (Total as CaCO3)	mg/L	170	1.0	A612532	170	1.0	A612532
Bicarbonate (HCO3)	mg/L	200	1.0	A612532	200	1.0	A612532
Carbonate (CO3)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A612532
Dissolved Fluoride (F)	mg/L	0.17	0.050	A612540	0.18	0.050	A612540
Hydroxide (OH)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A612532
Total Sulphide	mg/L	<0.0018	0.0018	A612046	<0.0018	0.0018	A612046
Chloride (Cl)	mg/L	18	1.0	A614906	18	1.0	A614906
Sulphate (SO4)	mg/L	110	1.0	A614906	120	1.0	A614906
Nutrients							
Total Ammonia (N)	mg/L	<0.015	0.015	A614223	<0.015	0.015	A614213

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Job #: C241303
Report Date: 2022/06/22

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Task Order#: pending, Line Item: 10
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Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA569			AVA570		
Sampling Date		2022/06/11 11:45			2022/06/11 12:10		
COC Number		292886			292886		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Nitrite (N)	mg/L	<0.010	0.010	A612693	<0.010	0.010	A611925
Nitrate plus Nitrite (N)	mg/L	0.026	0.010	A612693	0.033	0.010	A611925
Misc. Organics							
Total Oil and grease	mg/L	<2.0	2.0	A611721	<2.0	2.0	A611721
Physical Properties							
True Colour	PtCo units	12	2.0	A612362	13	2.0	A612362
Physical Properties							
Turbidity	NTU	1.7	0.10	A612059	1.2	0.10	A612059
RDL = Reportable Detection Limit							

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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA571		
Sampling Date		2022/06/11 13:30		
COC Number		292886		
	UNITS	**AEMP-09**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	100	0.50	A610897
Ion Balance (% Difference)	%	0.53	N/A	A610854
Nitrate (N)	mg/L	0.064	0.010	A610960
Nitrate (NO3)	mg/L	0.28	0.044	A611066
Nitrite (NO2)	mg/L	<0.033	0.033	A611066
Sulphide (as H2S)	mg/L	0.015	0.010	A611067
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A612080
Chemical Oxygen Demand	mg/L	82	10	A613493
Elements				
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A610806
Misc. Inorganics				
Conductivity	uS/cm	220	2.0	A612539
Dissolved Organic Carbon (C)	mg/L	7.3	0.50	A614774
pH	pH	7.67	N/A	A612538
Total Organic Carbon (C)	mg/L	6.8	0.50	A614777
Total Dissolved Solids	mg/L	160	10	A611370
Total Suspended Solids	mg/L	660 (1)	3.1	A612111
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A612532
Alkalinity (Total as CaCO3)	mg/L	79	1.0	A612532
Bicarbonate (HCO3)	mg/L	96	1.0	A612532
Carbonate (CO3)	mg/L	<1.0	1.0	A612532
Dissolved Fluoride (F)	mg/L	0.083	0.050	A612540
Hydroxide (OH)	mg/L	<1.0	1.0	A612532
Total Sulphide	mg/L	0.014 (2)	0.0090	A612046
Chloride (Cl)	mg/L	4.3	1.0	A614906
Sulphate (SO4)	mg/L	30	1.0	A614906

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.
(2) Detection limits raised due to sample matrix.

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA571		
Sampling Date		2022/06/11 13:30		
COC Number		292886		
	UNITS	**AEMP-09**	**RDL**	**QC Batch**
Nutrients				
Total Ammonia (N)	mg/L	<0.015	0.015	A614223
Nitrite (N)	mg/L	<0.010	0.010	A611925
Nitrate plus Nitrite (N)	mg/L	0.064	0.010	A611925
Misc. Organics				
Total Oil and grease	mg/L	3.0	2.0	A611721
Physical Properties				
True Colour	PtCo units	34	2.0	A612362
Physical Properties				
Turbidity	NTU	300 (1)	0.50	A612059

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVA569	AVA570	AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10	2022/06/11 13:30		
COC Number		292886	292886	292886		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-09**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A610518
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A611521
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A611521
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A611521
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A611521
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A611521
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A611521
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A611521
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A611521
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A611521
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A611521
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A611521
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A611521
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A611521
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A611521
Phenanthrene	mg/L	<0.000050	<0.000050	0.000052	0.000050	A611521
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A611521
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A611521
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A611521
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	110	111	108		A611521
D8-ACENAPHTHYLENE (sur.)	%	94	95	92		A611521
D8-NAPHTHALENE (sur.)	%	82	86	81		A611521
TERPHENYL-D14 (sur.)	%	116	122	118		A611521
RDL = Reportable Detection Limit						

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVA569	AVA570		AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10		2022/06/11 13:30		
COC Number		292886	292886		292886		
	UNITS	**AEMP-02**	**AEMP-03**	**RDL**	**AEMP-09**	**RDL**	**QC Batch**
Elements							
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	<0.0019	0.0019	A611839
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	0.026	0.019	A611844
RDL = Reportable Detection Limit							

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Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA569	AVA570	AVA571		
Sampling Date		2022/06/11 11:45	2022/06/11 12:10	2022/06/11 13:30		
COC Number		292886	292886	292886		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-09**	**RDL**	**QC Batch**
Elements						
Dissolved Aluminum (Al)	mg/L	0.018	<0.0030	0.014	0.0030	A612531
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A612531
Dissolved Arsenic (As)	mg/L	0.00021	<0.00020	0.00037	0.00020	A612531
Dissolved Barium (Ba)	mg/L	0.073	0.073	0.038	0.010	A614268
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Boron (B)	mg/L	0.027	0.027	<0.020	0.020	A614268
Dissolved Calcium (Ca)	mg/L	69	70	28	0.30	A614268
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	0.00030	A612531
Dissolved Copper (Cu)	mg/L	<0.0010	<0.0010	0.0036	0.0010	A612531
Dissolved Iron (Fe)	mg/L	<0.060	<0.060	<0.060	0.060	A614268
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A612531
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A614268
Dissolved Magnesium (Mg)	mg/L	26	27	8.0	0.20	A614268
Dissolved Manganese (Mn)	mg/L	0.0076	<0.0040	0.0050	0.0040	A614268
Dissolved Molybdenum (Mo)	mg/L	0.0015	0.0017	0.00083	0.00020	A612531
Dissolved Nickel (Ni)	mg/L	0.0015	0.00071	0.0015	0.00050	A612531
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A614268
Dissolved Potassium (K)	mg/L	1.2	1.2	1.0	0.30	A614268
Dissolved Selenium (Se)	mg/L	<0.00020	<0.00020	0.00041	0.00020	A612531
Dissolved Silicon (Si)	mg/L	1.7	1.8	1.6	0.10	A614268
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A612531
Dissolved Sodium (Na)	mg/L	16	16	5.2	0.50	A614268
Dissolved Strontium (Sr)	mg/L	1.2	1.2	0.15	0.020	A614268
Dissolved Sulphur (S)	mg/L	40	41	9.2	0.20	A614268
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A612531
Dissolved Tin (Sn)	mg/L	0.0021	<0.0010	<0.0010	0.0010	A612531
Dissolved Titanium (Ti)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Uranium (U)	mg/L	0.00090	0.0011	0.00060	0.00010	A612531
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A612531
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	0.0030	A612531
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA569
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613757	N/A	2022/06/21	Darrus Ong
F1-BTEX	CALC/MS	A610891	N/A	2022/06/22	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613005	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A611514	2022/06/17	2022/06/17	Zeynab (Sara) Naserifar
Sulphide (as H2S)	CALC	A610298	N/A	2022/06/16	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A610807	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A612693	N/A	2022/06/16	Ana Katrina Cariaga
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A611521	2022/06/17	2022/06/18	Nora Kazemian
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A612059	N/A	2022/06/16	Grace O'Connor

Bureau Veritas ID: AVA569 Dup
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613757	N/A	2022/06/21	Darrus Ong

Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA570
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613757	N/A	2022/06/21	Darrus Ong
F1-BTEX	CALC/MS	A610891	N/A	2022/06/22	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613493	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A611514	2022/06/17	2022/06/17	Zeynab (Sara) Naserifar
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/16	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614213	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A611925	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A611521	2022/06/17	2022/06/18	Nora Kazemian
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A612059	N/A	2022/06/16	Grace O'Connor

Bureau Veritas ID: AVA571
Sample ID: AEMP-09
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis

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Bureau Veritas Job #: C241303
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA571
Sample ID: AEMP-09
Matrix: Water

Collected: 2022/06/11
Relinquished: 2022/06/12
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A613757	N/A	2022/06/21	Darrus Ong
F1-BTEX	CALC/MS	A610891	N/A	2022/06/22	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613493	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A611514	2022/06/17	2022/06/17	Zeynab (Sara) Naserifar
Sulphide (as H2S)	CALC	A611067	N/A	2022/06/16	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A615538	2022/06/20	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A615527	2022/06/20	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614223	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A611066	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A611925	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A611521	2022/06/17	2022/06/18	Nora Kazemian
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A612046	N/A	2022/06/16	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611370	2022/06/16	2022/06/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A612059	N/A	2022/06/16	Grace O'Connor

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	-1.0°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 5.3 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AVA569 [AEMP-02] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA570 [AEMP-03] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA571 [AEMP-09] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

MERCURY BY COLD VAPOR (WATER) Comments

Sample AVA571 [AEMP-09] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA569	AEMP-02	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA569	AEMP-02	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA569	AEMP-02	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA570	AEMP-03	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA570	AEMP-03	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA570	AEMP-03	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA571	AEMP-09	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA571	AEMP-09	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA571	AEMP-09	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A611370	HE1	Method Blank	Total Dissolved Solids	2022/06/16	<10		mg/L	
A611514	ZSN	Method Blank	O-TERPHENYL (sur.)	2022/06/17		99	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17	<0.10		mg/L	
A611521	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/06/18		112	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		122	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		93	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		78	%	50 - 130
			Acenaphthene	2022/06/18	<0.00010		mg/L	
			Acenaphthylene	2022/06/18	<0.00010		mg/L	
			Acridine	2022/06/18	<0.000040		mg/L	
			Anthracene	2022/06/18	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/18	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/18	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/18	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/18	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/18	<0.000050		mg/L	
			Chrysene	2022/06/18	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/18	<0.0000075		mg/L	
			Fluoranthene	2022/06/18	<0.000010		mg/L	
			Fluorene	2022/06/18	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/18	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			Naphthalene	2022/06/18	<0.00010		mg/L	
			Phenanthrene	2022/06/18	<0.000050		mg/L	
			Perylene	2022/06/18	<0.000050		mg/L	
			Pyrene	2022/06/18	<0.000020		mg/L	
			Quinoline	2022/06/18	<0.00020		mg/L	
A611721	JB9	Method Blank	Total Oil and grease	2022/06/16	<2.0		mg/L	
A611839	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611844	JAB	Method Blank	Total Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611925	SKM	Method Blank	Nitrite (N)	2022/06/16	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/16	<0.010		mg/L	
A612046	BYM	Method Blank	Total Sulphide	2022/06/16	<0.0018		mg/L	
A612059	GOC	Method Blank	Turbidity	2022/06/16	<0.10		NTU	
A612080	MTG	Method Blank	Biochemical Oxygen Demand	2022/06/21	<2.0		mg/L	
A612111	LYV	Method Blank	Total Suspended Solids	2022/06/16	<0.97		mg/L	
A612362	FM0	Method Blank	True Colour	2022/06/16	<2.0		PtCo units	
A612531	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/18	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/18	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/18	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/06/18	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/06/18	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/18	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/18	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/06/18	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/18	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/06/18	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/18	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/18	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Tin (Sn)	2022/06/18	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/18	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/18	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/18	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/06/18	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/18	<0.0010		mg/L	
A612532	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/16	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/16	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/16	<1.0		mg/L	
			Carbonate (CO3)	2022/06/16	<1.0		mg/L	
			Hydroxide (OH)	2022/06/16	<1.0		mg/L	
A612539	MEL	Method Blank	Conductivity	2022/06/16	<2.0		uS/cm	
A612540	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/16	<0.050		mg/L	
A612693	ACR	Method Blank	Nitrite (N)	2022/06/16	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/16	<0.010		mg/L	
A613005	BYM	Method Blank	Chemical Oxygen Demand	2022/06/17	<10		mg/L	
A613493	BYM	Method Blank	Chemical Oxygen Demand	2022/06/17	<10		mg/L	
A613757	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/21		84	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/21		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/21		83	%	50 - 140
			Benzene	2022/06/21	<0.00040		mg/L	
			Toluene	2022/06/21	<0.00040		mg/L	
			Ethylbenzene	2022/06/21	<0.00040		mg/L	
			m & p-Xylene	2022/06/21	<0.00080		mg/L	
			o-Xylene	2022/06/21	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/21	<0.10		mg/L	
A614213	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A614223	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A614268	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/17	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/17	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/17	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/17	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/17	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/17	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/17	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/06/17	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/06/17	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/17	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/17	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/17	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/17	<0.30		mg/L	
A614665	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A614669	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A614774	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614777	MDO	Method Blank	Total Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614906	AFI	Method Blank	Chloride (Cl)	2022/06/19	<1.0		mg/L	
			Sulphate (SO4)	2022/06/19	<1.0		mg/L	
A615527	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A615538	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A615583	MAP	Method Blank	Total Nitrogen (N)	2022/06/20	<0.020		mg/L	
A613757	DO1	RPD [AVA569-15]	Benzene	2022/06/21	NC		%	30
			Toluene	2022/06/21	NC		%	30
			Ethylbenzene	2022/06/21	NC		%	30
			m & p-Xylene	2022/06/21	NC		%	30
			o-Xylene	2022/06/21	NC		%	30
			F1 (C6-C10)	2022/06/21	NC		%	30
A613757	DO1	Matrix Spike [AVA570-15]	1,4-Difluorobenzene (sur.)	2022/06/21		89	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/21		96	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/21		94	%	50 - 140
			Benzene	2022/06/21		89	%	50 - 140
			Toluene	2022/06/21		88	%	50 - 140
			Ethylbenzene	2022/06/21		93	%	50 - 140
			m & p-Xylene	2022/06/21		93	%	50 - 140
			o-Xylene	2022/06/21		98	%	50 - 140
			F1 (C6-C10)	2022/06/21		95	%	60 - 140
A611370	HE1	LCS	Total Dissolved Solids	2022/06/16		102	%	80 - 120
A611514	ZSN	LCS	O-TERPHENYL (sur.)	2022/06/17		97	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17		94	%	60 - 140
A611521	NK3	LCS	D10-ANTHRACENE (sur.)	2022/06/18		110	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		116	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		91	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		72	%	50 - 130
			Acenaphthene	2022/06/18		88	%	50 - 130
			Acenaphthylene	2022/06/18		88	%	50 - 130
			Acridine	2022/06/18		87	%	50 - 130
			Anthracene	2022/06/18		83	%	50 - 130
			Benzo(a)anthracene	2022/06/18		98	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/18		98	%	50 - 130
			Benzo(k)fluoranthene	2022/06/18		97	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/18		95	%	50 - 130
			Benzo(c)phenanthrene	2022/06/18		103	%	50 - 130
			Benzo(a)pyrene	2022/06/18		89	%	50 - 130
			Benzo(e)pyrene	2022/06/18		89	%	50 - 130
			Chrysene	2022/06/18		100	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/18		97	%	50 - 130
			Fluoranthene	2022/06/18		101	%	50 - 130
			Fluorene	2022/06/18		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/18		93	%	50 - 130
			1-Methylnaphthalene	2022/06/18		69	%	50 - 130
			2-Methylnaphthalene	2022/06/18		85	%	50 - 130
			Naphthalene	2022/06/18		84	%	50 - 130
			Phenanthrene	2022/06/18		95	%	50 - 130
			Perylene	2022/06/18		94	%	50 - 130
			Pyrene	2022/06/18		103	%	50 - 130
			Quinoline	2022/06/18		84	%	50 - 130
A611721	JB9	LCS	Total Oil and grease	2022/06/16		105	%	70 - 130
A611839	JAB	LCS	Dissolved Mercury (Hg)	2022/06/17		96	%	80 - 120
A611844	JAB	LCS	Total Mercury (Hg)	2022/06/17		96	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A611925	SKM	LCS	Nitrite (N)	2022/06/16		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/16		109	%	80 - 120
A612046	BYM	LCS	Total Sulphide	2022/06/16		89	%	80 - 120
A612059	GOC	LCS	Turbidity	2022/06/16		102	%	80 - 120
A612080	MTG	LCS	Biochemical Oxygen Demand	2022/06/21		93	%	85 - 115
A612111	LYV	LCS	Total Suspended Solids	2022/06/16		98	%	80 - 120
A612362	FM0	LCS	True Colour	2022/06/16		98	%	80 - 120
A612531	KH2	LCS	Dissolved Aluminum (Al)	2022/06/18		92	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/18		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/18		97	%	80 - 120
			Dissolved Copper (Cu)	2022/06/18		100	%	80 - 120
			Dissolved Lead (Pb)	2022/06/18		95	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/18		107	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/18		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/18		97	%	80 - 120
			Dissolved Selenium (Se)	2022/06/18		107	%	80 - 120
			Dissolved Silver (Ag)	2022/06/18		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/18		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/18		93	%	80 - 120
			Dissolved Tin (Sn)	2022/06/18		99	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/18		100	%	80 - 120
			Dissolved Uranium (U)	2022/06/18		95	%	80 - 120
			Dissolved Vanadium (V)	2022/06/18		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/18		103	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/18		90	%	80 - 120
A612532	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/16		99	%	80 - 120
A612538	MEL	LCS	pH	2022/06/16		100	%	97 - 103
A612539	MEL	LCS	Conductivity	2022/06/16		101	%	90 - 110
A612540	MEL	LCS	Dissolved Fluoride (F)	2022/06/16		93	%	80 - 120
A612693	ACR	LCS	Nitrite (N)	2022/06/16		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/16		98	%	80 - 120
A613005	BYM	LCS	Chemical Oxygen Demand	2022/06/17		101	%	80 - 120
A613493	BYM	LCS	Chemical Oxygen Demand	2022/06/17		101	%	80 - 120
A613757	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/06/21		90	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/21		113	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/21		95	%	50 - 140
			Benzene	2022/06/21		92	%	60 - 130
			Toluene	2022/06/21		91	%	60 - 130
			Ethylbenzene	2022/06/21		95	%	60 - 130
			m & p-Xylene	2022/06/21		97	%	60 - 130
			o-Xylene	2022/06/21		102	%	60 - 130
			F1 (C6-C10)	2022/06/21		95	%	60 - 140
A614213	ACR	LCS	Total Ammonia (N)	2022/06/19		102	%	80 - 120
A614223	ACR	LCS	Total Ammonia (N)	2022/06/19		101	%	80 - 120
A614268	MPU	LCS	Dissolved Iron (Fe)	2022/06/17		103	%	80 - 120
			Dissolved Lithium (Li)	2022/06/17		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/17		102	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/17		101	%	80 - 120
			Dissolved Potassium (K)	2022/06/17		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/17		94	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/17		94	%	80 - 120
			Dissolved Sulphur (S)	2022/06/17		100	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Phosphorus (P)	2022/06/17		105	%	80 - 120
			Dissolved Barium (Ba)	2022/06/17		95	%	80 - 120
			Dissolved Silicon (Si)	2022/06/17		98	%	80 - 120
			Dissolved Boron (B)	2022/06/17		95	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/17		97	%	80 - 120
A614665	MFP	LCS	Total Aluminum (Al)	2022/06/21		101	%	80 - 120
			Total Chromium (Cr)	2022/06/21		106	%	80 - 120
			Total Cobalt (Co)	2022/06/21		107	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		104	%	80 - 120
			Total Antimony (Sb)	2022/06/21		109	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		105	%	80 - 120
			Total Nickel (Ni)	2022/06/21		106	%	80 - 120
			Total Selenium (Se)	2022/06/21		110	%	80 - 120
			Total Silver (Ag)	2022/06/21		107	%	80 - 120
			Total Arsenic (As)	2022/06/21		104	%	80 - 120
			Total Thallium (Tl)	2022/06/21		103	%	80 - 120
			Total Tin (Sn)	2022/06/21		104	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		106	%	80 - 120
			Total Beryllium (Be)	2022/06/21		102	%	80 - 120
A614669	MPU	LCS	Total Iron (Fe)	2022/06/20		111	%	80 - 120
			Total Lithium (Li)	2022/06/20		104	%	80 - 120
			Total Magnesium (Mg)	2022/06/20		101	%	80 - 120
			Total Manganese (Mn)	2022/06/20		106	%	80 - 120
			Total Potassium (K)	2022/06/20		100	%	80 - 120
			Total Sodium (Na)	2022/06/20		101	%	80 - 120
			Total Strontium (Sr)	2022/06/20		99	%	80 - 120
			Total Sulphur (S)	2022/06/20		99	%	80 - 120
			Total Phosphorus (P)	2022/06/20		102	%	80 - 120
			Total Barium (Ba)	2022/06/20		101	%	80 - 120
			Total Silicon (Si)	2022/06/20		104	%	80 - 120
			Total Boron (B)	2022/06/20		104	%	80 - 120
			Total Calcium (Ca)	2022/06/20		100	%	80 - 120
A614774	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/20		105	%	80 - 120
A614777	MDO	LCS	Total Organic Carbon (C)	2022/06/20		111	%	80 - 120
A614906	AFI	LCS	Chloride (Cl)	2022/06/19		100	%	80 - 120
			Sulphate (SO4)	2022/06/19		102	%	80 - 120
A615527	MFP	LCS	Total Aluminum (Al)	2022/06/21		97	%	80 - 120
			Total Chromium (Cr)	2022/06/21		107	%	80 - 120
			Total Cobalt (Co)	2022/06/21		106	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		99	%	80 - 120
			Total Antimony (Sb)	2022/06/21		105	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		103	%	80 - 120
			Total Nickel (Ni)	2022/06/21		105	%	80 - 120
			Total Selenium (Se)	2022/06/21		113	%	80 - 120
			Total Silver (Ag)	2022/06/21		103	%	80 - 120
			Total Arsenic (As)	2022/06/21		103	%	80 - 120
			Total Thallium (Tl)	2022/06/21		100	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Tin (Sn)	2022/06/21		101	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		107	%	80 - 120
			Total Beryllium (Be)	2022/06/21		103	%	80 - 120
A615538	MPU	LCS	Total Iron (Fe)	2022/06/21		105	%	80 - 120
			Total Lithium (Li)	2022/06/21		99	%	80 - 120
			Total Magnesium (Mg)	2022/06/21		98	%	80 - 120
			Total Manganese (Mn)	2022/06/21		101	%	80 - 120
			Total Potassium (K)	2022/06/21		98	%	80 - 120
			Total Sodium (Na)	2022/06/21		96	%	80 - 120
			Total Strontium (Sr)	2022/06/21		97	%	80 - 120
			Total Sulphur (S)	2022/06/21		93	%	80 - 120
			Total Phosphorus (P)	2022/06/21		93	%	80 - 120
			Total Barium (Ba)	2022/06/21		99	%	80 - 120
			Total Silicon (Si)	2022/06/21		100	%	80 - 120
			Total Boron (B)	2022/06/21		97	%	80 - 120
			Total Calcium (Ca)	2022/06/21		96	%	80 - 120
A615583	MAP	LCS	Total Nitrogen (N)	2022/06/20		104	%	80 - 120
A615583	MAP	SRM	Total Nitrogen (N)	2022/06/20		102	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

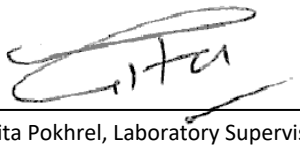
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

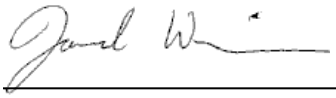
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VALIDATION SIGNATURE PAGE

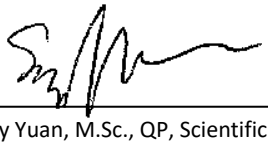
The analytical data and all QC contained in this report were reviewed and validated by:



Gita Pokhrel, Laboratory Supervisor



Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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Toll Free: (800) 386-7247

☒ Edmonton
9331 - 48 Street, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187
Toll Free: (800) 386-7247

4/12

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 292886

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: Advisian/Worley
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150, 205 Quarry Park BLVD SE Calgary, Ab T2C 3E7	Address: 150, 205 Quarry Park BLVD SE Calgary, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): Tino Ngulube / Alex Haigh	Consultant Project #: 417085-42051

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	ANALYSIS REQUESTED: VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☒ DIS ☒	MERCURY TOTAL ☒ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD, TURBIDITY	TRUE COLOR, TSS, TDS, ~~FOREIGN~~	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	OIL & GREASE	FLUORIDE
1	AEMP-02		X			17	2022/06/11	11:45	X			X	X								X	X					X			X	X	X	X	X	X
2	AEMP-03		X			17	2022/06/11	12:10	X			X	X								X	X					X			X	X	X	X	X	X
3	AEMP-09		X			17	2022/06/11	13:30	X			X	X								X	X					X			X	X	X	X	X	X
4																																					
5																																					
6																																					
7																																					
8																																					
9																																					
10																																					

IOL SITE LOCATION: NORMAN WELLS / NT

IOL PROJECT # (if applicable): NA

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) EAL ☐ Other

SPECIAL INSTRUCTIONS: email Canada.chemistry@worley.com Cacal.IOR.data.track@worley.com BOD past hold time, see email approval. YES A2601436

JARS USED & NOT SUBMITTED Enter N/A for Water: NA

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #				YES	NO	COOLER ID # MCAL				YES	NO	COOLER ID #			
SEAL PRESENT	✓						✓											
SEAL INTACT	✓		TEMP °C	6	-1	-2	✓		TEMP °C	6	5	5			TEMP °C			
COOLING MEDIA PRESENT	✓			1	2	3	✓			1	2	3				1	2	3

LAB USE ONLY
MAXXAM JOB # C241303

RELINQUISHED BY:	DATE:	TIME (24 HR)	RECEIVED BY:	DATE:	TIME (24 HR)
1. Stacy Gibbs	2022/06/12	10:00	1. Alejandro Escobar-Lopez	2022/06/14	17:26
2. Kyle VanThournout	2022/06/14	20:00	2. Anderson Ferry	2022/06/15	06:00
3.			3.		

SAMPLES
LABELED BY: KVT
VERIFIED BY: MBY

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292889

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241305
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	4	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	4		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	4	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	2		Auto Calc
PAH in Water by GC/MS (1)	2	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	2	AB SOP-00005	SM 23 4500-H+B m

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292889

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241305
Received: 2022/06/14, 17:26

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: pending
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 292889

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/22
Report #: R3190340
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C241305

Received: 2022/06/14, 17:26

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Danielle Boisvert
Customer Solutions Representative
22 Jun 2022 18:13:15

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVA576	AVA577		AVA578	AVA581		
Sampling Date		2022/06/12 14:20	2022/06/12 15:00		2022/06/12 17:00	2022/06/12 17:00		
COC Number		292889	292889		292889	292889		
	UNITS	**AEMP-08**	**AEMP-12**	**QC Batch**	**2022-DUP2**	**2022-DUP3**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon								
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	A610834	<0.10	<0.10	0.10	A612475
Volatiles								
Benzene	mg/L	<0.00040	<0.00040	A612412	<0.00040	<0.00040	0.00040	A612412
Toluene	mg/L	<0.00040	<0.00040	A612412	<0.00040	<0.00040	0.00040	A612412
Ethylbenzene	mg/L	<0.00040	<0.00040	A612412	<0.00040	<0.00040	0.00040	A612412
m & p-Xylene	mg/L	<0.00080	<0.00080	A612412	<0.00080	<0.00080	0.00080	A612412
o-Xylene	mg/L	<0.00040	<0.00040	A612412	<0.00040	<0.00040	0.00040	A612412
Xylenes (Total)	mg/L	<0.00089	<0.00089	A610891	<0.00089	<0.00089	0.00089	A610891
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	A610891	<0.10	<0.10	0.10	A610891
F1 (C6-C10)	mg/L	<0.10	<0.10	A612412	<0.10	<0.10	0.10	A612412
Extraction Surrogate Recovery (%)								
O-TERPHENYL (sur.)	%	99	97	A610834	96	100		A612475
Instrument Surrogate Recovery (%)								
1,4-Difluorobenzene (sur.)	%	98	95	A612412	94	95		A612412
4-Bromofluorobenzene (sur.)	%	123	122	A612412	125	127		A612412
D4-1,2-Dichloroethane (sur.)	%	97	96	A612412	96	96		A612412

RDL = Reportable Detection Limit

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVA576		AVA577		
Sampling Date		2022/06/12 14:20		2022/06/12 15:00		
COC Number		292889		292889		
	UNITS	**AEMP-08**	**RDL**	**AEMP-12**	**RDL**	**QC Batch**
Calculated Parameters						
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.35	0.10	0.59	0.020	A609774
Nutrients						
Total Nitrogen (N)	mg/L	0.41 (1)	0.10	0.62	0.020	A615583

RDL = Reportable Detection Limit

(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA576		AVA577		
Sampling Date		2022/06/12 14:20		2022/06/12 15:00		
COC Number		292889		292889		
	UNITS	**AEMP-08**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	0.00027	A610723	0.00022	0.000020	A610723
Total Aluminum (Al)	mg/L	3.3	A614665	3.1	0.0030	A615527
Total Antimony (Sb)	mg/L	<0.00060	A614665	<0.00060	0.00060	A615527
Total Arsenic (As)	mg/L	0.0036	A614665	0.0035	0.00020	A615527
Total Barium (Ba)	mg/L	0.13	A614669	0.17	0.010	A615538
Total Beryllium (Be)	mg/L	<0.0010	A614665	<0.0010	0.0010	A615527
Total Boron (B)	mg/L	<0.020	A614669	0.031	0.020	A615538
Total Calcium (Ca)	mg/L	43	A614669	57	0.30	A615538
Total Chromium (Cr)	mg/L	0.0057	A614665	0.0061	0.0010	A615527
Total Cobalt (Co)	mg/L	0.0040	A614665	0.0040	0.00030	A615527
Total Copper (Cu)	mg/L	0.0095	A614665	0.0094	0.0010	A615527
Total Iron (Fe)	mg/L	9.0	A614669	8.7	0.060	A615538
Total Lead (Pb)	mg/L	0.0040	A614665	0.0041	0.00020	A615527
Total Lithium (Li)	mg/L	<0.020	A614669	<0.020	0.020	A615538
Total Magnesium (Mg)	mg/L	11	A614669	20	0.20	A615538
Total Manganese (Mn)	mg/L	0.16	A614669	0.16	0.0040	A615538
Total Molybdenum (Mo)	mg/L	0.0027	A614665	0.0027	0.00020	A615527
Total Nickel (Ni)	mg/L	0.014	A614665	0.014	0.00050	A615527
Total Phosphorus (P)	mg/L	0.19	A614669	0.13	0.10	A615538
Total Potassium (K)	mg/L	2.0	A614669	2.3	0.30	A615538
Total Selenium (Se)	mg/L	0.00073	A614665	0.00048	0.00020	A615527
Total Silicon (Si)	mg/L	6.1	A614669	11	0.10	A615538
Total Silver (Ag)	mg/L	<0.00010	A614665	<0.00010	0.00010	A615527
Total Sodium (Na)	mg/L	5.3	A614669	12	0.50	A615538
Total Strontium (Sr)	mg/L	0.20	A614669	0.80	0.020	A615538
Total Sulphur (S)	mg/L	9.9	A614669	26	0.20	A615538
Total Thallium (Tl)	mg/L	<0.00020	A614665	<0.00020	0.00020	A615527
Total Tin (Sn)	mg/L	<0.0010	A614665	<0.0010	0.0010	A615527
Total Titanium (Ti)	mg/L	0.039	A614665	0.041	0.0010	A615527
Total Uranium (U)	mg/L	0.0011	A614665	0.0012	0.00010	A615527
Total Vanadium (V)	mg/L	0.010	A614665	0.0093	0.0010	A615527
RDL = Reportable Detection Limit						

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVA576		AVA577		
Sampling Date		2022/06/12 14:20		2022/06/12 15:00		
COC Number		292889		292889		
	UNITS	**AEMP-08**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.10	A614665	0.098	0.0030	A615527
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA576			AVA577		
Sampling Date		2022/06/12 14:20			2022/06/12 15:00		
COC Number		292889			292889		
	UNITS	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	110	0.50	A610897	210	0.50	A610897
Ion Balance (% Difference)	%	0.16	N/A	A610854	0.67	N/A	A610854
Nitrate (N)	mg/L	0.058	0.010	A610960	0.032	0.010	A610960
Nitrate (NO3)	mg/L	0.26	0.044	A610807	0.14	0.044	A610807
Nitrite (NO2)	mg/L	<0.033	0.033	A610807	<0.033	0.033	A610807
Sulphide (as H2S)	mg/L	0.012	0.0020	A610298	0.012	0.0020	A610298
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A612080	<2.0	2.0	A612080
Chemical Oxygen Demand	mg/L	57	10	A613493	52	10	A613493
Elements							
Dissolved Cadmium (Cd)	mg/L	0.000023	0.000020	A610806	<0.000020	0.000020	A610806
Misc. Inorganics							
Conductivity	uS/cm	220	2.0	A612539	440	2.0	A613512
Dissolved Organic Carbon (C)	mg/L	6.7	0.50	A614774	5.0	0.50	A614774
pH	pH	7.52	N/A	A612538	7.98	N/A	A613510
Total Organic Carbon (C)	mg/L	5.9	0.50	A614777	4.2	0.50	A614777
Total Dissolved Solids	mg/L	150	10	A611643	280	10	A611643
Total Suspended Solids	mg/L	270 (1)	2.1	A612882	400 (1)	3.0	A612111
Anions							
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A613502
Alkalinity (Total as CaCO3)	mg/L	79	1.0	A612532	130	1.0	A613502
Bicarbonate (HCO3)	mg/L	96	1.0	A612532	160	1.0	A613502
Carbonate (CO3)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A613502
Dissolved Fluoride (F)	mg/L	0.085	0.050	A612540	0.13	0.050	A613514
Hydroxide (OH)	mg/L	<1.0	1.0	A612532	<1.0	1.0	A613502
Total Sulphide	mg/L	0.012	0.0018	A613216	0.012	0.0018	A613216
Chloride (Cl)	mg/L	3.9	1.0	A614906	13	1.0	A614906
Sulphate (SO4)	mg/L	32	1.0	A614906	88	1.0	A614906

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.

Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVA576			AVA577		
Sampling Date		2022/06/12 14:20			2022/06/12 15:00		
COC Number		292889			292889		
	UNITS	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**
Nutrients							
Total Ammonia (N)	mg/L	<0.015	0.015	A614213	0.018	0.015	A614213
Nitrite (N)	mg/L	<0.010	0.010	A612707	<0.010	0.010	A612707
Nitrate plus Nitrite (N)	mg/L	0.058	0.010	A612707	0.032	0.010	A612707
Misc. Organics							
Total Oil and grease	mg/L	<2.0	2.0	A611721	<2.0	2.0	A611721
Physical Properties							
True Colour	PtCo units	37	2.0	A612362	17	2.0	A612362
Physical Properties							
Turbidity	NTU	97 (1)	0.20	A610674	220 (1)	0.20	A610674

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVA576	AVA577		
Sampling Date		2022/06/12 14:20	2022/06/12 15:00		
COC Number		292889	292889		
	UNITS	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	A610518
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	A610837
Acridine	mg/L	<0.000040	<0.000040	0.000040	A610837
Anthracene	mg/L	<0.000010	<0.000010	0.000010	A610837
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	0.000050	A610837
Chrysene	mg/L	<0.0000085	0.000012	0.0000085	A610837
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	A610837
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	A610837
Fluorene	mg/L	<0.000050	0.000058	0.000050	A610837
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	A610837
1-Methylnaphthalene	mg/L	<0.00010	0.00021	0.00010	A610837
2-Methylnaphthalene	mg/L	<0.00010	0.00028	0.00010	A610837
Naphthalene	mg/L	<0.00010	<0.00010	0.00010	A610837
Phenanthrene	mg/L	<0.000050	0.00021	0.000050	A610837
Perylene	mg/L	<0.000050	<0.000050	0.000050	A610837
Pyrene	mg/L	<0.000020	<0.000020	0.000020	A610837
Quinoline	mg/L	<0.00020	<0.00020	0.00020	A610837
Extraction Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	111	111		A610837
D8-ACENAPHTHYLENE (sur.)	%	94	82		A610837
D8-NAPHTHALENE (sur.)	%	74	52		A610837
TERPHENYL-D14 (sur.)	%	107	104		A610837
RDL = Reportable Detection Limit					

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Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVA576	AVA577		
Sampling Date		2022/06/12 14:20	2022/06/12 15:00		
COC Number		292889	292889		
	UNITS	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Elements					
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A611839
Total Mercury (Hg)	ug/L	0.023	<0.019	0.019	A611844
RDL = Reportable Detection Limit					

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVA576	AVA577		
Sampling Date		2022/06/12 14:20	2022/06/12 15:00		
COC Number		292889	292889		
	UNITS	**AEMP-08**	**AEMP-12**	**RDL**	**QC Batch**
Elements					
Dissolved Aluminum (Al)	mg/L	0.016	0.0082	0.0030	A612531
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A612531
Dissolved Arsenic (As)	mg/L	0.00033	0.00032	0.00020	A612531
Dissolved Barium (Ba)	mg/L	0.033	0.080	0.010	A614268
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A612531
Dissolved Boron (B)	mg/L	<0.020	0.020	0.020	A614268
Dissolved Calcium (Ca)	mg/L	29	54	0.30	A614268
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A612531
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A612531
Dissolved Copper (Cu)	mg/L	0.0017	0.0012	0.0010	A612531
Dissolved Iron (Fe)	mg/L	0.064	<0.060	0.060	A614268
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	0.00020	A612531
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	0.020	A614268
Dissolved Magnesium (Mg)	mg/L	8.0	19	0.20	A614268
Dissolved Manganese (Mn)	mg/L	<0.0040	0.034	0.0040	A614268
Dissolved Molybdenum (Mo)	mg/L	0.0020	0.0014	0.00020	A612531
Dissolved Nickel (Ni)	mg/L	0.0024	0.0017	0.00050	A612531
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A614268
Dissolved Potassium (K)	mg/L	1.1	1.0	0.30	A614268
Dissolved Selenium (Se)	mg/L	0.00051	0.00024	0.00020	A612531
Dissolved Silicon (Si)	mg/L	1.6	1.5	0.10	A614268
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A612531
Dissolved Sodium (Na)	mg/L	5.1	12	0.50	A614268
Dissolved Strontium (Sr)	mg/L	0.16	0.77	0.020	A614268
Dissolved Sulphur (S)	mg/L	10	30	0.20	A614268
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A612531
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A612531
Dissolved Titanium (Ti)	mg/L	0.0011	<0.0010	0.0010	A612531
Dissolved Uranium (U)	mg/L	0.00076	0.00093	0.00010	A612531
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A612531
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0030	A612531
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA576
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A612532	N/A	2022/06/16	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613493	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A612539	N/A	2022/06/16	Madelyn Ellis
Fluoride	AT	A612540	N/A	2022/06/16	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/17	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A610298	N/A	2022/06/17	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A614669	2022/06/18	2022/06/20	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A614665	2022/06/18	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614213	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A610807	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A612707	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A612538	N/A	2022/06/16	Madelyn Ellis
Total Sulphide	SPEC	A613216	N/A	2022/06/17	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611643	2022/06/16	2022/06/16	Kiara Garrido
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612882	2022/06/17	2022/06/17	Haydee Estilong
Turbidity	TURB	A610674	N/A	2022/06/15	Kiara Garrido

Bureau Veritas ID: AVA577
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A613502	N/A	2022/06/17	Madelyn Ellis

Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA577
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A612080	2022/06/16	2022/06/21	Monica Tamang
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A610806	N/A	2022/06/18	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A610723	N/A	2022/06/22	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A614906	N/A	2022/06/19	Adam Fishleigh
COD by Colorimeter	M/PROB	A613493	N/A	2022/06/17	Bailey Morrison
True Colour	SPEC/COL	A612362	N/A	2022/06/16	Fadia Mostafa
Carbon (DOC)	TECH	A614774	N/A	2022/06/20	Ming Dong
Conductivity @25C	COND	A613512	N/A	2022/06/17	Madelyn Ellis
Fluoride	AT	A613514	N/A	2022/06/17	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A610834	2022/06/17	2022/06/18	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A610298	N/A	2022/06/17	Automated Statchk
Hardness	CALC	A610897	N/A	2022/06/18	Automated Statchk
Mercury (Dissolved) by CV	CV	A611839	2022/06/16	2022/06/17	Jason Bao
Mercury (Total) by CV	CV	A611844	2022/06/16	2022/06/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A614268	N/A	2022/06/17	Mohammad Pousti
Elements by ICP - Total	ICPA	A615538	2022/06/20	2022/06/21	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A612531	N/A	2022/06/18	Kevin Huang
Elements by ICPMS - Total	ICPM	A615527	2022/06/20	2022/06/21	Maria Fernanda Paez
Ion Balance	CALC	A610854	N/A	2022/06/20	Automated Statchk
Ammonia-N (Total)	KONE	A614213	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A610807	N/A	2022/06/17	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A612707	N/A	2022/06/16	Shanna McKort
Nitrate (as N)	CALC	A610960	2022/06/17	2022/06/17	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A611721	2022/06/16	2022/06/16	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A610518	N/A	2022/06/18	Automated Statchk
PAH in Water by GC/MS	GC/MS	A610837	2022/06/17	2022/06/18	Jiby Uthup
pH @25°C	AT/ALK	A613510	N/A	2022/06/17	Madelyn Ellis
Total Sulphide	SPEC	A613216	N/A	2022/06/17	Bailey Morrison
Total Dissolved Solids (Filt. Residue)	BAL	A611643	2022/06/16	2022/06/16	Kiara Garrido
Total Kjeldahl Nitrogen (Total)	CALC	A609774	N/A	2022/06/21	Automated Statchk
Nitrogen (Total)	AC/COL	A615583	2022/06/20	2022/06/20	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A614777	N/A	2022/06/20	Ming Dong
Total Suspended Solids (NFR)	BAL	A612111	2022/06/16	2022/06/16	Ly Vu
Turbidity	TURB	A610674	N/A	2022/06/15	Kiara Garrido

Bureau Veritas ID: AVA578
Sample ID: 2022-DUP2
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk

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Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVA578
Sample ID: 2022-DUP2
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A612475	2022/06/17	2022/06/18	Zeynab (Sara) Naserifar

Bureau Veritas ID: AVA581
Sample ID: 2022-DUP3
Matrix: Water

Collected: 2022/06/12
Relinquished: 2022/06/13
Received: 2022/06/14

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A612412	N/A	2022/06/19	Wonjeong Park
F1-BTEX	CALC/MS	A610891	N/A	2022/06/20	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A612475	2022/06/17	2022/06/18	Zeynab (Sara) Naserifar

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Bureau Veritas Job #: C241305
Report Date: 2022/06/22

Advisian
Task Order#: pending, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 5.5 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AVA576 [AEMP-08] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AVA577 [AEMP-12] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

MERCURY BY COLD VAPOR (WATER) Comments

Sample AVA576 [AEMP-08] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample AVA577 [AEMP-12] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVA576	AEMP-08	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA576	AEMP-08	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA576	AEMP-08	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA577	AEMP-12	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA577	AEMP-12	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVA577	AEMP-12	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A610674	KGA	Method Blank	Turbidity	2022/06/15	<0.10		NTU	
A610834	GG3	Method Blank	O-TERPHENYL (sur.)	2022/06/17		101	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17	<0.10		mg/L	
A610837	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/06/18		116	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		105	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		84	%	50 - 130
			Acenaphthene	2022/06/18	<0.00010		mg/L	
			Acenaphthylene	2022/06/18	<0.00010		mg/L	
			Acridine	2022/06/18	<0.000040		mg/L	
			Anthracene	2022/06/18	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/18	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/18	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/18	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/18	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/18	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/18	<0.000050		mg/L	
			Chrysene	2022/06/18	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/18	<0.0000075		mg/L	
			Fluoranthene	2022/06/18	<0.000010		mg/L	
			Fluorene	2022/06/18	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/18	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/18	<0.00010		mg/L	
			Naphthalene	2022/06/18	<0.00010		mg/L	
			Phenanthrene	2022/06/18	<0.000050		mg/L	
			Perylene	2022/06/18	<0.000050		mg/L	
			Pyrene	2022/06/18	<0.000020		mg/L	
			Quinoline	2022/06/18	<0.00020		mg/L	
A611643	KGA	Method Blank	Total Dissolved Solids	2022/06/16	<10		mg/L	
A611721	JB9	Method Blank	Total Oil and grease	2022/06/16	<2.0		mg/L	
A611839	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A611844	JAB	Method Blank	Total Mercury (Hg)	2022/06/17	<0.0019		ug/L	
A612080	MTG	Method Blank	Biochemical Oxygen Demand	2022/06/21	<2.0		mg/L	
A612111	LYV	Method Blank	Total Suspended Solids	2022/06/16	<0.97		mg/L	
A612362	FM0	Method Blank	True Colour	2022/06/16	<2.0		PtCo units	
A612412	WPK	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/19		96	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/19		128	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/19		95	%	50 - 140
			Benzene	2022/06/19	<0.00040		mg/L	
			Toluene	2022/06/19	<0.00040		mg/L	
			Ethylbenzene	2022/06/19	<0.00040		mg/L	
			m & p-Xylene	2022/06/19	<0.00080		mg/L	
			o-Xylene	2022/06/19	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/19	<0.10		mg/L	
A612475	ZSN	Method Blank	O-TERPHENYL (sur.)	2022/06/17		105	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17	<0.10		mg/L	
A612531	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/18	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/18	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/18	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/06/18	<0.0010		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Lead (Pb)	2022/06/18	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/18	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/18	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/06/18	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/18	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/06/18	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/18	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/18	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/06/18	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/18	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/18	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/18	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/06/18	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/18	<0.0010		mg/L	
A612532	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/16	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/16	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/16	<1.0		mg/L	
			Carbonate (CO3)	2022/06/16	<1.0		mg/L	
			Hydroxide (OH)	2022/06/16	<1.0		mg/L	
A612539	MEL	Method Blank	Conductivity	2022/06/16	<2.0		uS/cm	
A612540	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/16	<0.050		mg/L	
A612707	SKM	Method Blank	Nitrite (N)	2022/06/16	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/16	<0.010		mg/L	
A612882	HE1	Method Blank	Total Suspended Solids	2022/06/17	<1.0		mg/L	
A613216	BYM	Method Blank	Total Sulphide	2022/06/17	<0.0018		mg/L	
A613493	BYM	Method Blank	Chemical Oxygen Demand	2022/06/17	<10		mg/L	
A613502	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/17	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/17	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/17	<1.0		mg/L	
			Carbonate (CO3)	2022/06/17	<1.0		mg/L	
			Hydroxide (OH)	2022/06/17	<1.0		mg/L	
A613512	MEL	Method Blank	Conductivity	2022/06/17	<2.0		uS/cm	
A613514	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/17	<0.050		mg/L	
A614213	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A614268	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/17	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/17	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/17	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/17	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/17	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/17	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/17	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/06/17	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/06/17	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/17	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/17	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/17	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/17	<0.30		mg/L	
A614665	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	

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			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A614669	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A614774	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614777	MDO	Method Blank	Total Organic Carbon (C)	2022/06/20	<0.50		mg/L	
A614906	AFI	Method Blank	Chloride (Cl)	2022/06/19	<1.0		mg/L	
			Sulphate (SO4)	2022/06/19	<1.0		mg/L	
A615527	MFP	Method Blank	Total Aluminum (Al)	2022/06/21	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/21	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/21	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/21	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/21	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/21	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/21	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/21	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/21	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/21	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/21	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/21	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/21	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/21	<0.0010		mg/L	
			Total Uranium (U)	2022/06/21	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/21	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/21	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/21	<0.0010		mg/L	
A615538	MPU	Method Blank	Total Iron (Fe)	2022/06/21	<0.060		mg/L	
			Total Lithium (Li)	2022/06/21	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/21	<0.0040		mg/L	

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			Total Potassium (K)	2022/06/21	<0.30		mg/L	
			Total Sodium (Na)	2022/06/21	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Total Sulphur (S)	2022/06/21	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Total Barium (Ba)	2022/06/21	<0.010		mg/L	
			Total Silicon (Si)	2022/06/21	<0.10		mg/L	
			Total Boron (B)	2022/06/21	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/21	<0.30		mg/L	
A615583	MAP	Method Blank	Total Nitrogen (N)	2022/06/20	<0.020		mg/L	
A610674	KGA	LCS	Turbidity	2022/06/15		102	%	80 - 120
A610834	GG3	LCS	O-TERPHENYL (sur.)	2022/06/17		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17		97	%	60 - 140
A610837	JU2	LCS	D10-ANTHRACENE (sur.)	2022/06/18		114	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/18		109	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/18		96	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/18		78	%	50 - 130
			Acenaphthene	2022/06/18		91	%	50 - 130
			Acenaphthylene	2022/06/18		91	%	50 - 130
			Acridine	2022/06/18		92	%	50 - 130
			Anthracene	2022/06/18		89	%	50 - 130
			Benzo(a)anthracene	2022/06/18		103	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/18		100	%	50 - 130
			Benzo(k)fluoranthene	2022/06/18		103	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/18		113	%	50 - 130
			Benzo(c)phenanthrene	2022/06/18		106	%	50 - 130
			Benzo(a)pyrene	2022/06/18		98	%	50 - 130
			Benzo(e)pyrene	2022/06/18		93	%	50 - 130
			Chrysene	2022/06/18		102	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/18		115	%	50 - 130
			Fluoranthene	2022/06/18		96	%	50 - 130
			Fluorene	2022/06/18		95	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/18		111	%	50 - 130
			1-Methylnaphthalene	2022/06/18		74	%	50 - 130
			2-Methylnaphthalene	2022/06/18		90	%	50 - 130
			Naphthalene	2022/06/18		92	%	50 - 130
			Phenanthrene	2022/06/18		97	%	50 - 130
			Perylene	2022/06/18		96	%	50 - 130
			Pyrene	2022/06/18		96	%	50 - 130
			Quinoline	2022/06/18		85	%	50 - 130
A611643	KGA	LCS	Total Dissolved Solids	2022/06/16		100	%	80 - 120
A611721	JB9	LCS	Total Oil and grease	2022/06/16		105	%	70 - 130
A611839	JAB	LCS	Dissolved Mercury (Hg)	2022/06/17		96	%	80 - 120
A611844	JAB	LCS	Total Mercury (Hg)	2022/06/17		96	%	80 - 120
A612080	MTG	LCS	Biochemical Oxygen Demand	2022/06/21		93	%	85 - 115
A612111	LYV	LCS	Total Suspended Solids	2022/06/16		98	%	80 - 120
A612362	FM0	LCS	True Colour	2022/06/16		98	%	80 - 120
A612412	WPK	LCS	1,4-Difluorobenzene (sur.)	2022/06/19		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/19		124	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/19		99	%	50 - 140
			Benzene	2022/06/19		92	%	60 - 130
			Toluene	2022/06/19		87	%	60 - 130

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			Ethylbenzene	2022/06/19		86	%	60 - 130
			m & p-Xylene	2022/06/19		81	%	60 - 130
			o-Xylene	2022/06/19		75	%	60 - 130
			F1 (C6-C10)	2022/06/19		85	%	60 - 140
A612475	ZSN	LCS	O-TERPHENYL (sur.)	2022/06/17		100	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/17		105	%	60 - 140
A612531	KH2	LCS	Dissolved Aluminum (Al)	2022/06/18		92	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/18		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/18		97	%	80 - 120
			Dissolved Copper (Cu)	2022/06/18		100	%	80 - 120
			Dissolved Lead (Pb)	2022/06/18		95	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/18		107	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/18		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/18		97	%	80 - 120
			Dissolved Selenium (Se)	2022/06/18		107	%	80 - 120
			Dissolved Silver (Ag)	2022/06/18		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/18		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/18		93	%	80 - 120
			Dissolved Tin (Sn)	2022/06/18		99	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/18		100	%	80 - 120
			Dissolved Uranium (U)	2022/06/18		95	%	80 - 120
			Dissolved Vanadium (V)	2022/06/18		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/18		103	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/18		90	%	80 - 120
A612532	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/16		99	%	80 - 120
A612538	MEL	LCS	pH	2022/06/16		100	%	97 - 103
A612539	MEL	LCS	Conductivity	2022/06/16		101	%	90 - 110
A612540	MEL	LCS	Dissolved Fluoride (F)	2022/06/16		93	%	80 - 120
A612707	SKM	LCS	Nitrite (N)	2022/06/16		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/16		106	%	80 - 120
A612882	HE1	LCS	Total Suspended Solids	2022/06/17		99	%	80 - 120
A613216	BYM	LCS	Total Sulphide	2022/06/17		104	%	80 - 120
A613493	BYM	LCS	Chemical Oxygen Demand	2022/06/17		101	%	80 - 120
A613502	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/18		98	%	80 - 120
A613510	MEL	LCS	pH	2022/06/17		100	%	97 - 103
A613512	MEL	LCS	Conductivity	2022/06/17		100	%	90 - 110
A613514	MEL	LCS	Dissolved Fluoride (F)	2022/06/17		92	%	80 - 120
A614213	ACR	LCS	Total Ammonia (N)	2022/06/19		102	%	80 - 120
A614268	MPU	LCS	Dissolved Iron (Fe)	2022/06/17		103	%	80 - 120
			Dissolved Lithium (Li)	2022/06/17		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/17		102	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/17		101	%	80 - 120
			Dissolved Potassium (K)	2022/06/17		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/17		94	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/17		94	%	80 - 120
			Dissolved Sulphur (S)	2022/06/17		100	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/17		105	%	80 - 120
			Dissolved Barium (Ba)	2022/06/17		95	%	80 - 120
			Dissolved Silicon (Si)	2022/06/17		98	%	80 - 120
			Dissolved Boron (B)	2022/06/17		95	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/17		97	%	80 - 120
A614665	MFP	LCS	Total Aluminum (Al)	2022/06/21		101	%	80 - 120

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			Total Chromium (Cr)	2022/06/21		106	%	80 - 120
			Total Cobalt (Co)	2022/06/21		107	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		104	%	80 - 120
			Total Antimony (Sb)	2022/06/21		109	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		105	%	80 - 120
			Total Nickel (Ni)	2022/06/21		106	%	80 - 120
			Total Selenium (Se)	2022/06/21		110	%	80 - 120
			Total Silver (Ag)	2022/06/21		107	%	80 - 120
			Total Arsenic (As)	2022/06/21		104	%	80 - 120
			Total Thallium (Tl)	2022/06/21		103	%	80 - 120
			Total Tin (Sn)	2022/06/21		104	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		106	%	80 - 120
			Total Beryllium (Be)	2022/06/21		102	%	80 - 120
A614669	MPU	LCS	Total Iron (Fe)	2022/06/20		111	%	80 - 120
			Total Lithium (Li)	2022/06/20		104	%	80 - 120
			Total Magnesium (Mg)	2022/06/20		101	%	80 - 120
			Total Manganese (Mn)	2022/06/20		106	%	80 - 120
			Total Potassium (K)	2022/06/20		100	%	80 - 120
			Total Sodium (Na)	2022/06/20		101	%	80 - 120
			Total Strontium (Sr)	2022/06/20		99	%	80 - 120
			Total Sulphur (S)	2022/06/20		99	%	80 - 120
			Total Phosphorus (P)	2022/06/20		102	%	80 - 120
			Total Barium (Ba)	2022/06/20		101	%	80 - 120
			Total Silicon (Si)	2022/06/20		104	%	80 - 120
			Total Boron (B)	2022/06/20		104	%	80 - 120
			Total Calcium (Ca)	2022/06/20		100	%	80 - 120
A614774	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/20		105	%	80 - 120
A614777	MDO	LCS	Total Organic Carbon (C)	2022/06/20		111	%	80 - 120
A614906	AFI	LCS	Chloride (Cl)	2022/06/19		100	%	80 - 120
			Sulphate (SO4)	2022/06/19		102	%	80 - 120
A615527	MFP	LCS	Total Aluminum (Al)	2022/06/21		97	%	80 - 120
			Total Chromium (Cr)	2022/06/21		107	%	80 - 120
			Total Cobalt (Co)	2022/06/21		106	%	80 - 120
			Total Copper (Cu)	2022/06/21		107	%	80 - 120
			Total Lead (Pb)	2022/06/21		99	%	80 - 120
			Total Antimony (Sb)	2022/06/21		105	%	80 - 120
			Total Molybdenum (Mo)	2022/06/21		103	%	80 - 120
			Total Nickel (Ni)	2022/06/21		105	%	80 - 120
			Total Selenium (Se)	2022/06/21		113	%	80 - 120
			Total Silver (Ag)	2022/06/21		103	%	80 - 120
			Total Arsenic (As)	2022/06/21		103	%	80 - 120
			Total Thallium (Tl)	2022/06/21		100	%	80 - 120
			Total Tin (Sn)	2022/06/21		101	%	80 - 120
			Total Titanium (Ti)	2022/06/21		104	%	80 - 120
			Total Uranium (U)	2022/06/21		104	%	80 - 120
			Total Vanadium (V)	2022/06/21		106	%	80 - 120
			Total Zinc (Zn)	2022/06/21		107	%	80 - 120
			Total Beryllium (Be)	2022/06/21		103	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A615538	MPU	LCS	Total Iron (Fe)	2022/06/21		105	%	80 - 120
			Total Lithium (Li)	2022/06/21		99	%	80 - 120
			Total Magnesium (Mg)	2022/06/21		98	%	80 - 120
			Total Manganese (Mn)	2022/06/21		101	%	80 - 120
			Total Potassium (K)	2022/06/21		98	%	80 - 120
			Total Sodium (Na)	2022/06/21		96	%	80 - 120
			Total Strontium (Sr)	2022/06/21		97	%	80 - 120
			Total Sulphur (S)	2022/06/21		93	%	80 - 120
			Total Phosphorus (P)	2022/06/21		93	%	80 - 120
			Total Barium (Ba)	2022/06/21		99	%	80 - 120
			Total Silicon (Si)	2022/06/21		100	%	80 - 120
			Total Boron (B)	2022/06/21		97	%	80 - 120
			Total Calcium (Ca)	2022/06/21		96	%	80 - 120
A615583	MAP	LCS	Total Nitrogen (N)	2022/06/20		104	%	80 - 120
A615583	MAP	SRM	Total Nitrogen (N)	2022/06/20		102	%	80 - 120

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Gita Pokhrel, Laboratory Supervisor

Janet Gao, B.Sc., QP, Supervisor, Organics

Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics

Sandy Yuan, M.Sc., QP, Scientific Specialist

Sze Yeung Fock, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
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Automated Statchk

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VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by:

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Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

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4000 19th St. NE, T2E 6P8
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Fax: (780) 450-4187
Toll Free: (800) 386-7247

4/1 EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page 1 of 1

C of C # 292889

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☑ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150 205 QUARRY PARK SE CALGARY, AB T2C 3E7	Address: 150 205 QUARRY PARK SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): ALEX HAIGH / TINO NGOLUBE	Consultant Project #: 417085-42051

ANALYSIS REQUESTED

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☑ DIS ☑	MERCURY: TOTAL ☑ DISSOLVED ☑	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TDC, TKN, BOD	TRUE COLOR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	OBC	FLOURIDE
1	AEMP - 08		X			17	2022/06/12	14:20	X			X	X							X	X					X			X	X	X	X	X	X	X	X
2	AGMP - 12		X			17	↓	15:00	X			X	X							X	X					X			X	X	X	X	X	X	X	X
3	2022 - Dup2				X	4		17:00					X							X	X					X			X	X	X	X	X	X	X	X
4	2022 - Dup3				X	4		17:00					X																							
5																																				
6																																				
7																																				
8																																				
9																																				
10																																				

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email canada.chemistry@worley.com calcal.iordatatrack@worley.com
Headspace and/or sediment may be present please proceed with analysis
IES A2601436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # ITCAL	TEMP °C 1	2	3
SEAL PRESENT	✓					
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT						
SEAL INTACT						
COOLING MEDIA PRESENT						

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	TINO NGOLUBE	2022/06/13	10:00	1.			
2.	Kyle VanThournout	2022/06/14	20:00	2.	Alejandro Escobar-Lopez / Anderson Torres	2022/06/14 / 2022/06/15	17:26 / 06:00
3.				3.			

LAB USE ONLY
MAXXAM JOB # C241305
SAMPLES
LABELED BY: KIT
VERIFIED BY: MRY

COC-1010 (06/2016) IOL-AB

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299411

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191672
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242195
Received: 2022/06/16, 18:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	2		Auto Calc
PAH in Water by GC/MS (1)	2	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	2	AB SOP-00005	SM 23 4500-H+B m

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299411

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191672
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242195
Received: 2022/06/16, 18:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299411

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191672
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242195

Received: 2022/06/16, 18:40

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Namita Sahni
Customer Solutions Representative
27 Jun 2022 12:55:48

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C242195
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVF602			AVF602			AVF603		
Sampling Date		2022/06/14 10:30			2022/06/14 10:30			2022/06/14 12:00		
COC Number		299411			299411			299411		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**	**AEMP-01 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-05**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A614107				<0.10	0.10	A614107
Volatiles										
Benzene	mg/L	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932
Toluene	mg/L	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932
Ethylbenzene	mg/L	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932
m & p-Xylene	mg/L	<0.00080	0.00080	A618932	<0.00080	0.00080	A618932	<0.00080	0.00080	A618932
o-Xylene	mg/L	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932	<0.00040	0.00040	A618932
Xylenes (Total)	mg/L	<0.00089	0.00089	A613658				<0.00089	0.00089	A613658
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A613658				<0.10	0.10	A613658
F1 (C6-C10)	mg/L	<0.10	0.10	A618932	<0.10	0.10	A618932	<0.10	0.10	A618932
Extraction Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	91		A614107				93		A614107
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	99		A618932	98		A618932	97		A618932
4-Bromofluorobenzene (sur.)	%	99		A618932	98		A618932	99		A618932
D4-1,2-Dichloroethane (sur.)	%	81		A618932	84		A618932	87		A618932

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C242195
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVF602		AVF603		
Sampling Date		2022/06/14 10:30		2022/06/14 12:00		
COC Number		299411		299411		
	UNITS	**AEMP-01**	**RDL**	**AEMP-05**	**RDL**	**QC Batch**
Calculated Parameters						
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.48	0.10	0.60	0.020	A612851
Nutrients						
Total Nitrogen (N)	mg/L	0.53 (1)	0.10	0.60	0.020	A619052

RDL = Reportable Detection Limit

(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVF602	AVF603		
Sampling Date		2022/06/14 10:30	2022/06/14 12:00		
COC Number		299411	299411		
	UNITS	**AEMP-01**	**AEMP-05**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.00050	<0.000020	0.000020	A613128
Total Aluminum (Al)	mg/L	7.9	0.027	0.0030	A619634
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A619634
Total Arsenic (As)	mg/L	0.0068	0.00088	0.00020	A619634
Total Barium (Ba)	mg/L	0.24	0.11	0.010	A619636
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A619634
Total Boron (B)	mg/L	<0.020	<0.020	0.020	A619636
Total Calcium (Ca)	mg/L	55	40	0.30	A619636
Total Chromium (Cr)	mg/L	0.013	<0.0010	0.0010	A619634
Total Cobalt (Co)	mg/L	0.0087	<0.00030	0.00030	A619634
Total Copper (Cu)	mg/L	0.019	<0.0010	0.0010	A619634
Total Iron (Fe)	mg/L	16	0.15	0.060	A619636
Total Lead (Pb)	mg/L	0.0082	<0.00020	0.00020	A619634
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A619636
Total Magnesium (Mg)	mg/L	16	11	0.20	A619636
Total Manganese (Mn)	mg/L	0.34	0.021	0.0040	A619636
Total Molybdenum (Mo)	mg/L	0.0018	0.0011	0.00020	A619634
Total Nickel (Ni)	mg/L	0.026	0.0015	0.00050	A619634
Total Phosphorus (P)	mg/L	0.33	<0.10	0.10	A619636
Total Potassium (K)	mg/L	2.4	1.5	0.30	A619636
Total Selenium (Se)	mg/L	0.00081	<0.00020	0.00020	A619634
Total Silicon (Si)	mg/L	9.0	1.1	0.10	A619636
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A619634
Total Sodium (Na)	mg/L	4.0	3.5	0.50	A619636
Total Strontium (Sr)	mg/L	0.20	0.15	0.020	A619636
Total Sulphur (S)	mg/L	10	5.2	0.20	A619636
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A619634
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A619634
Total Titanium (Ti)	mg/L	0.14	0.0016	0.0010	A619634
Total Uranium (U)	mg/L	0.0013	0.00038	0.00010	A619634
Total Vanadium (V)	mg/L	0.024	<0.0010	0.0010	A619634
RDL = Reportable Detection Limit					

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVF602	AVF603		
Sampling Date		2022/06/14 10:30	2022/06/14 12:00		
COC Number		299411	299411		
	UNITS	**AEMP-01**	**AEMP-05**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.087	<0.0030	0.0030	A619634
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C242195
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVF602			AVF603		
Sampling Date		2022/06/14 10:30			2022/06/14 12:00		
COC Number		299411			299411		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**	**AEMP-05**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	110	0.50	A613094	160	0.50	A613094
Ion Balance (% Difference)	%	2.4	N/A	A613677	0.43	N/A	A613677
Nitrate (N)	mg/L	0.051	0.010	A612848	<0.010	0.010	A613742
Nitrate (NO3)	mg/L	0.23	0.044	A613679	<0.044	0.044	A613679
Nitrite (NO2)	mg/L	<0.033	0.033	A613679	<0.033	0.033	A613679
Sulphide (as H2S)	mg/L	0.026	0.0020	A613446	<0.0020	0.0020	A613446
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A613576	<2.1	2.0	A613576
Chemical Oxygen Demand	mg/L	71	10	A614473	37	10	A614473
Elements							
Dissolved Cadmium (Cd)	mg/L	0.000025	0.000020	A612867	<0.000020	0.000020	A612867
Misc. Inorganics							
Conductivity	uS/cm	220	2.0	A613512	310	2.0	A613512
Dissolved Organic Carbon (C)	mg/L	6.4	0.50	A618082	13	0.50	A618082
pH	pH	7.45	N/A	A613510	7.87	N/A	A613510
Total Organic Carbon (C)	mg/L	7.1	0.50	A618087	13	0.50	A618087
Total Dissolved Solids	mg/L	160	10	A615157	190	10	A615157
Total Suspended Solids	mg/L	550 (1)	3.0	A614872	4.2	0.98	A614872
Anions							
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A613502	<1.0	1.0	A613502
Alkalinity (Total as CaCO3)	mg/L	81	1.0	A613502	140	1.0	A613502
Bicarbonate (HCO3)	mg/L	99	1.0	A613502	170	1.0	A613502
Carbonate (CO3)	mg/L	<1.0	1.0	A613502	<1.0	1.0	A613502
Dissolved Fluoride (F)	mg/L	0.077	0.050	A613514	0.10	0.050	A613514
Hydroxide (OH)	mg/L	<1.0	1.0	A613502	<1.0	1.0	A613502
Total Sulphide	mg/L	0.025	0.0018	A614593	<0.0018	0.0018	A614649
Chloride (Cl)	mg/L	2.7	1.0	A618589	3.4	1.0	A618589
Sulphate (SO4)	mg/L	34	1.0	A618589	19	1.0	A618589

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.

Bureau Veritas Job #: C242195
Report Date: 2022/06/25

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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVF602			AVF603		
Sampling Date		2022/06/14 10:30			2022/06/14 12:00		
COC Number		299411			299411		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**	**AEMP-05**	**RDL**	**QC Batch**
Nutrients							
Total Ammonia (N)	mg/L	<0.015	0.015	A618633	<0.015	0.015	A618633
Nitrite (N)	mg/L	<0.010	0.010	A614290	<0.010	0.010	A614290
Nitrate plus Nitrite (N)	mg/L	0.051	0.010	A614290	<0.010	0.010	A614290
Misc. Organics							
Total Oil and grease	mg/L	6.0	2.0	A612504	6.0	2.0	A612504
Physical Properties							
True Colour	PtCo units	41	2.0	A613958	31	2.0	A613958
Physical Properties							
Turbidity	NTU	410 (1)	0.20	A613859	1.5	0.10	A613859

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVF602	AVF603		
Sampling Date		2022/06/14 10:30	2022/06/14 12:00		
COC Number		299411	299411		
	UNITS	**AEMP-01**	**AEMP-05**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	A613662
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	A614110
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	A614110
Acridine	mg/L	<0.000040	<0.000040	0.000040	A614110
Anthracene	mg/L	<0.000010	<0.000010	0.000010	A614110
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	A614110
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Chrysene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	A614110
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	A614110
Fluorene	mg/L	<0.000050	<0.000050	0.000050	A614110
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
Naphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
Phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Perylene	mg/L	<0.000050	<0.000050	0.000050	A614110
Pyrene	mg/L	<0.000020	<0.000020	0.000020	A614110
Quinoline	mg/L	<0.00020	<0.00020	0.00020	A614110
Extraction Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	111	112		A614110
D8-ACENAPHTHYLENE (sur.)	%	93	84		A614110
D8-NAPHTHALENE (sur.)	%	68	54		A614110
TERPHENYL-D14 (sur.)	%	118	127		A614110
RDL = Reportable Detection Limit					

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVF602		AVF603		
Sampling Date		2022/06/14 10:30		2022/06/14 12:00		
COC Number		299411		299411		
	UNITS	**AEMP-01**	**RDL**	**AEMP-05**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	0.0022	0.0019	0.0026	0.0019	A614825
Total Mercury (Hg)	ug/L	0.034	0.0038	0.0020	0.0019	A614824
RDL = Reportable Detection Limit						

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Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVF602	AVF603		
Sampling Date		2022/06/14 10:30	2022/06/14 12:00		
COC Number		299411	299411		
	UNITS	**AEMP-01**	**AEMP-05**	**RDL**	**QC Batch**
Elements					
Dissolved Aluminum (Al)	mg/L	0.022	<0.0030	0.0030	A614518
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A614518
Dissolved Arsenic (As)	mg/L	0.00030	0.00070	0.00020	A614518
Dissolved Barium (Ba)	mg/L	0.039	0.11	0.010	A616468
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Boron (B)	mg/L	<0.020	<0.020	0.020	A616468
Dissolved Calcium (Ca)	mg/L	30	44	0.30	A616468
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A614518
Dissolved Copper (Cu)	mg/L	0.0016	<0.0010	0.0010	A614518
Dissolved Iron (Fe)	mg/L	<0.060	<0.060	0.060	A616468
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	0.00020	A614518
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	0.020	A616468
Dissolved Magnesium (Mg)	mg/L	7.7	12	0.20	A616468
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0098	0.0040	A616468
Dissolved Molybdenum (Mo)	mg/L	0.00082	0.0011	0.00020	A614518
Dissolved Nickel (Ni)	mg/L	0.0015	0.0012	0.00050	A614518
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A616468
Dissolved Potassium (K)	mg/L	0.87	1.5	0.30	A616468
Dissolved Selenium (Se)	mg/L	0.00026	<0.00020	0.00020	A614518
Dissolved Silicon (Si)	mg/L	1.6	0.86	0.10	A616468
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A614518
Dissolved Sodium (Na)	mg/L	3.9	3.8	0.50	A616468
Dissolved Strontium (Sr)	mg/L	0.16	0.17	0.020	A616468
Dissolved Sulphur (S)	mg/L	10	5.6	0.20	A616468
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A614518
Dissolved Tin (Sn)	mg/L	0.0033	0.0022	0.0010	A614518
Dissolved Titanium (Ti)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Uranium (U)	mg/L	0.00062	0.00037	0.00010	A614518
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0030	A614518
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C242195
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVF602
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A613502	N/A	2022/06/17	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A613576	2022/06/17	2022/06/22	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A618932	N/A	2022/06/23	Darrus Ong
F1-BTEX	CALC/MS	A613658	N/A	2022/06/24	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A612867	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A613128	N/A	2022/06/24	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A618589	N/A	2022/06/22	Carlo Truong
COD by Colorimeter	M/PROB	A614473	N/A	2022/06/18	Bailey Morrison
True Colour	SPEC/COL	A613958	N/A	2022/06/17	Fadia Mostafa
Carbon (DOC)	TECH	A618082	N/A	2022/06/22	Ming Dong
Conductivity @25C	COND	A613512	N/A	2022/06/17	Madelyn Ellis
Fluoride	AT	A613514	N/A	2022/06/17	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A614107	2022/06/20	2022/06/20	Abu Dani Alex
Sulphide (as H2S)	CALC	A613446	N/A	2022/06/18	Automated Statchk
Hardness	CALC	A613094	N/A	2022/06/21	Automated Statchk
Mercury (Dissolved) by CV	CV	A614825	2022/06/18	2022/06/22	Jason Bao
Mercury (Total) by CV	CV	A614824	2022/06/18	2022/06/23	Jason Bao
Elements by ICP - Dissolved	ICPA	A616468	N/A	2022/06/20	Mohammad Pousti
Elements by ICP - Total	ICPA	A619636	2022/06/23	2022/06/23	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A614518	N/A	2022/06/19	Kevin Huang
Elements by ICPMS - Total	ICPM	A619634	2022/06/23	2022/06/23	Maria Fernanda Paez
Ion Balance	CALC	A613677	N/A	2022/06/23	Automated Statchk
Ammonia-N (Total)	KONE	A618633	N/A	2022/06/22	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A613679	N/A	2022/06/18	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A614290	N/A	2022/06/18	Ana Katrina Cariaga
Nitrate (as N)	CALC	A612848	2022/06/18	2022/06/18	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A612504	2022/06/20	2022/06/20	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A613662	N/A	2022/06/21	Automated Statchk
PAH in Water by GC/MS	GC/MS	A614110	2022/06/20	2022/06/20	Nora Kazemian
pH @25°C	AT/ALK	A613510	N/A	2022/06/17	Madelyn Ellis
Total Sulphide	SPEC	A614593	N/A	2022/06/18	Monica Tamang
Total Dissolved Solids (Filt. Residue)	BAL	A615157	2022/06/19	2022/06/19	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A612851	N/A	2022/06/23	Automated Statchk
Nitrogen (Total)	AC/COL	A619052	2022/06/22	2022/06/23	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A618087	N/A	2022/06/22	Ming Dong
Total Suspended Solids (NFR)	BAL	A614872	2022/06/19	2022/06/19	Kiara Garrido
Turbidity	TURB	A613859	N/A	2022/06/17	Kiara Garrido

Bureau Veritas ID: AVF602 Dup
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A618932	N/A	2022/06/23	Darrus Ong

Bureau Veritas Job #: C242195
Report Date: 2022/06/25

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Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVF603
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A613502	N/A	2022/06/17	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A613576	2022/06/17	2022/06/22	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A618932	N/A	2022/06/23	Darrus Ong
F1-BTEX	CALC/MS	A613658	N/A	2022/06/24	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A612867	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A613128	N/A	2022/06/24	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A618589	N/A	2022/06/22	Carlo Truong
COD by Colorimeter	M/PROB	A614473	N/A	2022/06/18	Bailey Morrison
True Colour	SPEC/COL	A613958	N/A	2022/06/17	Fadia Mostafa
Carbon (DOC)	TECH	A618082	N/A	2022/06/22	Ming Dong
Conductivity @25C	COND	A613512	N/A	2022/06/17	Madelyn Ellis
Fluoride	AT	A613514	N/A	2022/06/17	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A614107	2022/06/20	2022/06/20	Abu Dani Alex
Sulphide (as H2S)	CALC	A613446	N/A	2022/06/18	Automated Statchk
Hardness	CALC	A613094	N/A	2022/06/21	Automated Statchk
Mercury (Dissolved) by CV	CV	A614825	2022/06/18	2022/06/23	Jason Bao
Mercury (Total) by CV	CV	A614824	2022/06/18	2022/06/23	Jason Bao
Elements by ICP - Dissolved	ICPA	A616468	N/A	2022/06/21	Mohammad Pousti
Elements by ICP - Total	ICPA	A619636	2022/06/23	2022/06/24	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A614518	N/A	2022/06/19	Kevin Huang
Elements by ICPMS - Total	ICPM	A619634	2022/06/23	2022/06/23	Maria Fernanda Paez
Ion Balance	CALC	A613677	N/A	2022/06/23	Automated Statchk
Ammonia-N (Total)	KONE	A618633	N/A	2022/06/22	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A613679	N/A	2022/06/18	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A614290	N/A	2022/06/17	Ana Katrina Cariaga
Nitrate (as N)	CALC	A613742	2022/06/18	2022/06/18	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A612504	2022/06/20	2022/06/20	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A613662	N/A	2022/06/21	Automated Statchk
PAH in Water by GC/MS	GC/MS	A614110	2022/06/20	2022/06/20	Nora Kazemian
pH @25°C	AT/ALK	A613510	N/A	2022/06/17	Madelyn Ellis
Total Sulphide	SPEC	A614649	N/A	2022/06/18	Monica Tamang
Total Dissolved Solids (Filt. Residue)	BAL	A615157	2022/06/19	2022/06/19	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A612851	N/A	2022/06/23	Automated Statchk
Nitrogen (Total)	AC/COL	A619052	2022/06/22	2022/06/23	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A618087	N/A	2022/06/22	Ming Dong
Total Suspended Solids (NFR)	BAL	A614872	2022/06/19	2022/06/19	Kiara Garrido
Turbidity	TURB	A613859	N/A	2022/06/17	Kiara Garrido

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 4.6 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AVF602 [AEMP-01] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes.

Sample AVF603 [AEMP-05] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

MERCURY BY COLD VAPOR (WATER) Comments

Sample AVF602 [AEMP-01] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A612504	JB9	Method Blank	Total Oil and grease	2022/06/20	<2.0		mg/L	
A613502	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/17	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/17	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/17	<1.0		mg/L	
			Carbonate (CO3)	2022/06/17	<1.0		mg/L	
			Hydroxide (OH)	2022/06/17	<1.0		mg/L	
A613512	MEL	Method Blank	Conductivity	2022/06/17	<2.0		uS/cm	
A613514	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/17	<0.050		mg/L	
A613576	PK8	Method Blank	Biochemical Oxygen Demand	2022/06/22	<2.0		mg/L	
A613859	KGA	Method Blank	Turbidity	2022/06/17	<0.10		NTU	
A613958	FM0	Method Blank	True Colour	2022/06/17	<2.0		PtCo units	
A614107	AAX	Method Blank	O-TERPHENYL (sur.)	2022/06/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/20	<0.10		mg/L	
A614110	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/06/20		129	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/20		166 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/20		117	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/20		85	%	50 - 130
			Acenaphthene	2022/06/20	<0.00010		mg/L	
			Acenaphthylene	2022/06/20	<0.00010		mg/L	
			Acridine	2022/06/20	<0.000040		mg/L	
			Anthracene	2022/06/20	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/20	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/20	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/20	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/20	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/20	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/20	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/20	<0.000050		mg/L	
			Chrysene	2022/06/20	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/20	<0.0000075		mg/L	
			Fluoranthene	2022/06/20	<0.000010		mg/L	
			Fluorene	2022/06/20	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/20	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/20	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/20	<0.00010		mg/L	
			Naphthalene	2022/06/20	<0.00010		mg/L	
			Phenanthrene	2022/06/20	<0.000050		mg/L	
			Perylene	2022/06/20	<0.000050		mg/L	
			Pyrene	2022/06/20	<0.000020		mg/L	
			Quinoline	2022/06/20	<0.00020		mg/L	
A614290	ACR	Method Blank	Nitrite (N)	2022/06/18	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/18	<0.010		mg/L	
A614473	BYM	Method Blank	Chemical Oxygen Demand	2022/06/18	<10		mg/L	
A614518	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/19	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/19	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/19	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/06/19	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/06/19	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/19	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/19	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/06/19	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/19	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Silver (Ag)	2022/06/19	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/19	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/19	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/06/19	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/19	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/19	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/19	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/06/19	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/19	<0.0010		mg/L	
A614593	MTG	Method Blank	Total Sulphide	2022/06/18	<0.0018		mg/L	
A614649	MTG	Method Blank	Total Sulphide	2022/06/18	<0.0018		mg/L	
A614824	JAB	Method Blank	Total Mercury (Hg)	2022/06/23	<0.0019		ug/L	
A614825	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/22	<0.0019		ug/L	
A614872	KGA	Method Blank	Total Suspended Solids	2022/06/19	<1.0		mg/L	
A615157	KK9	Method Blank	Total Dissolved Solids	2022/06/19	<10		mg/L	
A616468	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/21	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/21	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/21	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/21	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/06/21	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/21	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/21	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/21	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/21	<0.30		mg/L	
A618082	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/22	<0.50		mg/L	
A618087	MDO	Method Blank	Total Organic Carbon (C)	2022/06/22	<0.50		mg/L	
A618589	CTU	Method Blank	Chloride (Cl)	2022/06/22	<1.0		mg/L	
			Sulphate (SO4)	2022/06/22	<1.0		mg/L	
A618633	ACR	Method Blank	Total Ammonia (N)	2022/06/22	<0.015		mg/L	
A618932	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/23		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/23		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/23		83	%	50 - 140
			Benzene	2022/06/23	<0.00040		mg/L	
			Toluene	2022/06/23	<0.00040		mg/L	
			Ethylbenzene	2022/06/23	<0.00040		mg/L	
			m & p-Xylene	2022/06/23	<0.00080		mg/L	
			o-Xylene	2022/06/23	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/23	<0.10		mg/L	
A619052	MAP	Method Blank	Total Nitrogen (N)	2022/06/23	<0.020		mg/L	
A619634	MFP	Method Blank	Total Aluminum (Al)	2022/06/23	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/23	<0.0010		mg/L	
			Total Cobalt (Co)	2022/06/23	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/23	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/23	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/23	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/23	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/23	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/23	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Silver (Ag)	2022/06/23	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/23	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/23	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/23	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/23	<0.0010		mg/L	
			Total Uranium (U)	2022/06/23	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/23	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/23	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/23	<0.0010		mg/L	
A619636	IK0	Method Blank	Total Iron (Fe)	2022/06/24	<0.060		mg/L	
			Total Lithium (Li)	2022/06/24	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/24	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/24	<0.0040		mg/L	
			Total Potassium (K)	2022/06/24	<0.30		mg/L	
			Total Sodium (Na)	2022/06/24	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/24	<0.020		mg/L	
			Total Sulphur (S)	2022/06/24	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/24	<0.10		mg/L	
			Total Barium (Ba)	2022/06/24	<0.010		mg/L	
			Total Silicon (Si)	2022/06/24	<0.10		mg/L	
			Total Boron (B)	2022/06/24	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/24	<0.30		mg/L	
A618932	DO1	RPD [AVF602-14]	Benzene	2022/06/23	NC		%	30
			Toluene	2022/06/23	NC		%	30
			Ethylbenzene	2022/06/23	NC		%	30
			m & p-Xylene	2022/06/23	NC		%	30
			o-Xylene	2022/06/23	NC		%	30
			F1 (C6-C10)	2022/06/23	NC		%	30
A618932	DO1	Matrix Spike [AVF603-14]	1,4-Difluorobenzene (sur.)	2022/06/23		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/23		104	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/23		87	%	50 - 140
			Benzene	2022/06/23		99	%	50 - 140
			Toluene	2022/06/23		90	%	50 - 140
			Ethylbenzene	2022/06/23		95	%	50 - 140
			m & p-Xylene	2022/06/23		95	%	50 - 140
			o-Xylene	2022/06/23		96	%	50 - 140
			F1 (C6-C10)	2022/06/23		97	%	60 - 140
A612504	JB9	LCS	Total Oil and grease	2022/06/20		119	%	70 - 130
A613502	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/18		98	%	80 - 120
A613510	MEL	LCS	pH	2022/06/17		100	%	97 - 103
A613512	MEL	LCS	Conductivity	2022/06/17		100	%	90 - 110
A613514	MEL	LCS	Dissolved Fluoride (F)	2022/06/17		92	%	80 - 120
A613576	PK8	LCS	Biochemical Oxygen Demand	2022/06/22		90	%	85 - 115
A613859	KGA	LCS	Turbidity	2022/06/17		102	%	80 - 120
A613958	FM0	LCS	True Colour	2022/06/17		94	%	80 - 120
A614107	AAX	LCS	O-TERPHENYL (sur.)	2022/06/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/20		82	%	60 - 140
A614110	NK3	LCS	D10-ANTHRACENE (sur.)	2022/06/20		130	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/20		130	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/20		82	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/20		44 (1)	%	50 - 130
			Acenaphthene	2022/06/20		81	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Acenaphthylene	2022/06/20		88	%	50 - 130
			Acridine	2022/06/20		100	%	50 - 130
			Anthracene	2022/06/20		94	%	50 - 130
			Benzo(a)anthracene	2022/06/20		114	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/20		115	%	50 - 130
			Benzo(k)fluoranthene	2022/06/20		112	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/20		111	%	50 - 130
			Benzo(c)phenanthrene	2022/06/20		121	%	50 - 130
			Benzo(a)pyrene	2022/06/20		104	%	50 - 130
			Benzo(e)pyrene	2022/06/20		106	%	50 - 130
			Chrysene	2022/06/20		117	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/20		110	%	50 - 130
			Fluoranthene	2022/06/20		116	%	50 - 130
			Fluorene	2022/06/20		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/20		108	%	50 - 130
			1-Methylnaphthalene	2022/06/20		60	%	50 - 130
			2-Methylnaphthalene	2022/06/20		72	%	50 - 130
			Naphthalene	2022/06/20		83	%	50 - 130
			Phenanthrene	2022/06/20		106	%	50 - 130
			Perylene	2022/06/20		108	%	50 - 130
			Pyrene	2022/06/20		115	%	50 - 130
			Quinoline	2022/06/20		81	%	50 - 130
A614290	ACR	LCS	Nitrite (N)	2022/06/17		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/17		106	%	80 - 120
A614473	BYM	LCS	Chemical Oxygen Demand	2022/06/18		101	%	80 - 120
A614518	KH2	LCS	Dissolved Aluminum (Al)	2022/06/19		90	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/19		92	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/19		93	%	80 - 120
			Dissolved Copper (Cu)	2022/06/19		92	%	80 - 120
			Dissolved Lead (Pb)	2022/06/19		91	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/19		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/19		95	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/19		92	%	80 - 120
			Dissolved Selenium (Se)	2022/06/19		91	%	80 - 120
			Dissolved Silver (Ag)	2022/06/19		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/19		89	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/19		90	%	80 - 120
			Dissolved Tin (Sn)	2022/06/19		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/19		97	%	80 - 120
			Dissolved Uranium (U)	2022/06/19		87	%	80 - 120
			Dissolved Vanadium (V)	2022/06/19		95	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/19		82	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/19		90	%	80 - 120
A614593	MTG	LCS	Total Sulphide	2022/06/18		114	%	80 - 120
A614649	MTG	LCS	Total Sulphide	2022/06/18		115	%	80 - 120
A614824	JAB	LCS	Total Mercury (Hg)	2022/06/23		101	%	80 - 120
A614825	JAB	LCS	Dissolved Mercury (Hg)	2022/06/22		97	%	80 - 120
A614872	KGA	LCS	Total Suspended Solids	2022/06/19		101	%	80 - 120
A615157	KK9	LCS	Total Dissolved Solids	2022/06/19		99	%	80 - 120
A616468	MPU	LCS	Dissolved Iron (Fe)	2022/06/20		108	%	80 - 120
			Dissolved Lithium (Li)	2022/06/20		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/20		97	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Manganese (Mn)	2022/06/20		104	%	80 - 120
			Dissolved Potassium (K)	2022/06/20		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/20		97	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/20		96	%	80 - 120
			Dissolved Sulphur (S)	2022/06/20		97	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/20		100	%	80 - 120
			Dissolved Barium (Ba)	2022/06/20		98	%	80 - 120
			Dissolved Silicon (Si)	2022/06/20		96	%	80 - 120
			Dissolved Boron (B)	2022/06/20		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/20		97	%	80 - 120
A618082	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/22		112	%	80 - 120
A618087	MDO	LCS	Total Organic Carbon (C)	2022/06/22		111	%	80 - 120
A618589	CTU	LCS	Chloride (Cl)	2022/06/22		101	%	80 - 120
			Sulphate (SO4)	2022/06/22		97	%	80 - 120
A618633	ACR	LCS	Total Ammonia (N)	2022/06/22		102	%	80 - 120
A618932	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/06/23		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/23		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/23		85	%	50 - 140
			Benzene	2022/06/23		100	%	60 - 130
			Toluene	2022/06/23		91	%	60 - 130
			Ethylbenzene	2022/06/23		97	%	60 - 130
			m & p-Xylene	2022/06/23		97	%	60 - 130
			o-Xylene	2022/06/23		95	%	60 - 130
			F1 (C6-C10)	2022/06/23		101	%	60 - 140
A619052	MAP	LCS	Total Nitrogen (N)	2022/06/23		105	%	80 - 120
A619634	MFP	LCS	Total Aluminum (Al)	2022/06/23		98	%	80 - 120
			Total Chromium (Cr)	2022/06/23		101	%	80 - 120
			Total Cobalt (Co)	2022/06/23		102	%	80 - 120
			Total Copper (Cu)	2022/06/23		103	%	80 - 120
			Total Lead (Pb)	2022/06/23		105	%	80 - 120
			Total Antimony (Sb)	2022/06/23		107	%	80 - 120
			Total Molybdenum (Mo)	2022/06/23		103	%	80 - 120
			Total Nickel (Ni)	2022/06/23		101	%	80 - 120
			Total Selenium (Se)	2022/06/23		105	%	80 - 120
			Total Silver (Ag)	2022/06/23		104	%	80 - 120
			Total Arsenic (As)	2022/06/23		101	%	80 - 120
			Total Thallium (Tl)	2022/06/23		104	%	80 - 120
			Total Tin (Sn)	2022/06/23		104	%	80 - 120
			Total Titanium (Ti)	2022/06/23		100	%	80 - 120
			Total Uranium (U)	2022/06/23		105	%	80 - 120
			Total Vanadium (V)	2022/06/23		101	%	80 - 120
			Total Zinc (Zn)	2022/06/23		101	%	80 - 120
			Total Beryllium (Be)	2022/06/23		99	%	80 - 120
A619636	IK0	LCS	Total Iron (Fe)	2022/06/23		99	%	80 - 120
			Total Lithium (Li)	2022/06/23		96	%	80 - 120
			Total Magnesium (Mg)	2022/06/23		93	%	80 - 120
			Total Manganese (Mn)	2022/06/23		101	%	80 - 120
			Total Potassium (K)	2022/06/23		96	%	80 - 120
			Total Sodium (Na)	2022/06/23		96	%	80 - 120
			Total Strontium (Sr)	2022/06/23		93	%	80 - 120
			Total Sulphur (S)	2022/06/23		94	%	80 - 120
			Total Phosphorus (P)	2022/06/23		95	%	80 - 120

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Bureau Veritas Job #: C242195
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Barium (Ba)	2022/06/23		96	%	80 - 120
			Total Silicon (Si)	2022/06/23		99	%	80 - 120
			Total Boron (B)	2022/06/23		96	%	80 - 120
			Total Calcium (Ca)	2022/06/23		93	%	80 - 120
A619052	MAP	SRM	Total Nitrogen (N)	2022/06/23		101	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

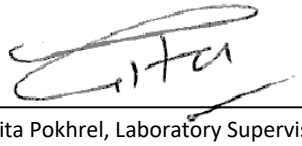
Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

VALIDATION SIGNATURE PAGE

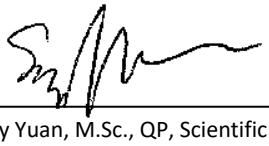
The analytical data and all QC contained in this report were reviewed and validated by:



Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



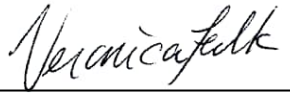
Gita Pokhrel, Laboratory Supervisor



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

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Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
Phone: (403) 291-3077
Fax: (403) 735-2240
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☒ Edmonton
9331 - 48 Street, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187
Toll Free: (800) 386-7247

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

SAD

C of C # 299411

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150 205 QUARRY PARK BLVD SE CALGARY, AB T2C 3E7	Address: 150 205 QUARRY PARK BLVD SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): ALEX HAIGH / TINO NGULUBE	Consultant Project #: 417085-42051

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☒ DIS ☒	MERCURY: TOTAL ☒ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	True color, TSS, TDS, Turbidity	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	OIL & GREASE	FLOURIDE
1	AEMP-01		X			17	2022/06/14	10:30	X			X	X							X	X					X			X	X	X	X	X	X	X
2	AEMP-05		X			17	↓	12:00	X			X	X							X	X					X			X	X	X	X	X	X	X
3																																					
4																																					
5																																					
6																																					
7																																					
8																																					
9																																					
10																																					

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email canada.chemistry@worley.com caceliordatamanck@worley.com
Headspace and/or sediment may be present. Please proceed with analysis
IES A2601436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	2	2	6
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # MCAL			
SEAL PRESENT	✓		TEMP °C	4	5	5
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C			
SEAL INTACT				1	2	3
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C242195

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	ALEX HAIGH	2022/06/15	10:00	1.	Kyle VanThournout	2022/06/16	1840
2.	Kyle VanThournout	2022/06/16	1930	2.	Aryam Lwemoe	2022/06/17	06:30
3.				3.			

SAMPLES
LABELED BY: KVT
VERIFIED BY: SAD

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299412

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191716
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242197
Received: 2022/06/16, 18:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	2		Auto Calc
PAH in Water by GC/MS (1)	2	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	2	AB SOP-00005	SM 23 4500-H+B m

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299412

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191716
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242197
Received: 2022/06/16, 18:40

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Task Order#: PENDING
Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051
Your C.O.C. #: 299412

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/06/25
Report #: R3191716
Version: 2 - Final

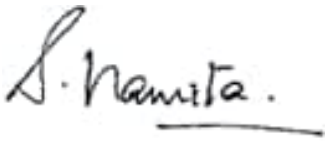
CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C242197

Received: 2022/06/16, 18:40

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
27 Jun 2022 12:58:17

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C242197
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	0.10	A614107
Volatiles					
Benzene	mg/L	<0.00040	<0.00040	0.00040	A618932
Toluene	mg/L	<0.00040	<0.00040	0.00040	A618932
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	A618932
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	A618932
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	A618932
Xylenes (Total)	mg/L	<0.00089	<0.00089	0.00089	A613658
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	0.10	A613658
F1 (C6-C10)	mg/L	<0.10	<0.10	0.10	A618932
Extraction Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	90	91		A614107
Instrument Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	98	98		A618932
4-Bromofluorobenzene (sur.)	%	97	98		A618932
D4-1,2-Dichloroethane (sur.)	%	82	82		A618932
RDL = Reportable Detection Limit					

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TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AVF759		AVF760		
Sampling Date		2022/06/14 11:30		2022/06/14 11:35		
COC Number		299412		299412		
	UNITS	**AEMP-13**	**QC Batch**	**2022-DUP4**	**RDL**	**QC Batch**
Calculated Parameters						
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.54	A612851	0.49	0.020	A612851
Nutrients						
Total Nitrogen (N)	mg/L	0.57	A619052	0.51	0.020	A621308
RDL = Reportable Detection Limit						

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.00028	0.00027	0.000020	A613128
Total Aluminum (Al)	mg/L	5.5	4.9	0.0030	A619634
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A619634
Total Arsenic (As)	mg/L	0.0037	0.0037	0.00020	A619634
Total Barium (Ba)	mg/L	0.18	0.15	0.010	A619636
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A619634
Total Boron (B)	mg/L	0.026	0.023	0.020	A619636
Total Calcium (Ca)	mg/L	42	42	0.30	A619636
Total Chromium (Cr)	mg/L	0.0080	0.0074	0.0010	A619634
Total Cobalt (Co)	mg/L	0.0041	0.0040	0.00030	A619634
Total Copper (Cu)	mg/L	0.0098	0.0092	0.0010	A619634
Total Iron (Fe)	mg/L	8.0	7.4	0.060	A619636
Total Lead (Pb)	mg/L	0.0041	0.0041	0.00020	A619634
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A619636
Total Magnesium (Mg)	mg/L	12	11	0.20	A619636
Total Manganese (Mn)	mg/L	0.15	0.15	0.0040	A619636
Total Molybdenum (Mo)	mg/L	0.0025	0.0022	0.00020	A619634
Total Nickel (Ni)	mg/L	0.015	0.014	0.00050	A619634
Total Phosphorus (P)	mg/L	0.14	0.13	0.10	A619636
Total Potassium (K)	mg/L	3.5	3.5	0.30	A622770
Total Selenium (Se)	mg/L	0.00060	0.00052	0.00020	A619634
Total Silicon (Si)	mg/L	20	19	0.10	A622770
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A619634
Total Sodium (Na)	mg/L	4.0	3.9	0.50	A619636
Total Strontium (Sr)	mg/L	0.18	0.18	0.020	A619636
Total Sulphur (S)	mg/L	9.5	9.5	0.20	A619636
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A619634
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A619634
Total Titanium (Ti)	mg/L	0.11	0.12	0.0010	A619634
Total Uranium (U)	mg/L	0.0011	0.0011	0.00010	A619634
Total Vanadium (V)	mg/L	0.016	0.015	0.0010	A619634
RDL = Reportable Detection Limit					

Bureau Veritas Job #: C242197
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.045	0.042	0.0030	A619634
RDL = Reportable Detection Limit					

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C242197
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVF759		AVF760			AVF760		
Sampling Date		2022/06/14 11:30		2022/06/14 11:35			2022/06/14 11:35		
COC Number		299412		299412			299412		
	UNITS	**AEMP-13**	**QC Batch**	**2022-DUP4**	**RDL**	**QC Batch**	**2022-DUP4 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	120	A613094	120	0.50	A613094			
Ion Balance (% Difference)	%	5.4	A613677	6.5	N/A	A613677			
Nitrate (N)	mg/L	0.025	A613742	0.023	0.010	A613742			
Nitrate (NO3)	mg/L	0.11	A613679	0.10	0.044	A613679			
Nitrite (NO2)	mg/L	<0.033	A613679	<0.033	0.033	A613679			
Sulphide (as H2S)	mg/L	0.014	A613446	0.018	0.0020	A613446			
Demand Parameters									
Biochemical Oxygen Demand	mg/L	<2.0	A613576	<2.0	2.0	A613576			
Chemical Oxygen Demand	mg/L	59	A614473	69	10	A614473			
Elements									
Dissolved Cadmium (Cd)	mg/L	0.000025	A612867	0.000026	0.000020	A612867			
Misc. Inorganics									
Conductivity	uS/cm	260	A613512	270	2.0	A614612			
Dissolved Organic Carbon (C)	mg/L	6.4	A618082	7.0	0.50	A618082			
pH	pH	7.61	A613510	7.76	N/A	A614610			
Total Organic Carbon (C)	mg/L	8.2	A618087	6.8	0.50	A618087			
Total Dissolved Solids	mg/L	180	A615157	190	10	A615157			
Total Suspended Solids	mg/L	150 (1)	A614872	170 (1)	3.0	A614872			
Anions									
Alkalinity (PP as CaCO3)	mg/L	<1.0	A613502	<1.0	1.0	A614609			
Alkalinity (Total as CaCO3)	mg/L	100	A613502	110	1.0	A614609			
Bicarbonate (HCO3)	mg/L	130	A613502	130	1.0	A614609			
Carbonate (CO3)	mg/L	<1.0	A613502	<1.0	1.0	A614609			
Dissolved Fluoride (F)	mg/L	0.087	A613514	0.091	0.050	A614613			
Hydroxide (OH)	mg/L	<1.0	A613502	<1.0	1.0	A614609			
Total Sulphide	mg/L	0.013 (2)	A621321	0.017 (2)	0.0018	A621321			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.
(2) Sample was originally processed within hold time. Data quality required investigation. Re-analysis was completed past recommended hold time.

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Report Date: 2022/06/25

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Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AVF759		AVF760			AVF760		
Sampling Date		2022/06/14 11:30		2022/06/14 11:35			2022/06/14 11:35		
COC Number		299412		299412			299412		
	UNITS	**AEMP-13**	**QC Batch**	**2022-DUP4**	**RDL**	**QC Batch**	**2022-DUP4 Lab-Dup**	**RDL**	**QC Batch**
Chloride (Cl)	mg/L	3.2	A618589	2.9	1.0	A618589			
Sulphate (SO4)	mg/L	32	A618589	32	1.0	A618589			
Nutrients									
Total Ammonia (N)	mg/L	<0.015	A615001	<0.015	0.015	A618633			
Nitrite (N)	mg/L	<0.010	A614290	<0.010	0.010	A614291	<0.010	0.010	A614291
Nitrate plus Nitrite (N)	mg/L	0.025	A614290	0.023	0.010	A614291	0.022	0.010	A614291
Misc. Organics									
Total Oil and grease	mg/L	<2.0	A612504	4.0	2.0	A612504			
Physical Properties									
True Colour	PtCo units	37	A613958	37	2.0	A613958			
Physical Properties									
Turbidity	NTU	170 (1)	A613859	220 (1)	0.20	A613859			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Polycyclic Aromatics					
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	0.000010	A613662
Acenaphthene	mg/L	<0.00010	<0.00010	0.00010	A614110
Acenaphthylene	mg/L	<0.00010	<0.00010	0.00010	A614110
Acridine	mg/L	<0.000040	<0.000040	0.000040	A614110
Anthracene	mg/L	<0.000010	<0.000010	0.000010	A614110
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	0.0000075	A614110
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Chrysene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	0.0000075	A614110
Fluoranthene	mg/L	<0.000010	<0.000010	0.000010	A614110
Fluorene	mg/L	<0.000050	<0.000050	0.000050	A614110
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	0.0000085	A614110
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
Naphthalene	mg/L	<0.00010	<0.00010	0.00010	A614110
Phenanthrene	mg/L	<0.000050	<0.000050	0.000050	A614110
Perylene	mg/L	<0.000050	<0.000050	0.000050	A614110
Pyrene	mg/L	<0.000020	<0.000020	0.000020	A614110
Quinoline	mg/L	<0.00020	<0.00020	0.00020	A614110
Extraction Surrogate Recovery (%)					
D10-ANTHRACENE (sur.)	%	117	118		A614110
D8-ACENAPHTHYLENE (sur.)	%	92	103		A614110
D8-NAPHTHALENE (sur.)	%	64	83		A614110
TERPHENYL-D14 (sur.)	%	128	99		A614110
RDL = Reportable Detection Limit					

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Elements					
Dissolved Mercury (Hg)	ug/L	0.0019	0.0023	0.0019	A614825
Total Mercury (Hg)	ug/L	0.026	0.025	0.0038	A614824
RDL = Reportable Detection Limit					

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AVF759	AVF760		
Sampling Date		2022/06/14 11:30	2022/06/14 11:35		
COC Number		299412	299412		
	UNITS	**AEMP-13**	**2022-DUP4**	**RDL**	**QC Batch**
Elements					
Dissolved Aluminum (Al)	mg/L	0.025	0.024	0.0030	A614518
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A614518
Dissolved Arsenic (As)	mg/L	0.00037	0.00031	0.00020	A614518
Dissolved Barium (Ba)	mg/L	0.050	0.050	0.010	A616468
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Boron (B)	mg/L	<0.020	<0.020	0.020	A616468
Dissolved Calcium (Ca)	mg/L	33	33	0.30	A616468
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A614518
Dissolved Copper (Cu)	mg/L	0.0013	0.0013	0.0010	A614518
Dissolved Iron (Fe)	mg/L	<0.060	0.061	0.060	A616468
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	0.00020	A614518
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	0.020	A616468
Dissolved Magnesium (Mg)	mg/L	8.7	8.6	0.20	A616468
Dissolved Manganese (Mn)	mg/L	0.0080	0.0078	0.0040	A616468
Dissolved Molybdenum (Mo)	mg/L	0.00095	0.00098	0.00020	A614518
Dissolved Nickel (Ni)	mg/L	0.0016	0.0016	0.00050	A614518
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A616468
Dissolved Potassium (K)	mg/L	0.96	0.97	0.30	A616468
Dissolved Selenium (Se)	mg/L	<0.00020	<0.00020	0.00020	A614518
Dissolved Silicon (Si)	mg/L	1.5	1.5	0.10	A616468
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A614518
Dissolved Sodium (Na)	mg/L	4.0	3.9	0.50	A616468
Dissolved Strontium (Sr)	mg/L	0.17	0.17	0.020	A616468
Dissolved Sulphur (S)	mg/L	15	10	0.20	A622747
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A614518
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Titanium (Ti)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Uranium (U)	mg/L	0.00060	0.00060	0.00010	A614518
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A614518
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0030	A614518
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C242197
Report Date: 2022/06/25

Advisian
Task Order#: PENDING, Line Item: 10
Site#:
Site Location: NORMAN WELLS, NT
Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVF759
Sample ID: AEMP-13
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A613502	N/A	2022/06/17	Madelyn Ellis
Biochemical Oxygen Demand	DO/PROB	A613576	2022/06/17	2022/06/22	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A618932	N/A	2022/06/23	Darrus Ong
F1-BTEX	CALC/MS	A613658	N/A	2022/06/24	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A612867	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A613128	N/A	2022/06/24	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A618589	N/A	2022/06/22	Carlo Truong
COD by Colorimeter	M/PROB	A614473	N/A	2022/06/18	Bailey Morrison
True Colour	SPEC/COL	A613958	N/A	2022/06/17	Fadia Mostafa
Carbon (DOC)	TECH	A618082	N/A	2022/06/22	Ming Dong
Conductivity @25C	COND	A613512	N/A	2022/06/17	Madelyn Ellis
Fluoride	AT	A613514	N/A	2022/06/17	Madelyn Ellis
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A614107	2022/06/20	2022/06/20	Abu Dani Alex
Sulphide (as H2S)	CALC	A613446	N/A	2022/06/18	Automated Statchk
Hardness	CALC	A613094	N/A	2022/06/21	Automated Statchk
Mercury (Dissolved) by CV	CV	A614825	2022/06/18	2022/06/23	Jason Bao
Mercury (Total) by CV	CV	A614824	2022/06/18	2022/06/23	Jason Bao
Elements by ICP - Dissolved	ICPA	A616468	N/A	2022/06/21	Mohammad Pousti
Elements by ICP - Total	ICPA	A619636	2022/06/23	2022/06/23	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A614518	N/A	2022/06/19	Kevin Huang
Elements by ICPMS - Total	ICPM	A619634	2022/06/23	2022/06/23	Maria Fernanda Paez
Ion Balance	CALC	A613677	N/A	2022/06/23	Automated Statchk
Ammonia-N (Total)	KONE	A615001	N/A	2022/06/19	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A613679	N/A	2022/06/18	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A614290	N/A	2022/06/18	Ana Katrina Cariaga
Nitrate (as N)	CALC	A613742	2022/06/18	2022/06/18	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A612504	2022/06/20	2022/06/20	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A613662	N/A	2022/06/21	Automated Statchk
PAH in Water by GC/MS	GC/MS	A614110	2022/06/20	2022/06/20	Nora Kazemian
pH @25°C	AT/ALK	A613510	N/A	2022/06/17	Madelyn Ellis
Total Sulphide	SPEC	A621321	N/A	2022/06/24	Preetleen Kathuria
Total Dissolved Solids (Filt. Residue)	BAL	A615157	2022/06/19	2022/06/19	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A612851	N/A	2022/06/23	Automated Statchk
Nitrogen (Total)	AC/COL	A619052	2022/06/22	2022/06/23	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A618087	N/A	2022/06/22	Ming Dong
Total Suspended Solids (NFR)	BAL	A614872	2022/06/19	2022/06/19	Kiara Garrido
Turbidity	TURB	A613859	N/A	2022/06/17	Kiara Garrido

Bureau Veritas ID: AVF760
Sample ID: 2022-DUP4
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A614609	N/A	2022/06/18	Tracy (Jing) Ling

Bureau Veritas Job #: C242197
Report Date: 2022/06/25

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Task Order#: PENDING, Line Item: 10
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Project #: 417085-42051

TEST SUMMARY

Bureau Veritas ID: AVF760
Sample ID: 2022-DUP4
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A613576	2022/06/17	2022/06/22	Preetleen Kathuria
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A618932	N/A	2022/06/23	Darrus Ong
F1-BTEX	CALC/MS	A613658	N/A	2022/06/24	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A612867	N/A	2022/06/20	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A613128	N/A	2022/06/24	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A618589	N/A	2022/06/22	Carlo Truong
COD by Colorimeter	M/PROB	A614473	N/A	2022/06/18	Bailey Morrison
True Colour	SPEC/COL	A613958	N/A	2022/06/17	Fadia Mostafa
Carbon (DOC)	TECH	A618082	N/A	2022/06/22	Ming Dong
Conductivity @25C	COND	A614612	N/A	2022/06/18	Tracy (Jing) Ling
Fluoride	AT	A614613	N/A	2022/06/18	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A614107	2022/06/20	2022/06/20	Abu Dani Alex
Sulphide (as H2S)	CALC	A613446	N/A	2022/06/18	Automated Statchk
Hardness	CALC	A613094	N/A	2022/06/21	Automated Statchk
Mercury (Dissolved) by CV	CV	A614825	2022/06/18	2022/06/23	Jason Bao
Mercury (Total) by CV	CV	A614824	2022/06/18	2022/06/23	Jason Bao
Elements by ICP - Dissolved	ICPA	A616468	N/A	2022/06/21	Mohammad Pousti
Elements by ICP - Total	ICPA	A619636	2022/06/23	2022/06/23	Ilonka Kovac
Elements by ICPMS - Dissolved	ICPM	A614518	N/A	2022/06/19	Kevin Huang
Elements by ICPMS - Total	ICPM	A619634	2022/06/23	2022/06/23	Maria Fernanda Paez
Ion Balance	CALC	A613677	N/A	2022/06/23	Automated Statchk
Ammonia-N (Total)	KONE	A618633	N/A	2022/06/22	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A613679	N/A	2022/06/18	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A614291	N/A	2022/06/17	Ana Katrina Cariaga
Nitrate (as N)	CALC	A613742	2022/06/18	2022/06/18	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A612504	2022/06/20	2022/06/20	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A613662	N/A	2022/06/21	Automated Statchk
PAH in Water by GC/MS	GC/MS	A614110	2022/06/20	2022/06/20	Nora Kazemian
pH @25°C	AT/ALK	A614610	N/A	2022/06/18	Tracy (Jing) Ling
Total Sulphide	SPEC	A621321	N/A	2022/06/24	Preetleen Kathuria
Total Dissolved Solids (Filt. Residue)	BAL	A615157	2022/06/19	2022/06/19	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A612851	N/A	2022/06/24	Automated Statchk
Nitrogen (Total)	AC/COL	A621308	2022/06/24	2022/06/24	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A618087	N/A	2022/06/22	Ming Dong
Total Suspended Solids (NFR)	BAL	A614872	2022/06/19	2022/06/19	Kiara Garrido
Turbidity	TURB	A613859	N/A	2022/06/17	Kiara Garrido

Bureau Veritas ID: AVF760 Dup
Sample ID: 2022-DUP4
Matrix: Water

Collected: 2022/06/14
Relinquished: 2022/06/15
Received: 2022/06/16

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A614291	N/A	2022/06/17	Ana Katrina Cariaga

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 4.6 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AVF759 [AEMP-13] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. NO2 (N); NO2 (N) + NO3 (N) in Water completed within five days of sampling. Data is satisfactory for compliance purposes. Sample was analyzed past method specified hold time for Total Sulphide.

Sample AVF760 [2022-DUP4] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Total Sulphide.

MERCURY BY COLD VAPOR (WATER) Comments

Sample AVF759 [AEMP-13] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample AVF760 [2022-DUP4] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample AVF759, Elements by ICP - Total: Test repeated.
Sample AVF760, Elements by ICP - Total: Test repeated.
Sample AVF759, Elements by ICP - Dissolved: Test repeated.
Sample AVF760, Elements by ICP - Dissolved: Test repeated.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AVF759	AEMP-13	Water	BOD	DEMA	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVF759	AEMP-13	Water	SIDE	MAI	Sample	#11 Past Hold Time	#4 Re-Analysis Required	This may increase the uncertainty associated with these results.
AVF760	2022-DUP4	Water	BOD	DEMA	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AVF760	2022-DUP4	Water	SIDE	MAI	Sample	#11 Past Hold Time	#4 Re-Analysis Required	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A612504	JB9	Method Blank	Total Oil and grease	2022/06/20	<2.0		mg/L	
A613502	MEL	Method Blank	Alkalinity (Total as CaCO3)	2022/06/17	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/17	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/17	<1.0		mg/L	
			Carbonate (CO3)	2022/06/17	<1.0		mg/L	
			Hydroxide (OH)	2022/06/17	<1.0		mg/L	
A613512	MEL	Method Blank	Conductivity	2022/06/17	<2.0		uS/cm	
A613514	MEL	Method Blank	Dissolved Fluoride (F)	2022/06/17	<0.050		mg/L	
A613576	PK8	Method Blank	Biochemical Oxygen Demand	2022/06/22	<2.0		mg/L	
A613859	KGA	Method Blank	Turbidity	2022/06/17	<0.10		NTU	
A613958	FM0	Method Blank	True Colour	2022/06/17	<2.0		PtCo units	
A614107	AAX	Method Blank	O-TERPHENYL (sur.)	2022/06/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/20	<0.10		mg/L	
A614110	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/06/20		129	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/20		166 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/20		117	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/20		85	%	50 - 130
			Acenaphthene	2022/06/20	<0.00010		mg/L	
			Acenaphthylene	2022/06/20	<0.00010		mg/L	
			Acridine	2022/06/20	<0.000040		mg/L	
			Anthracene	2022/06/20	<0.000010		mg/L	
			Benzo(a)anthracene	2022/06/20	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/06/20	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/06/20	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/06/20	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/06/20	<0.000050		mg/L	
			Benzo(a)pyrene	2022/06/20	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/06/20	<0.000050		mg/L	
			Chrysene	2022/06/20	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/06/20	<0.0000075		mg/L	
			Fluoranthene	2022/06/20	<0.000010		mg/L	
			Fluorene	2022/06/20	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/06/20	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/06/20	<0.00010		mg/L	
			2-Methylnaphthalene	2022/06/20	<0.00010		mg/L	
			Naphthalene	2022/06/20	<0.00010		mg/L	
			Phenanthrene	2022/06/20	<0.000050		mg/L	
			Perylene	2022/06/20	<0.000050		mg/L	
			Pyrene	2022/06/20	<0.000020		mg/L	
			Quinoline	2022/06/20	<0.00020		mg/L	
A614290	ACR	Method Blank	Nitrite (N)	2022/06/18	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/18	<0.010		mg/L	
A614291	ACR	Method Blank	Nitrite (N)	2022/06/17	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/06/17	<0.010		mg/L	
A614473	BYM	Method Blank	Chemical Oxygen Demand	2022/06/18	<10		mg/L	
A614518	KH2	Method Blank	Dissolved Aluminum (Al)	2022/06/19	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/06/19	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/06/19	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/06/19	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/06/19	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/06/19	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/06/19	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Nickel (Ni)	2022/06/19	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/06/19	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/06/19	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/06/19	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/06/19	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/06/19	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/06/19	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/06/19	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/06/19	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/06/19	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/06/19	<0.0010		mg/L	
A614609	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/06/18	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/06/18	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/06/18	<1.0		mg/L	
			Carbonate (CO3)	2022/06/18	<1.0		mg/L	
			Hydroxide (OH)	2022/06/18	<1.0		mg/L	
A614612	JLD	Method Blank	Conductivity	2022/06/18	<2.0		uS/cm	
A614613	JLD	Method Blank	Dissolved Fluoride (F)	2022/06/18	<0.050		mg/L	
A614824	JAB	Method Blank	Total Mercury (Hg)	2022/06/23	<0.0019		ug/L	
A614825	JAB	Method Blank	Dissolved Mercury (Hg)	2022/06/22	<0.0019		ug/L	
A614872	KGA	Method Blank	Total Suspended Solids	2022/06/19	<1.0		mg/L	
A615001	ACR	Method Blank	Total Ammonia (N)	2022/06/19	<0.015		mg/L	
A615157	KK9	Method Blank	Total Dissolved Solids	2022/06/19	<10		mg/L	
A616468	MPU	Method Blank	Dissolved Iron (Fe)	2022/06/21	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/06/21	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/06/21	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/06/21	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/06/21	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/06/21	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/06/21	<0.020		mg/L	
			Dissolved Phosphorus (P)	2022/06/21	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/06/21	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/06/21	<0.10		mg/L	
			Dissolved Boron (B)	2022/06/21	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/06/21	<0.30		mg/L	
A618082	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/06/22	<0.50		mg/L	
A618087	MDO	Method Blank	Total Organic Carbon (C)	2022/06/22	<0.50		mg/L	
A618589	CTU	Method Blank	Chloride (Cl)	2022/06/22	<1.0		mg/L	
			Sulphate (SO4)	2022/06/22	<1.0		mg/L	
A618633	ACR	Method Blank	Total Ammonia (N)	2022/06/22	<0.015		mg/L	
A618932	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/06/23		97	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/23		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/23		83	%	50 - 140
			Benzene	2022/06/23	<0.00040		mg/L	
			Toluene	2022/06/23	<0.00040		mg/L	
			Ethylbenzene	2022/06/23	<0.00040		mg/L	
			m & p-Xylene	2022/06/23	<0.00080		mg/L	
			o-Xylene	2022/06/23	<0.00040		mg/L	
			F1 (C6-C10)	2022/06/23	<0.10		mg/L	
A619052	MAP	Method Blank	Total Nitrogen (N)	2022/06/23	<0.020		mg/L	
A619634	MFP	Method Blank	Total Aluminum (Al)	2022/06/23	<0.0030		mg/L	
			Total Chromium (Cr)	2022/06/23	<0.0010		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Cobalt (Co)	2022/06/23	<0.00030		mg/L	
			Total Copper (Cu)	2022/06/23	<0.0010		mg/L	
			Total Lead (Pb)	2022/06/23	<0.00020		mg/L	
			Total Antimony (Sb)	2022/06/23	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/06/23	<0.00020		mg/L	
			Total Nickel (Ni)	2022/06/23	<0.00050		mg/L	
			Total Selenium (Se)	2022/06/23	<0.00020		mg/L	
			Total Silver (Ag)	2022/06/23	<0.00010		mg/L	
			Total Arsenic (As)	2022/06/23	<0.00020		mg/L	
			Total Thallium (Tl)	2022/06/23	<0.00020		mg/L	
			Total Tin (Sn)	2022/06/23	<0.0010		mg/L	
			Total Titanium (Ti)	2022/06/23	<0.0010		mg/L	
			Total Uranium (U)	2022/06/23	<0.00010		mg/L	
			Total Vanadium (V)	2022/06/23	<0.0010		mg/L	
			Total Zinc (Zn)	2022/06/23	<0.0030		mg/L	
			Total Beryllium (Be)	2022/06/23	<0.0010		mg/L	
A619636	IK0	Method Blank	Total Iron (Fe)	2022/06/24	<0.060		mg/L	
			Total Lithium (Li)	2022/06/24	<0.020		mg/L	
			Total Magnesium (Mg)	2022/06/24	<0.20		mg/L	
			Total Manganese (Mn)	2022/06/24	<0.0040		mg/L	
			Total Sodium (Na)	2022/06/24	<0.50		mg/L	
			Total Strontium (Sr)	2022/06/24	<0.020		mg/L	
			Total Sulphur (S)	2022/06/24	<0.20		mg/L	
			Total Phosphorus (P)	2022/06/24	<0.10		mg/L	
			Total Barium (Ba)	2022/06/24	<0.010		mg/L	
			Total Boron (B)	2022/06/24	<0.020		mg/L	
			Total Calcium (Ca)	2022/06/24	<0.30		mg/L	
A621308	MAP	Method Blank	Total Nitrogen (N)	2022/06/24	<0.020		mg/L	
A621321	PK8	Method Blank	Total Sulphide	2022/06/24	<0.0018		mg/L	
A622747	IK0	Method Blank	Dissolved Sulphur (S)	2022/06/25	<0.20		mg/L	
A622770	IK0	Method Blank	Total Potassium (K)	2022/06/25	<0.30		mg/L	
			Total Silicon (Si)	2022/06/25	<0.10		mg/L	
A614291	ACR	RPD [AVF760-01]	Nitrite (N)	2022/06/17	NC		%	20
			Nitrate plus Nitrite (N)	2022/06/17	3.2		%	20
A614291	ACR	Matrix Spike [AVF760-01]	Nitrite (N)	2022/06/17		95	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/17		116	%	80 - 120
A619636	IK0	Matrix Spike [AVF759-07]	Total Iron (Fe)	2022/06/23		NC	%	80 - 120
			Total Lithium (Li)	2022/06/23		97	%	80 - 120
			Total Magnesium (Mg)	2022/06/23		94	%	80 - 120
			Total Manganese (Mn)	2022/06/23		103	%	80 - 120
			Total Sodium (Na)	2022/06/23		97	%	80 - 120
			Total Strontium (Sr)	2022/06/23		94	%	80 - 120
			Total Sulphur (S)	2022/06/23		96	%	80 - 120
			Total Phosphorus (P)	2022/06/23		97	%	80 - 120
			Total Barium (Ba)	2022/06/23		97	%	80 - 120
			Total Boron (B)	2022/06/23		98	%	80 - 120
			Total Calcium (Ca)	2022/06/23		NC	%	80 - 120
A612504	JB9	LCS	Total Oil and grease	2022/06/20		119	%	70 - 130
A613502	MEL	LCS	Alkalinity (Total as CaCO3)	2022/06/18		98	%	80 - 120
A613510	MEL	LCS	pH	2022/06/17		100	%	97 - 103
A613512	MEL	LCS	Conductivity	2022/06/17		100	%	90 - 110
A613514	MEL	LCS	Dissolved Fluoride (F)	2022/06/17		92	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A613576	PK8	LCS	Biochemical Oxygen Demand	2022/06/22		90	%	85 - 115
A613859	KGA	LCS	Turbidity	2022/06/17		102	%	80 - 120
A613958	FM0	LCS	True Colour	2022/06/17		94	%	80 - 120
A614107	AAX	LCS	O-TERPHENYL (sur.)	2022/06/20		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/06/20		82	%	60 - 140
A614110	NK3	LCS	D10-ANTHRACENE (sur.)	2022/06/20		130	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/06/20		130	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/06/20		82	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/06/20		44 (1)	%	50 - 130
			Acenaphthene	2022/06/20		81	%	50 - 130
			Acenaphthylene	2022/06/20		88	%	50 - 130
			Acridine	2022/06/20		100	%	50 - 130
			Anthracene	2022/06/20		94	%	50 - 130
			Benzo(a)anthracene	2022/06/20		114	%	50 - 130
			Benzo(b&j)fluoranthene	2022/06/20		115	%	50 - 130
			Benzo(k)fluoranthene	2022/06/20		112	%	50 - 130
			Benzo(g,h,i)perylene	2022/06/20		111	%	50 - 130
			Benzo(c)phenanthrene	2022/06/20		121	%	50 - 130
			Benzo(a)pyrene	2022/06/20		104	%	50 - 130
			Benzo(e)pyrene	2022/06/20		106	%	50 - 130
			Chrysene	2022/06/20		117	%	50 - 130
			Dibenz(a,h)anthracene	2022/06/20		110	%	50 - 130
			Fluoranthene	2022/06/20		116	%	50 - 130
			Fluorene	2022/06/20		92	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/06/20		108	%	50 - 130
			1-Methylnaphthalene	2022/06/20		60	%	50 - 130
			2-Methylnaphthalene	2022/06/20		72	%	50 - 130
			Naphthalene	2022/06/20		83	%	50 - 130
			Phenanthrene	2022/06/20		106	%	50 - 130
			Perylene	2022/06/20		108	%	50 - 130
			Pyrene	2022/06/20		115	%	50 - 130
			Quinoline	2022/06/20		81	%	50 - 130
A614290	ACR	LCS	Nitrite (N)	2022/06/17		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/17		106	%	80 - 120
A614291	ACR	LCS	Nitrite (N)	2022/06/17		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/06/17		105	%	80 - 120
A614473	BYM	LCS	Chemical Oxygen Demand	2022/06/18		101	%	80 - 120
A614518	KH2	LCS	Dissolved Aluminum (Al)	2022/06/19		90	%	80 - 120
			Dissolved Chromium (Cr)	2022/06/19		92	%	80 - 120
			Dissolved Cobalt (Co)	2022/06/19		93	%	80 - 120
			Dissolved Copper (Cu)	2022/06/19		92	%	80 - 120
			Dissolved Lead (Pb)	2022/06/19		91	%	80 - 120
			Dissolved Antimony (Sb)	2022/06/19		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/06/19		95	%	80 - 120
			Dissolved Nickel (Ni)	2022/06/19		92	%	80 - 120
			Dissolved Selenium (Se)	2022/06/19		91	%	80 - 120
			Dissolved Silver (Ag)	2022/06/19		95	%	80 - 120
			Dissolved Arsenic (As)	2022/06/19		89	%	80 - 120
			Dissolved Thallium (Tl)	2022/06/19		90	%	80 - 120
			Dissolved Tin (Sn)	2022/06/19		96	%	80 - 120
			Dissolved Titanium (Ti)	2022/06/19		97	%	80 - 120
			Dissolved Uranium (U)	2022/06/19		87	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Vanadium (V)	2022/06/19		95	%	80 - 120
			Dissolved Zinc (Zn)	2022/06/19		82	%	80 - 120
			Dissolved Beryllium (Be)	2022/06/19		90	%	80 - 120
A614609	JLD	LCS	Alkalinity (Total as CaCO3)	2022/06/18		98	%	80 - 120
A614610	JLD	LCS	pH	2022/06/18		100	%	97 - 103
A614612	JLD	LCS	Conductivity	2022/06/18		100	%	90 - 110
A614613	JLD	LCS	Dissolved Fluoride (F)	2022/06/18		95	%	80 - 120
A614824	JAB	LCS	Total Mercury (Hg)	2022/06/23		101	%	80 - 120
A614825	JAB	LCS	Dissolved Mercury (Hg)	2022/06/22		97	%	80 - 120
A614872	KGA	LCS	Total Suspended Solids	2022/06/19		101	%	80 - 120
A615001	ACR	LCS	Total Ammonia (N)	2022/06/19		102	%	80 - 120
A615157	KK9	LCS	Total Dissolved Solids	2022/06/19		99	%	80 - 120
A616468	MPU	LCS	Dissolved Iron (Fe)	2022/06/20		108	%	80 - 120
			Dissolved Lithium (Li)	2022/06/20		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/06/20		97	%	80 - 120
			Dissolved Manganese (Mn)	2022/06/20		104	%	80 - 120
			Dissolved Potassium (K)	2022/06/20		97	%	80 - 120
			Dissolved Sodium (Na)	2022/06/20		97	%	80 - 120
			Dissolved Strontium (Sr)	2022/06/20		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/06/20		100	%	80 - 120
			Dissolved Barium (Ba)	2022/06/20		98	%	80 - 120
			Dissolved Silicon (Si)	2022/06/20		96	%	80 - 120
			Dissolved Boron (B)	2022/06/20		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/06/20		97	%	80 - 120
A618082	MDO	LCS	Dissolved Organic Carbon (C)	2022/06/22		112	%	80 - 120
A618087	MDO	LCS	Total Organic Carbon (C)	2022/06/22		111	%	80 - 120
A618589	CTU	LCS	Chloride (Cl)	2022/06/22		101	%	80 - 120
			Sulphate (SO4)	2022/06/22		97	%	80 - 120
A618633	ACR	LCS	Total Ammonia (N)	2022/06/22		102	%	80 - 120
A618932	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/06/23		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/06/23		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/06/23		85	%	50 - 140
			Benzene	2022/06/23		100	%	60 - 130
			Toluene	2022/06/23		91	%	60 - 130
			Ethylbenzene	2022/06/23		97	%	60 - 130
			m & p-Xylene	2022/06/23		97	%	60 - 130
			o-Xylene	2022/06/23		95	%	60 - 130
			F1 (C6-C10)	2022/06/23		101	%	60 - 140
A619052	MAP	LCS	Total Nitrogen (N)	2022/06/23		105	%	80 - 120
A619634	MFP	LCS	Total Aluminum (Al)	2022/06/23		98	%	80 - 120
			Total Chromium (Cr)	2022/06/23		101	%	80 - 120
			Total Cobalt (Co)	2022/06/23		102	%	80 - 120
			Total Copper (Cu)	2022/06/23		103	%	80 - 120
			Total Lead (Pb)	2022/06/23		105	%	80 - 120
			Total Antimony (Sb)	2022/06/23		107	%	80 - 120
			Total Molybdenum (Mo)	2022/06/23		103	%	80 - 120
			Total Nickel (Ni)	2022/06/23		101	%	80 - 120
			Total Selenium (Se)	2022/06/23		105	%	80 - 120
			Total Silver (Ag)	2022/06/23		104	%	80 - 120
			Total Arsenic (As)	2022/06/23		101	%	80 - 120
			Total Thallium (Tl)	2022/06/23		104	%	80 - 120
			Total Tin (Sn)	2022/06/23		104	%	80 - 120

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Titanium (Ti)	2022/06/23		100	%	80 - 120
			Total Uranium (U)	2022/06/23		105	%	80 - 120
			Total Vanadium (V)	2022/06/23		101	%	80 - 120
			Total Zinc (Zn)	2022/06/23		101	%	80 - 120
			Total Beryllium (Be)	2022/06/23		99	%	80 - 120
A619636	IK0	LCS	Total Iron (Fe)	2022/06/23		99	%	80 - 120
			Total Lithium (Li)	2022/06/23		96	%	80 - 120
			Total Magnesium (Mg)	2022/06/23		93	%	80 - 120
			Total Manganese (Mn)	2022/06/23		101	%	80 - 120
			Total Sodium (Na)	2022/06/23		96	%	80 - 120
			Total Strontium (Sr)	2022/06/23		93	%	80 - 120
			Total Sulphur (S)	2022/06/23		94	%	80 - 120
			Total Phosphorus (P)	2022/06/23		95	%	80 - 120
			Total Barium (Ba)	2022/06/23		96	%	80 - 120
			Total Boron (B)	2022/06/23		96	%	80 - 120
			Total Calcium (Ca)	2022/06/23		93	%	80 - 120
A621308	MAP	LCS	Total Nitrogen (N)	2022/06/24		105	%	80 - 120
A621321	PK8	LCS	Total Sulphide	2022/06/24		95	%	80 - 120
A622747	IK0	LCS	Dissolved Sulphur (S)	2022/06/25		96	%	80 - 120
A622770	IK0	LCS	Total Potassium (K)	2022/06/25		100	%	80 - 120
			Total Silicon (Si)	2022/06/25		98	%	80 - 120
A619052	MAP	SRM	Total Nitrogen (N)	2022/06/23		101	%	80 - 120
A621308	MAP	SRM	Total Nitrogen (N)	2022/06/24		103	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

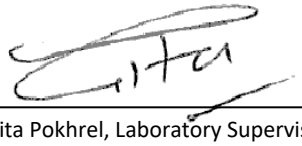
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VALIDATION SIGNATURE PAGE

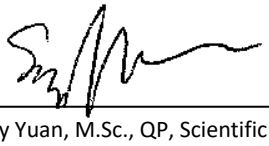
The analytical data and all QC contained in this report were reviewed and validated by:



Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



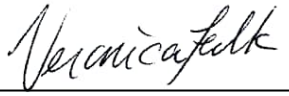
Gita Pokhrel, Laboratory Supervisor



Sandy Yuan, M.Sc., QP, Scientific Specialist



Sze Yeung Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

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Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
Phone: (403) 291-3077
Fax: (403) 735-2240
Toll Free: (800) 386-7247

☒ Edmonton
9331 - 48 Street, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187
Toll Free: (800) 386-7247

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page 1 of 1

C of C # 299412

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150 205 QUARRY PARK BLVD, SE CALGARY, AB T2C 3E7	Address: 150 205 QUARRY PARK BLVD SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): TINO NGULUBE / ALEX HAIGH	Consultant Project #: 417085-42051

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☒ DIS ☒	MERCURY TOTAL ☒ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	METALS 0.45	FLOURIDE
1	AEMP-13		X			17	2022/06/14	11:30	X			X	X							X	X					X			X	X	X	X	X	X	X	X
2	2022-DUP4		X			17	2022/06/14	11:35	X			X	X							X	X					X			X	X	X	X	X	X	X	X
3																																					
4																																					
5																																					
6																																					
7																																					
8																																					
9																																					
10																																					

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email canada.chemistry@worley.com acacal.iordatatrack@worley.com
Headspace and/or sediment may be present. Please proceed with analysis
IES A2601436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT	✓			5	4	7
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # MCAL	TEMP °C 1	2	3
SEAL PRESENT	✓			4	5	5
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT						
SEAL INTACT						
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C242197

SAMPLES
LABELED BY: KVT
VERIFIED BY: SBQ

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	TINO NGULUBE	2022/06/15	10:00		Kyle VanThournout	2022/06/16	1840
2.	Kyle VanThournout	2022/06/16	1930		Aryan Livermore	2022/06/17	06:30
3.							

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299414

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216911
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258675
Received: 2022/08/09, 16:46

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299414

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216911
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258675
Received: 2022/08/09, 16:46

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299414

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216911
Version: 1 - Final

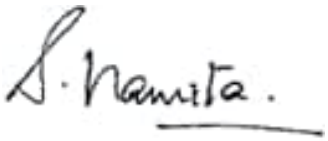
CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258675

Received: 2022/08/09, 16:46

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
16 Aug 2022 17:06:52

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZE164	AZE165	AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44	2022/08/06 10:30		
COC Number		299414	299414	299414		
	UNITS	**AEMP-09**	**AEMP-12**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A674799
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A676869
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A676869
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A676869
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A676869
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A676869
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A675719
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A675719
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A676869
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	92	95	101		A674799
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	99	98	98		A676869
4-Bromofluorobenzene (sur.)	%	98	97	97		A676869
D4-1,2-Dichloroethane (sur.)	%	104	107	105		A676869
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZE164	AZE165		AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44		2022/08/06 10:30		
COC Number		299414	299414		299414		
	UNITS	**AEMP-09**	**AEMP-12**	**QC Batch**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Calculated Parameters							
Nitrate (N)	mg/L	0.048	0.035	A675669	0.033	0.010	A675669
Nitrate (NO3)	mg/L	0.21	0.15	A675931	0.15	0.044	A675931
Nitrite (NO2)	mg/L	<0.033	<0.033	A675931	<0.033	0.033	A675931
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.30	0.19	A675314	0.31	0.020	A675314
Nutrients							
Nitrite (N)	mg/L	<0.010	<0.010	A676420	<0.010	0.010	A676420
Nitrate plus Nitrite (N)	mg/L	0.048	0.035	A676420	0.033	0.010	A676420
Total Nitrogen (N)	mg/L	0.34	0.22	A678803	0.34	0.020	A678799
RDL = Reportable Detection Limit							

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE164	AZE165	AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44	2022/08/06 10:30		
COC Number		299414	299414	299414		
	UNITS	**AEMP-09**	**AEMP-12**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	0.00016	<0.000020	0.000089	0.000020	A675970
Total Aluminum (Al)	mg/L	1.9	0.28	0.95	0.0030	A678469
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A678469
Total Arsenic (As)	mg/L	0.0021	0.00064	0.0012	0.00020	A678469
Total Barium (Ba)	mg/L	0.11	0.073	0.086	0.010	A678476
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A678469
Total Boron (B)	mg/L	<0.020	<0.020	<0.020	0.020	A678476
Total Calcium (Ca)	mg/L	38	52	41	0.30	A678476
Total Chromium (Cr)	mg/L	0.0032	<0.0010	0.0015	0.0010	A678469
Total Cobalt (Co)	mg/L	0.0020	<0.00030	0.00094	0.00030	A678469
Total Copper (Cu)	mg/L	0.0052	0.0012	0.0031	0.0010	A678469
Total Iron (Fe)	mg/L	4.9	0.53	2.3	0.060	A678476
Total Lead (Pb)	mg/L	0.0024	0.00032	0.0011	0.00020	A678469
Total Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A678476
Total Magnesium (Mg)	mg/L	12	18	12	0.20	A678476
Total Manganese (Mn)	mg/L	0.12	0.021	0.050	0.0040	A678476
Total Molybdenum (Mo)	mg/L	0.0014	0.0013	0.0012	0.00020	A678469
Total Nickel (Ni)	mg/L	0.0066	0.0014	0.0041	0.00050	A678469
Total Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A678476
Total Potassium (K)	mg/L	2.1	1.2	1.6	0.30	A678476
Total Selenium (Se)	mg/L	0.00038	0.00025	0.00046	0.00020	A678469
Total Silicon (Si)	mg/L	8.7	2.6	5.7	0.10	A678476
Total Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A678469
Total Sodium (Na)	mg/L	9.9	15	7.7	0.50	A678476
Total Strontium (Sr)	mg/L	0.23	0.73	0.23	0.020	A678476
Total Sulphur (S)	mg/L	13	28	16	0.20	A678476
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A678469
Total Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A678469
Total Titanium (Ti)	mg/L	0.030	0.0043	0.016	0.0010	A678469
Total Uranium (U)	mg/L	0.00082	0.00081	0.00084	0.00010	A678469
Total Vanadium (V)	mg/L	0.0057	0.0010	0.0030	0.0010	A678469
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE164	AZE165	AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44	2022/08/06 10:30		
COC Number		299414	299414	299414		
	UNITS	**AEMP-09**	**AEMP-12**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.083	<0.0030	0.064	0.0030	A678469
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE164		AZE165		AZE166		
Sampling Date		2022/08/05 13:33		2022/08/05 12:44		2022/08/06 10:30		
COC Number		299414		299414		299414		
	UNITS	**AEMP-09**	**QC Batch**	**AEMP-12**	**QC Batch**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Calculated Parameters								
Hardness (CaCO3)	mg/L	130	A675929	190	A675929	130	0.50	A675929
Ion Balance (% Difference)	%	1.4	A675721	2.1	A675721	6.6	N/A	A675721
Sulphide (as H2S)	mg/L	0.0024	A675950	<0.0020	A675950	<0.0020	0.0020	A675950
Demand Parameters								
Biochemical Oxygen Demand	mg/L	<2.0	A675178	<2.0	A675178	<2.0	2.0	A675178
Chemical Oxygen Demand	mg/L	29	A677354	14	A677354	24	10	A677354
Elements								
Dissolved Cadmium (Cd)	mg/L	0.000023	A675611	<0.000020	A675611	<0.000020	0.000020	A675611
Misc. Inorganics								
Conductivity	uS/cm	280	A676645	430	A676645	300	2.0	A681425
Dissolved Organic Carbon (C)	mg/L	5.4	A678143	4.3	A682375	6.1	0.50	A678143
pH	pH	7.70	A676604	8.16	A676604	7.76	N/A	A681423
Total Organic Carbon (C)	mg/L	5.9	A678147	4.3	A682739	4.9	0.50	A678147
Total Dissolved Solids	mg/L	180	A675690	260	A675690	190	10	A675690
Total Suspended Solids	mg/L	140	A676594	7.5	A676594	92	1.0	A676594
Anions								
Alkalinity (PP as CaCO3)	mg/L	<1.0	A676602	<1.0	A676602	<1.0	1.0	A681422
Alkalinity (Total as CaCO3)	mg/L	97	A676602	120	A676602	110	1.0	A681422
Bicarbonate (HCO3)	mg/L	120	A676602	150	A676602	130	1.0	A681422
Carbonate (CO3)	mg/L	<1.0	A676602	<1.0	A676602	<1.0	1.0	A681422
Dissolved Fluoride (F)	mg/L	0.091	A676652	0.14	A676652	0.090	0.050	A676652
Hydroxide (OH)	mg/L	<1.0	A676602	<1.0	A676602	<1.0	1.0	A681422
Total Sulphide	mg/L	0.0022	A676795	<0.0018	A676795	<0.0018	0.0018	A676795
Chloride (Cl)	mg/L	9.5	A676958	16	A676958	6.8	1.0	A681510
Sulphate (SO4)	mg/L	41	A676958	78	A676958	49	1.0	A681510
Nutrients								
Total Ammonia (N)	mg/L	<0.015	A677685	<0.015	A677685	<0.015	0.015	A677685
Misc. Organics								
Total Oil and grease	mg/L	5.0	A676375	3.0	A676375	5.0	2.0	A676375

RDL = Reportable Detection Limit
N/A = Not Applicable

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE164		AZE165		AZE166		
Sampling Date		2022/08/05 13:33		2022/08/05 12:44		2022/08/06 10:30		
COC Number		299414		299414		299414		
	UNITS	**AEMP-09**	**QC Batch**	**AEMP-12**	**QC Batch**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Physical Properties								
True Colour	PtCo units	9.6	A676281	9.0	A676281	14	2.0	A676281
Physical Properties								
Turbidity	NTU	100	A676402	14	A676402	49	0.10	A676402
RDL = Reportable Detection Limit								

Bureau Veritas ID		AZE166		
Sampling Date		2022/08/06 10:30		
COC Number		299414		
	UNITS	**AEMP-01 DUP Lab-Dup**	**RDL**	**QC Batch**
Physical Properties				
Turbidity	NTU	49	0.10	A676402
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate				

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AZE164	AZE165	AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44	2022/08/06 10:30		
COC Number		299414	299414	299414		
	UNITS	**AEMP-09**	**AEMP-12**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A675933
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Acridine	mg/L	<0.000040	0.000091	<0.000040	0.000040	A673040
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A673040
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A673040
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Chrysene	mg/L	<0.0000085	0.000023	<0.0000085	0.0000085	A673040
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A673040
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A673040
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Phenanthrene	mg/L	<0.000050	0.00011	<0.000050	0.000050	A673040
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Pyrene	mg/L	<0.000020	0.000031	<0.000020	0.000020	A673040
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A673040
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	111	121	129		A673040
D8-ACENAPHTHYLENE (sur.)	%	97	108	110		A673040
D8-NAPHTHALENE (sur.)	%	84	89	91		A673040
TERPHENYL-D14 (sur.)	%	153 (1)	170 (1)	174 (1)		A673040

RDL = Reportable Detection Limit
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZE164	AZE165	AZE166		
Sampling Date		2022/08/05 13:33	2022/08/05 12:44	2022/08/06 10:30		
COC Number		299414	299414	299414		
	UNITS	**AEMP-09**	**AEMP-12**	**AEMP-01 DUP**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A676355
Total Mercury (Hg)	ug/L	0.011	<0.0019	0.0055	0.0019	A676341
RDL = Reportable Detection Limit						

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE164		AZE165			AZE165		
Sampling Date		2022/08/05 13:33		2022/08/05 12:44			2022/08/05 12:44		
COC Number		299414		299414			299414		
	UNITS	**AEMP-09**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**	**AEMP-12 Lab-Dup**	**RDL**	**QC Batch**
Elements									
Dissolved Aluminum (Al)	mg/L	0.034	A677344	0.0081	0.0030	A677344	0.0098	0.0030	A677344
Dissolved Antimony (Sb)	mg/L	<0.00060	A677344	<0.00060	0.00060	A677344	<0.00060	0.00060	A677344
Dissolved Arsenic (As)	mg/L	0.00039	A677344	0.00029	0.00020	A677344	0.00028	0.00020	A677344
Dissolved Barium (Ba)	mg/L	0.060	A677489	0.068	0.010	A677510			
Dissolved Beryllium (Be)	mg/L	<0.0010	A677344	<0.0010	0.0010	A677344	<0.0010	0.0010	A677344
Dissolved Boron (B)	mg/L	<0.020	A677489	0.022	0.020	A677510			
Dissolved Calcium (Ca)	mg/L	34	A677489	48	0.30	A677510			
Dissolved Chromium (Cr)	mg/L	<0.0010	A677344	<0.0010	0.0010	A677344	<0.0010	0.0010	A677344
Dissolved Cobalt (Co)	mg/L	<0.00030	A677344	<0.00030	0.00030	A677344	<0.00030	0.00030	A677344
Dissolved Copper (Cu)	mg/L	0.0047	A677344	0.0026	0.0010	A677344	0.0024	0.0010	A677344
Dissolved Iron (Fe)	mg/L	<0.060	A677489	<0.060	0.060	A677510			
Dissolved Lead (Pb)	mg/L	0.00029	A677344	<0.00020	0.00020	A677344	<0.00020	0.00020	A677344
Dissolved Lithium (Li)	mg/L	<0.020	A677489	<0.020	0.020	A677510			
Dissolved Magnesium (Mg)	mg/L	9.9	A677489	16	0.20	A677510			
Dissolved Manganese (Mn)	mg/L	0.027	A677489	0.0063	0.0040	A677510			
Dissolved Molybdenum (Mo)	mg/L	0.0011	A677344	0.0014	0.00020	A677344	0.0014	0.00020	A677344
Dissolved Nickel (Ni)	mg/L	0.0014	A677344	0.00091	0.00050	A677344	0.00089	0.00050	A677344
Dissolved Phosphorus (P)	mg/L	<0.10	A677489	<0.10	0.10	A677510			
Dissolved Potassium (K)	mg/L	1.0	A677489	0.98	0.30	A677510			
Dissolved Selenium (Se)	mg/L	0.00033	A677344	0.00024	0.00020	A677344	0.00022	0.00020	A677344
Dissolved Silicon (Si)	mg/L	1.9	A677489	1.7	0.10	A677510			
Dissolved Silver (Ag)	mg/L	<0.00010	A677344	<0.00010	0.00010	A677344	<0.00010	0.00010	A677344
Dissolved Sodium (Na)	mg/L	10	A677489	14	0.50	A677510			
Dissolved Strontium (Sr)	mg/L	0.23	A677489	0.67	0.020	A677510			
Dissolved Sulphur (S)	mg/L	12	A677489	24	0.20	A677510			
Dissolved Thallium (Tl)	mg/L	<0.00020	A677344	<0.00020	0.00020	A677344	<0.00020	0.00020	A677344
Dissolved Tin (Sn)	mg/L	<0.0010	A677344	<0.0010	0.0010	A677344	<0.0010	0.0010	A677344
Dissolved Titanium (Ti)	mg/L	<0.0010	A677344	<0.0010	0.0010	A677344	<0.0010	0.0010	A677344
Dissolved Uranium (U)	mg/L	0.00063	A677344	0.00075	0.00010	A677344	0.00076	0.00010	A677344
Dissolved Vanadium (V)	mg/L	<0.0010	A677344	<0.0010	0.0010	A677344	<0.0010	0.0010	A677344

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE164		AZE165			AZE165		
Sampling Date		2022/08/05 13:33		2022/08/05 12:44			2022/08/05 12:44		
COC Number		299414		299414			299414		
	UNITS	**AEMP-09**	**QC Batch**	**AEMP-12**	**RDL**	**QC Batch**	**AEMP-12 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	0.0082	A677344	0.0047	0.0030	A677344	0.0046	0.0030	A677344

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE166		
Sampling Date		2022/08/06 10:30		
COC Number		299414		
	UNITS	**AEMP-01 DUP**	**RDL**	**QC Batch**
Elements				
Dissolved Aluminum (Al)	mg/L	0.038	0.0030	A677344
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A677344
Dissolved Arsenic (As)	mg/L	0.00031	0.00020	A677344
Dissolved Barium (Ba)	mg/L	0.051	0.010	A677510
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A677344
Dissolved Boron (B)	mg/L	<0.020	0.020	A677510
Dissolved Calcium (Ca)	mg/L	36	0.30	A677510
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A677344
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A677344
Dissolved Copper (Cu)	mg/L	0.0023	0.0010	A677344
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A677510
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A677344
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677510
Dissolved Magnesium (Mg)	mg/L	9.6	0.20	A677510
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	A677510
Dissolved Molybdenum (Mo)	mg/L	0.0011	0.00020	A677344
Dissolved Nickel (Ni)	mg/L	0.0016	0.00050	A677344
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677510
Dissolved Potassium (K)	mg/L	1.0	0.30	A677510
Dissolved Selenium (Se)	mg/L	0.00039	0.00020	A677344
Dissolved Silicon (Si)	mg/L	2.0	0.10	A677510
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A677344
Dissolved Sodium (Na)	mg/L	7.4	0.50	A677510
Dissolved Strontium (Sr)	mg/L	0.21	0.020	A677510
Dissolved Sulphur (S)	mg/L	17	0.20	A677510
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A677344
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A677344
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A677344
Dissolved Uranium (U)	mg/L	0.00068	0.00010	A677344
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A677344
Dissolved Zinc (Zn)	mg/L	0.0079	0.0030	A677344
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE164
Sample ID: AEMP-09
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A676602	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A676869	N/A	2022/08/12	Rahul Suryawanshi
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A676958	N/A	2022/08/11	Carlo Truong
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A676645	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A676355	2022/08/10	2022/08/11	Jason Bao
Mercury (Total) by CV	CV	A676341	2022/08/10	2022/08/11	Jason Bao
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677685	N/A	2022/08/11	Shanna McKort
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676420	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A676604	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A676795	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A675690	2022/08/10	2022/08/10	Grace O'Connor
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/13	Automated Statchk
Nitrogen (Total)	AC/COL	A678803	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A678147	N/A	2022/08/12	Zoe Wu
Total Suspended Solids (NFR)	BAL	A676594	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A676402	N/A	2022/08/10	Hedy Cortes Lopez

Bureau Veritas ID: AZE165
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A676602	N/A	2022/08/11	Tracy (Jing) Ling

Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE165
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A676869	N/A	2022/08/12	Rahul Suryawanshi
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A676958	N/A	2022/08/11	Carlo Truong
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A682375	N/A	2022/08/16	Ming Dong
Conductivity @25C	COND	A676645	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A676355	2022/08/10	2022/08/11	Jason Bao
Mercury (Total) by CV	CV	A676341	2022/08/10	2022/08/11	Jason Bao
Elements by ICP - Dissolved	ICPA	A677510	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677685	N/A	2022/08/11	Shanna McKort
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676420	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A676604	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A676795	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A675690	2022/08/10	2022/08/10	Grace O'Connor
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/13	Automated Statchk
Nitrogen (Total)	AC/COL	A678803	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A682739	N/A	2022/08/16	Ming Dong
Total Suspended Solids (NFR)	BAL	A676594	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A676402	N/A	2022/08/10	Hedy Cortes Lopez

Bureau Veritas ID: AZE165 Dup
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki

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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE166
Sample ID: AEMP-01 DUP
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A681422	N/A	2022/08/16	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A676869	N/A	2022/08/12	Rahul Suryawanshi
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A681510	N/A	2022/08/15	Tyler Orr
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A681425	N/A	2022/08/16	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A676355	2022/08/10	2022/08/11	Jason Bao
Mercury (Total) by CV	CV	A676341	2022/08/10	2022/08/11	Jason Bao
Elements by ICP - Dissolved	ICPA	A677510	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677685	N/A	2022/08/11	Shanna McKort
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676420	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A681423	N/A	2022/08/16	Tracy (Jing) Ling
Total Sulphide	SPEC	A676795	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A675690	2022/08/10	2022/08/10	Grace O'Connor
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/13	Automated Statchk
Nitrogen (Total)	AC/COL	A678799	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A678147	N/A	2022/08/12	Zoe Wu
Total Suspended Solids (NFR)	BAL	A676594	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A676402	N/A	2022/08/10	Hedy Cortes Lopez

Bureau Veritas ID: AZE166 Dup
Sample ID: AEMP-01 DUP
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	TURB	A676402	N/A	2022/08/10	Hedy Cortes Lopez

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.0°C

Sample AZE164 [AEMP-09] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample AZE165 [AEMP-12] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample AZE166 [AEMP-01 DUP] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A673040	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/12		118	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/12		164 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/12		89	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/12		57	%	50 - 130
			Acenaphthene	2022/08/12	<0.00010		mg/L	
			Acenaphthylene	2022/08/12	<0.00010		mg/L	
			Acridine	2022/08/12	<0.000040		mg/L	
			Anthracene	2022/08/12	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/12	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/12	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/08/12	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/12	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/08/12	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/12	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/08/12	<0.000050		mg/L	
			Chrysene	2022/08/12	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/12	<0.0000075		mg/L	
			Fluoranthene	2022/08/12	<0.000010		mg/L	
			Fluorene	2022/08/12	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/12	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/08/12	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/12	<0.00010		mg/L	
			Naphthalene	2022/08/12	<0.00010		mg/L	
			Phenanthrene	2022/08/12	<0.000050		mg/L	
			Perylene	2022/08/12	<0.000050		mg/L	
			Pyrene	2022/08/12	<0.000020		mg/L	
			Quinoline	2022/08/12	<0.00020		mg/L	
A674799	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/11		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11	<0.10		mg/L	
A675178	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/15	<2.0		mg/L	
A675690	GOC	Method Blank	Total Dissolved Solids	2022/08/10	<10		mg/L	
A676281	FM0	Method Blank	True Colour	2022/08/10	<2.0		PtCo units	
A676341	JAB	Method Blank	Total Mercury (Hg)	2022/08/11	<0.0019		ug/L	
A676355	JAB	Method Blank	Dissolved Mercury (Hg)	2022/08/11	<0.0019		ug/L	
A676375	JB9	Method Blank	Total Oil and grease	2022/08/12	<2.0		mg/L	
A676402	HCL	Method Blank	Turbidity	2022/08/10	<0.10		NTU	
A676420	SKM	Method Blank	Nitrite (N)	2022/08/10	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/10	<0.010		mg/L	
A676594	HE1	Method Blank	Total Suspended Solids	2022/08/11	<1.0		mg/L	
A676602	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/11	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/11	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/11	<1.0		mg/L	
			Carbonate (CO3)	2022/08/11	<1.0		mg/L	
			Hydroxide (OH)	2022/08/11	<1.0		mg/L	
A676645	JLD	Method Blank	Conductivity	2022/08/11	<2.0		uS/cm	
A676652	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/11	<0.050		mg/L	
A676795	AP1	Method Blank	Total Sulphide	2022/08/11	<0.0018		mg/L	
A676869	RSU	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/12		98	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/12		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/12		106	%	50 - 140
			Benzene	2022/08/12	<0.00040		mg/L	
			Toluene	2022/08/12	<0.00040		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Ethylbenzene	2022/08/12	<0.00040		mg/L	
			m & p-Xylene	2022/08/12	<0.00080		mg/L	
			o-Xylene	2022/08/12	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/12	<0.10		mg/L	
A676958	CTU	Method Blank	Chloride (Cl)	2022/08/11	<1.0		mg/L	
			Sulphate (SO4)	2022/08/11	<1.0		mg/L	
A677344	RY3	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A677354	JM0	Method Blank	Chemical Oxygen Demand	2022/08/11	<10		mg/L	
A677489	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A677510	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A677685	SKM	Method Blank	Total Ammonia (N)	2022/08/11	<0.015		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A678143	ZWU	Method Blank	Dissolved Organic Carbon (C)	2022/08/12	<0.50		mg/L	
A678147	ZWU	Method Blank	Total Organic Carbon (C)	2022/08/12	<0.50		mg/L	
A678469	RY3	Method Blank	Total Aluminum (Al)	2022/08/12	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/12	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/12	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/12	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/12	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/12	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/12	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/12	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/12	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/12	<0.00010		mg/L	
			Total Arsenic (As)	2022/08/12	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/12	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/12	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/12	<0.0010		mg/L	
			Total Uranium (U)	2022/08/12	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/12	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/12	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/12	<0.0010		mg/L	
A678476	MPU	Method Blank	Total Iron (Fe)	2022/08/12	<0.060		mg/L	
			Total Lithium (Li)	2022/08/12	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Total Potassium (K)	2022/08/12	<0.30		mg/L	
			Total Sodium (Na)	2022/08/12	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Total Sulphur (S)	2022/08/12	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Total Barium (Ba)	2022/08/12	<0.010		mg/L	
			Total Silicon (Si)	2022/08/12	<0.10		mg/L	
			Total Boron (B)	2022/08/12	<0.020		mg/L	
			Total Calcium (Ca)	2022/08/12	<0.30		mg/L	
A678799	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A678803	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A681422	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/16	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/16	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/16	<1.0		mg/L	
			Carbonate (CO3)	2022/08/16	<1.0		mg/L	
			Hydroxide (OH)	2022/08/16	<1.0		mg/L	
A681425	JLD	Method Blank	Conductivity	2022/08/16	<2.0		uS/cm	
A681510	TOR	Method Blank	Chloride (Cl)	2022/08/15	<1.0		mg/L	
			Sulphate (SO4)	2022/08/15	<1.0		mg/L	
A682375	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/08/16	<0.50		mg/L	
A682739	MDO	Method Blank	Total Organic Carbon (C)	2022/08/16	<0.50		mg/L	
A677344	RY3	RPD [AZE165-06]	Dissolved Aluminum (Al)	2022/08/13	19		%	20
			Dissolved Chromium (Cr)	2022/08/13	NC		%	20
			Dissolved Cobalt (Co)	2022/08/13	NC		%	20
			Dissolved Copper (Cu)	2022/08/13	6.3		%	20
			Dissolved Lead (Pb)	2022/08/13	NC		%	20
			Dissolved Antimony (Sb)	2022/08/13	NC		%	20
			Dissolved Molybdenum (Mo)	2022/08/13	5.0		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Nickel (Ni)	2022/08/13	2.8		%	20
			Dissolved Selenium (Se)	2022/08/13	12		%	20
			Dissolved Silver (Ag)	2022/08/13	NC		%	20
			Dissolved Arsenic (As)	2022/08/13	4.3		%	20
			Dissolved Thallium (Tl)	2022/08/13	NC		%	20
			Dissolved Tin (Sn)	2022/08/13	NC		%	20
			Dissolved Titanium (Ti)	2022/08/13	NC		%	20
			Dissolved Uranium (U)	2022/08/13	0.81		%	20
			Dissolved Vanadium (V)	2022/08/13	NC		%	20
			Dissolved Zinc (Zn)	2022/08/13	2.8		%	20
			Dissolved Beryllium (Be)	2022/08/13	NC		%	20
A676402	HCL	RPD [AZE166-02]	Turbidity	2022/08/10	0.21		%	20
A675690	GOC	Matrix Spike [AZE164-02]	Total Dissolved Solids	2022/08/10		98	%	80 - 120
A677344	RY3	Matrix Spike [AZE165-06]	Dissolved Aluminum (Al)	2022/08/12		116	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/12		99	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/12		97	%	80 - 120
			Dissolved Copper (Cu)	2022/08/12		95	%	80 - 120
			Dissolved Lead (Pb)	2022/08/12		103	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/12		107	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/12		106	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/12		96	%	80 - 120
			Dissolved Selenium (Se)	2022/08/12		99	%	80 - 120
			Dissolved Silver (Ag)	2022/08/12		118	%	80 - 120
			Dissolved Arsenic (As)	2022/08/12		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/12		106	%	80 - 120
			Dissolved Tin (Sn)	2022/08/12		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/12		109	%	80 - 120
			Dissolved Uranium (U)	2022/08/12		96	%	80 - 120
			Dissolved Vanadium (V)	2022/08/12		103	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/12		100	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/12		109	%	80 - 120
A673040	NK3	LCS	D10-ANTHRACENE (sur.)	2022/08/12		117	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/12		151 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/12		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/12		67	%	50 - 130
			Acenaphthene	2022/08/12		77	%	50 - 130
			Acenaphthylene	2022/08/12		90	%	50 - 130
			Acridine	2022/08/12		96	%	50 - 130
			Anthracene	2022/08/12		94	%	50 - 130
			Benzo(a)anthracene	2022/08/12		112	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/12		107	%	50 - 130
			Benzo(k)fluoranthene	2022/08/12		94	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/12		102	%	50 - 130
			Benzo(c)phenanthrene	2022/08/12		113	%	50 - 130
			Benzo(a)pyrene	2022/08/12		97	%	50 - 130
			Benzo(e)pyrene	2022/08/12		94	%	50 - 130
			Chrysene	2022/08/12		105	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/12		101	%	50 - 130
			Fluoranthene	2022/08/12		106	%	50 - 130
			Fluorene	2022/08/12		83	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/12		103	%	50 - 130
			1-Methylnaphthalene	2022/08/12		65	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			2-Methylnaphthalene	2022/08/12		79	%	50 - 130
			Naphthalene	2022/08/12		82	%	50 - 130
			Phenanthrene	2022/08/12		83	%	50 - 130
			Perylene	2022/08/12		96	%	50 - 130
			Pyrene	2022/08/12		101	%	50 - 130
			Quinoline	2022/08/12		79	%	50 - 130
A674799	GG3	LCS	O-TERPHENYL (sur.)	2022/08/11		98	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		87	%	60 - 140
A675178	BYM	LCS	Biochemical Oxygen Demand	2022/08/15		104	%	85 - 115
A675690	GOC	LCS	Total Dissolved Solids	2022/08/10		101	%	80 - 120
A676281	FM0	LCS	True Colour	2022/08/10		96	%	80 - 120
A676341	JAB	LCS	Total Mercury (Hg)	2022/08/11		101	%	80 - 120
A676355	JAB	LCS	Dissolved Mercury (Hg)	2022/08/11		111	%	80 - 120
A676375	JB9	LCS	Total Oil and grease	2022/08/12		114	%	70 - 130
A676402	HCL	LCS	Turbidity	2022/08/10		103	%	80 - 120
A676420	SKM	LCS	Nitrite (N)	2022/08/10		97	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/10		100	%	80 - 120
A676594	HE1	LCS	Total Suspended Solids	2022/08/11		91	%	80 - 120
A676602	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/11		99	%	80 - 120
A676604	JLD	LCS	pH	2022/08/11		100	%	97 - 103
A676645	JLD	LCS	Conductivity	2022/08/11		99	%	90 - 110
A676652	JLD	LCS	Dissolved Fluoride (F)	2022/08/11		99	%	80 - 120
A676795	AP1	LCS	Total Sulphide	2022/08/11		103	%	80 - 120
A676869	RSU	LCS	1,4-Difluorobenzene (sur.)	2022/08/12		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/12		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/12		99	%	50 - 140
			Benzene	2022/08/12		99	%	60 - 130
			Toluene	2022/08/12		102	%	60 - 130
			Ethylbenzene	2022/08/12		101	%	60 - 130
			m & p-Xylene	2022/08/12		104	%	60 - 130
			o-Xylene	2022/08/12		103	%	60 - 130
			F1 (C6-C10)	2022/08/12		95	%	60 - 140
A676958	CTU	LCS	Chloride (Cl)	2022/08/11		103	%	80 - 120
			Sulphate (SO4)	2022/08/11		96	%	80 - 120
A677344	RY3	LCS	Dissolved Aluminum (Al)	2022/08/12		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/12		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/12		101	%	80 - 120
			Dissolved Copper (Cu)	2022/08/12		99	%	80 - 120
			Dissolved Lead (Pb)	2022/08/12		101	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/12		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/12		107	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/12		100	%	80 - 120
			Dissolved Selenium (Se)	2022/08/12		101	%	80 - 120
			Dissolved Silver (Ag)	2022/08/12		118	%	80 - 120
			Dissolved Arsenic (As)	2022/08/12		99	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/12		102	%	80 - 120
			Dissolved Tin (Sn)	2022/08/12		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/12		102	%	80 - 120
			Dissolved Uranium (U)	2022/08/12		93	%	80 - 120
			Dissolved Vanadium (V)	2022/08/12		101	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/12		101	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/12		107	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677354	JM0	LCS	Chemical Oxygen Demand	2022/08/11		101	%	80 - 120
A677489	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		102	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		100	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		104	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		104	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		100	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		101	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		97	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		98	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		105	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		101	%	80 - 120
			Dissolved Boron (B)	2022/08/11		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		101	%	80 - 120
A677510	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		104	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		100	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		106	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		103	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		101	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		95	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		96	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		105	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		98	%	80 - 120
			Dissolved Boron (B)	2022/08/11		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		100	%	80 - 120
A677685	SKM	LCS	Total Ammonia (N)	2022/08/11		102	%	80 - 120
A678143	ZWU	LCS	Dissolved Organic Carbon (C)	2022/08/12		104	%	80 - 120
A678147	ZWU	LCS	Total Organic Carbon (C)	2022/08/12		104	%	80 - 120
A678469	RY3	LCS	Total Aluminum (Al)	2022/08/12		100	%	80 - 120
			Total Chromium (Cr)	2022/08/12		97	%	80 - 120
			Total Cobalt (Co)	2022/08/12		97	%	80 - 120
			Total Copper (Cu)	2022/08/12		96	%	80 - 120
			Total Lead (Pb)	2022/08/12		102	%	80 - 120
			Total Antimony (Sb)	2022/08/12		101	%	80 - 120
			Total Molybdenum (Mo)	2022/08/12		98	%	80 - 120
			Total Nickel (Ni)	2022/08/12		97	%	80 - 120
			Total Selenium (Se)	2022/08/12		100	%	80 - 120
			Total Silver (Ag)	2022/08/12		115	%	80 - 120
			Total Arsenic (As)	2022/08/12		96	%	80 - 120
			Total Thallium (Tl)	2022/08/12		101	%	80 - 120
			Total Tin (Sn)	2022/08/12		98	%	80 - 120
			Total Titanium (Ti)	2022/08/12		102	%	80 - 120
			Total Uranium (U)	2022/08/12		98	%	80 - 120
			Total Vanadium (V)	2022/08/12		100	%	80 - 120
			Total Zinc (Zn)	2022/08/12		98	%	80 - 120
			Total Beryllium (Be)	2022/08/12		102	%	80 - 120
A678476	MPU	LCS	Total Iron (Fe)	2022/08/12		111	%	80 - 120
			Total Lithium (Li)	2022/08/12		103	%	80 - 120
			Total Magnesium (Mg)	2022/08/12		105	%	80 - 120
			Total Manganese (Mn)	2022/08/12		110	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Potassium (K)	2022/08/12		110	%	80 - 120
			Total Sodium (Na)	2022/08/12		102	%	80 - 120
			Total Strontium (Sr)	2022/08/12		101	%	80 - 120
			Total Sulphur (S)	2022/08/12		105	%	80 - 120
			Total Phosphorus (P)	2022/08/12		103	%	80 - 120
			Total Barium (Ba)	2022/08/12		107	%	80 - 120
			Total Silicon (Si)	2022/08/12		108	%	80 - 120
			Total Boron (B)	2022/08/12		107	%	80 - 120
			Total Calcium (Ca)	2022/08/12		100	%	80 - 120
A678799	MAP	LCS	Total Nitrogen (N)	2022/08/12		103	%	80 - 120
A678803	MAP	LCS	Total Nitrogen (N)	2022/08/12		103	%	80 - 120
A681422	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/16		99	%	80 - 120
A681423	JLD	LCS	pH	2022/08/16		100	%	97 - 103
A681425	JLD	LCS	Conductivity	2022/08/16		102	%	90 - 110
A681510	TOR	LCS	Chloride (Cl)	2022/08/15		104	%	80 - 120
			Sulphate (SO4)	2022/08/15		96	%	80 - 120
A682375	MDO	LCS	Dissolved Organic Carbon (C)	2022/08/16		110	%	80 - 120
A682739	MDO	LCS	Total Organic Carbon (C)	2022/08/16		105	%	80 - 120
A678799	MAP	SRM	Total Nitrogen (N)	2022/08/12		101	%	80 - 120
A678803	MAP	SRM	Total Nitrogen (N)	2022/08/12		96	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

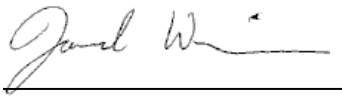
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Bureau Veritas Job #: C258675
Report Date: 2022/08/16

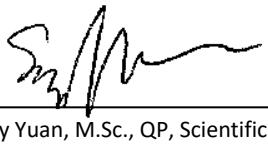
Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

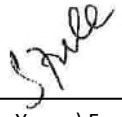
The analytical data and all QC contained in this report were reviewed and validated by:



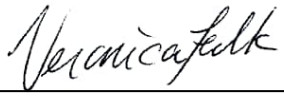
Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Sandy Yuan, M.Sc., QP, Scientific Specialist



Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD ALQ

C of C # 299414

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150, 205 Quarry Pk Blvd SE CALGARY, AB T2C 3E7	Address: 150, 205 Quarry Pk Blvd SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): STACY GIBB/NEAL TANNA	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☑ DIS ☑	MERCURY TOTAL ☑ DISSOLVED ☑	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	True color, TSS, TDS, Turbidity	Nitrate, nitrite, ammonia-N (total)	Carbon (DOC)	Total sulphide	Total & dissolved sulphur	Oil & grease	Fluoride
1	AEMP-09		X			17	2022/08/05	13:33	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
2	AEMP-12		X			17	2022/08/05	12:44	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
3	AEMP-01 DUP		X			17	2022/08/06	10:30	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
4																																		
5																																		
6																																		
7																																		
8																																		
9																																		
10																																		

IOL SITE LOCATION: Norman Wells, NT
IOL PROJECT # (if applicable): N/A
MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS
email. canada. chemistry@worley.com
cacal.ior datatrack@worley.com
*BOD frozen as per instructions, Cannot meet hold times *

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT	—			7	6	5
SEAL INTACT	—					
COOLING MEDIA PRESENT	—					

	YES	NO	COOLER ID # MCAL	TEMP °C 1	2	3
SEAL PRESENT	✓			6	6	6
SEAL INTACT	✓					
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #	TEMP °C 1	2	3
SEAL PRESENT						
SEAL INTACT						
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C258675

SAMPLES
LABELED BY: ISY
VERIFIED BY: ALQ

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	STACY GIBB	2022/08/06	11:00	1. Mandeep	Manjinder Randhe	2022/08/09	16:46
2.	Iuliia Smirnova	2022/08/09	20:00	2. Jobanjot	JOBAN RAJU	2022/08/10	06:30
3.				3.			

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299410

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/15
Report #: R3216271
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258688
Received: 2022/08/09, 16:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	1	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	1		
Biochemical Oxygen Demand (1)	1	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	1		Auto Calc
Cadmium - low level CCME (Total) (1)	1		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	1	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	1	AB SOP-00016	SM 23 5220D m
True Colour (1)	1	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 3)	1	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	1	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	1	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 4)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	1		Auto Calc
Hardness (1)	1		Auto Calc
Mercury (Dissolved) by CV (2, 5)	1	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (2)	1	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 5)	1	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	1	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 5)	1	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	1	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	1		Auto Calc
Ammonia-N (Total) (1)	1	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	1		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	1	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	1		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	1	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 6)	1		Auto Calc
PAH in Water by GC/MS (1)	1	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 7)	1	AB SOP-00005	SM 23 4500-H+B m

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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258688
Received: 2022/08/09, 16:50

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	1	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	1	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	1	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	1	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 8)	1	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	1	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	1	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5
(3) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(4) Silica gel clean up employed.

Task Order#: 417085-42051.22200
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Suite 500, 151 Canada Olympic
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CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258688

Received: 2022/08/09, 16:50

(5) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(6) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(7) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(8) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
16 Aug 2022 10:20:32

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZE251			AZE251			AZE252		
Sampling Date		2022/08/06 18:00			2022/08/06 18:00			2022/08/06 14:40		
COC Number		299410			299410			299410		
	UNITS	**TRIP BLANK**	**RDL**	**QC Batch**	**TRIP BLANK Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07 DUP**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A677426				<0.10	0.10	A677082
Volatiles										
Benzene	mg/L	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337
Toluene	mg/L	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337
Ethylbenzene	mg/L	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337
m & p-Xylene	mg/L	<0.00080	0.00080	A678337	<0.00080	0.00080	A678337	<0.00080	0.00080	A678337
o-Xylene	mg/L	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337	<0.00040	0.00040	A678337
Xylenes (Total)	mg/L	<0.00089	0.00089	A676116				<0.00089	0.00089	A676116
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A676116				<0.10	0.10	A676116
F1 (C6-C10)	mg/L	<0.10	0.10	A678337	<0.10	0.10	A678337	<0.10	0.10	A678337
Extraction Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	120		A677426				98		A677082
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	101		A678337	101		A678337	101		A678337
4-Bromofluorobenzene (sur.)	%	99		A678337	98		A678337	99		A678337
D4-1,2-Dichloroethane (sur.)	%	103		A678337	105		A678337	105		A678337

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Calculated Parameters				
Nitrate (N)	mg/L	0.058	0.010	A676056
Nitrate (NO3)	mg/L	0.26	0.044	A675931
Nitrite (NO2)	mg/L	<0.033	0.033	A675931
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.73	0.020	A676017
Nutrients				
Nitrite (N)	mg/L	<0.010	0.010	A678429
Nitrate plus Nitrite (N)	mg/L	0.058	0.010	A678429
Total Nitrogen (N)	mg/L	0.79	0.020	A678803
RDL = Reportable Detection Limit				

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Elements				
Total Cadmium (Cd)	mg/L	0.00066	0.000020	A675970
Total Aluminum (Al)	mg/L	7.7	0.0030	A680418
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A680418
Total Arsenic (As)	mg/L	0.0083	0.00020	A680418
Total Barium (Ba)	mg/L	0.37	0.010	A680420
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A680418
Total Boron (B)	mg/L	0.022	0.020	A680420
Total Calcium (Ca)	mg/L	73	0.30	A680420
Total Chromium (Cr)	mg/L	0.013	0.0010	A680418
Total Cobalt (Co)	mg/L	0.0096	0.00030	A680418
Total Copper (Cu)	mg/L	0.019	0.0010	A680418
Total Iron (Fe)	mg/L	21	0.060	A680420
Total Lead (Pb)	mg/L	0.011	0.00020	A680418
Total Lithium (Li)	mg/L	<0.020	0.020	A680420
Total Magnesium (Mg)	mg/L	22	0.20	A680420
Total Manganese (Mn)	mg/L	0.49	0.0040	A680420
Total Molybdenum (Mo)	mg/L	0.0023	0.00020	A680418
Total Nickel (Ni)	mg/L	0.028	0.00050	A680418
Total Phosphorus (P)	mg/L	0.57	0.10	A680420
Total Potassium (K)	mg/L	2.9	0.30	A680420
Total Selenium (Se)	mg/L	0.00092	0.00020	A680418
Total Silicon (Si)	mg/L	11	0.10	A680420
Total Silver (Ag)	mg/L	0.00012	0.00010	A680418
Total Sodium (Na)	mg/L	8.0	0.50	A680420
Total Strontium (Sr)	mg/L	0.28	0.020	A680420
Total Sulphur (S)	mg/L	12	0.20	A680420
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A680418
Total Tin (Sn)	mg/L	<0.0010	0.0010	A680418
Total Titanium (Ti)	mg/L	0.079	0.0010	A680418
Total Uranium (U)	mg/L	0.0016	0.00010	A680418
Total Vanadium (V)	mg/L	0.023	0.0010	A680418
RDL = Reportable Detection Limit				

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.16	0.0030	A680418
RDL = Reportable Detection Limit				

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Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	110	0.50	A675929
Ion Balance (% Difference)	%	3.5	N/A	A675721
Sulphide (as H2S)	mg/L	0.033	0.010	A675950
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A675178
Chemical Oxygen Demand	mg/L	70	10	A677354
Elements				
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A676120
Misc. Inorganics				
Conductivity	uS/cm	260	2.0	A677568
Dissolved Organic Carbon (C)	mg/L	5.3	0.50	A678143
pH	pH	7.77	N/A	A677565
Total Organic Carbon (C)	mg/L	5.3	0.50	A679921
Total Dissolved Solids	mg/L	180	10	A676656
Total Suspended Solids	mg/L	1000 (1)	3.9	A677084
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A677562
Alkalinity (Total as CaCO3)	mg/L	86	1.0	A677562
Bicarbonate (HCO3)	mg/L	110	1.0	A677562
Carbonate (CO3)	mg/L	<1.0	1.0	A677562
Dissolved Fluoride (F)	mg/L	0.084	0.050	A677574
Hydroxide (OH)	mg/L	<1.0	1.0	A677562
Total Sulphide	mg/L	0.031 (2)	0.0090	A678194
Chloride (Cl)	mg/L	9.1	1.0	A678734
Sulphate (SO4)	mg/L	37	1.0	A678734
Nutrients				
Total Ammonia (N)	mg/L	0.043	0.015	A679464

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.
(2) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Misc. Organics				
Total Oil and grease	mg/L	<2.0	2.0	A676375
Physical Properties				
True Colour	PtCo units	14	2.0	A677220
Physical Properties				
Turbidity	NTU	380 (1)	0.50	A677080

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Polycyclic Aromatics				
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	0.000010	A675933
Acenaphthene	mg/L	<0.00010	0.00010	A677069
Acenaphthylene	mg/L	<0.00010	0.00010	A677069
Acridine	mg/L	<0.000040	0.000040	A677069
Anthracene	mg/L	<0.000010	0.000010	A677069
Benzo(a)anthracene	mg/L	<0.0000085	0.0000085	A677069
Benzo(b&j)fluoranthene	mg/L	<0.0000085	0.0000085	A677069
Benzo(k)fluoranthene	mg/L	<0.0000085	0.0000085	A677069
Benzo(g,h,i)perylene	mg/L	<0.0000085	0.0000085	A677069
Benzo(c)phenanthrene	mg/L	<0.000050	0.000050	A677069
Benzo(a)pyrene	mg/L	<0.0000075	0.0000075	A677069
Benzo(e)pyrene	mg/L	<0.000050	0.000050	A677069
Chrysene	mg/L	<0.0000085	0.0000085	A677069
Dibenz(a,h)anthracene	mg/L	<0.0000075	0.0000075	A677069
Fluoranthene	mg/L	<0.000010	0.000010	A677069
Fluorene	mg/L	<0.000050	0.000050	A677069
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	0.0000085	A677069
1-Methylnaphthalene	mg/L	<0.00010	0.00010	A677069
2-Methylnaphthalene	mg/L	<0.00010	0.00010	A677069
Naphthalene	mg/L	<0.00010	0.00010	A677069
Phenanthrene	mg/L	<0.000050	0.000050	A677069
Perylene	mg/L	<0.000050	0.000050	A677069
Pyrene	mg/L	<0.000020	0.000020	A677069
Quinoline	mg/L	<0.00020	0.00020	A677069
Extraction Surrogate Recovery (%)				
D10-ANTHRACENE (sur.)	%	109		A677069
D8-ACENAPHTHYLENE (sur.)	%	93		A677069
D8-NAPHTHALENE (sur.)	%	73		A677069
TERPHENYL-D14 (sur.)	%	154 (1)		A677069

RDL = Reportable Detection Limit

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Elements				
Dissolved Mercury (Hg)	ug/L	<0.0019	0.0019	A680713
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A680717
RDL = Reportable Detection Limit				

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE252		
Sampling Date		2022/08/06 14:40		
COC Number		299410		
	UNITS	**AEMP-07 DUP**	**RDL**	**QC Batch**
Elements				
Dissolved Aluminum (Al)	mg/L	0.014	0.0030	A679432
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A679432
Dissolved Arsenic (As)	mg/L	0.00066	0.00020	A679432
Dissolved Barium (Ba)	mg/L	0.055	0.010	A677529
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A679432
Dissolved Boron (B)	mg/L	<0.020	0.020	A677529
Dissolved Calcium (Ca)	mg/L	30	0.30	A677529
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A679432
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A679432
Dissolved Copper (Cu)	mg/L	0.0011	0.0010	A679432
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A677529
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A679432
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677529
Dissolved Magnesium (Mg)	mg/L	8.8	0.20	A677529
Dissolved Manganese (Mn)	mg/L	0.069	0.0040	A677529
Dissolved Molybdenum (Mo)	mg/L	0.0010	0.00020	A679432
Dissolved Nickel (Ni)	mg/L	0.0011	0.00050	A679432
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677529
Dissolved Potassium (K)	mg/L	0.94	0.30	A677529
Dissolved Selenium (Se)	mg/L	0.00030	0.00020	A679432
Dissolved Silicon (Si)	mg/L	1.5	0.10	A677529
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A679432
Dissolved Sodium (Na)	mg/L	7.6	0.50	A677529
Dissolved Strontium (Sr)	mg/L	0.20	0.020	A677529
Dissolved Sulphur (S)	mg/L	11	0.20	A677529
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A679432
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A679432
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A679432
Dissolved Uranium (U)	mg/L	0.00067	0.00010	A679432
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A679432
Dissolved Zinc (Zn)	mg/L	<0.0030	0.0030	A679432
RDL = Reportable Detection Limit				

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE251
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A676116	N/A	2022/08/13	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677426	2022/08/12	2022/08/13	Clujd Astudillo

Bureau Veritas ID: AZE251 Dup
Sample ID: TRIP BLANK
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong

Bureau Veritas ID: AZE252
Sample ID: AEMP-07 DUP
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A676116	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A676120	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A678734	N/A	2022/08/12	Tyler Orr
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A677220	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/15	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677529	N/A	2022/08/11	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A679432	N/A	2022/08/13	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/15	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/12	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A678429	N/A	2022/08/12	Ana Katrina Cariaga
Nitrate (as N)	CALC	A676056	2022/08/12	2022/08/12	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk

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Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE252
Sample ID: AEMP-07 DUP
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A676017	N/A	2022/08/13	Automated Statchk
Nitrogen (Total)	AC/COL	A678803	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679921	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C

Temperatures upon receipt at Bureau Veritas Labs burnaby
Package 1: 2 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AZE252 [AEMP-07 DUP] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Results relate only to the items tested.

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Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A675178	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/15	<2.0		mg/L	
A676375	JB9	Method Blank	Total Oil and grease	2022/08/12	<2.0		mg/L	
A676656	HE1	Method Blank	Total Dissolved Solids	2022/08/11	<10		mg/L	
A677069	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/14		108	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		143 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		85	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		63	%	50 - 130
			Acenaphthene	2022/08/14	<0.00010		mg/L	
			Acenaphthylene	2022/08/14	<0.00010		mg/L	
			Acridine	2022/08/14	<0.000040		mg/L	
			Anthracene	2022/08/14	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/14	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/14	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/08/14	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/14	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/08/14	<0.000050		mg/L	
			Chrysene	2022/08/14	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/14	<0.0000075		mg/L	
			Fluoranthene	2022/08/14	<0.000010		mg/L	
			Fluorene	2022/08/14	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/14	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			Naphthalene	2022/08/14	<0.00010		mg/L	
			Phenanthrene	2022/08/14	<0.000050		mg/L	
			Perylene	2022/08/14	<0.000050		mg/L	
			Pyrene	2022/08/14	<0.000020		mg/L	
			Quinoline	2022/08/14	<0.00020		mg/L	
A677080	HCL	Method Blank	Turbidity	2022/08/11	<0.10		NTU	
A677082	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/12		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12	<0.10		mg/L	
A677084	HE1	Method Blank	Total Suspended Solids	2022/08/11	<0.95		mg/L	
A677220	FM0	Method Blank	True Colour	2022/08/11	<2.0		PtCo units	
A677354	JM0	Method Blank	Chemical Oxygen Demand	2022/08/11	<10		mg/L	
A677426	CAU	Method Blank	O-TERPHENYL (sur.)	2022/08/13		107	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/13	<0.10		mg/L	
A677529	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/11	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/11	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/11	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/11	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/11	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/11	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/11	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/11	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/11	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/11	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/11	0.14, RDL=0.10 (2)		mg/L	
			Dissolved Boron (B)	2022/08/11	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/11	<0.30		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677562	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/11	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/11	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/11	<1.0		mg/L	
			Carbonate (CO3)	2022/08/11	<1.0		mg/L	
			Hydroxide (OH)	2022/08/11	<1.0		mg/L	
A677568	JLD	Method Blank	Conductivity	2022/08/11	<2.0		uS/cm	
A677574	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/11	<0.050		mg/L	
A678143	ZWU	Method Blank	Dissolved Organic Carbon (C)	2022/08/12	<0.50		mg/L	
A678194	AP1	Method Blank	Total Sulphide	2022/08/12	<0.0018		mg/L	
A678337	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/13		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13	<0.00040		mg/L	
			Toluene	2022/08/13	<0.00040		mg/L	
			Ethylbenzene	2022/08/13	<0.00040		mg/L	
			m & p-Xylene	2022/08/13	<0.00080		mg/L	
			o-Xylene	2022/08/13	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/13	<0.10		mg/L	
A678429	ACR	Method Blank	Nitrite (N)	2022/08/12	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/12	<0.010		mg/L	
A678734	TOR	Method Blank	Chloride (Cl)	2022/08/12	<1.0		mg/L	
			Sulphate (SO4)	2022/08/12	<1.0		mg/L	
A678803	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A679432	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A679464	ACR	Method Blank	Total Ammonia (N)	2022/08/13	<0.015		mg/L	
A679921	ZWU	Method Blank	Total Organic Carbon (C)	2022/08/14	<0.50		mg/L	
A680418	STI	Method Blank	Total Aluminum (Al)	2022/08/15	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/15	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/15	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/15	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/15	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/15	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/15	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/15	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/15	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Silver (Ag)	2022/08/15	<0.00010		mg/L	
			Total Arsenic (As)	2022/08/15	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/15	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/15	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/15	<0.0010		mg/L	
			Total Uranium (U)	2022/08/15	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/15	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/15	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/15	<0.0010		mg/L	
A680420	MPU	Method Blank	Total Iron (Fe)	2022/08/15	<0.060		mg/L	
			Total Lithium (Li)	2022/08/15	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/15	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/15	<0.0040		mg/L	
			Total Potassium (K)	2022/08/15	<0.30		mg/L	
			Total Sodium (Na)	2022/08/15	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/15	<0.020		mg/L	
			Total Sulphur (S)	2022/08/15	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/15	<0.10		mg/L	
			Total Barium (Ba)	2022/08/15	<0.010		mg/L	
			Total Silicon (Si)	2022/08/15	0.11, RDL=0.10 (2)		mg/L	
			Total Boron (B)	2022/08/15	<0.020		mg/L	
			Total Calcium (Ca)	2022/08/15	<0.30		mg/L	
A680713	BAL	Method Blank	Dissolved Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A680717	BAL	Method Blank	Total Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A678337	DO1	RPD [AZE251-02]	Benzene	2022/08/13	NC		%	30
			Toluene	2022/08/13	NC		%	30
			Ethylbenzene	2022/08/13	NC		%	30
			m & p-Xylene	2022/08/13	NC		%	30
			o-Xylene	2022/08/13	NC		%	30
			F1 (C6-C10)	2022/08/13	NC		%	30
A678337	DO1	Matrix Spike [AZE252-12]	1,4-Difluorobenzene (sur.)	2022/08/13		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		101	%	50 - 140
			Benzene	2022/08/13		98	%	50 - 140
			Toluene	2022/08/13		92	%	50 - 140
			Ethylbenzene	2022/08/13		97	%	50 - 140
			m & p-Xylene	2022/08/13		97	%	50 - 140
			o-Xylene	2022/08/13		99	%	50 - 140
			F1 (C6-C10)	2022/08/13		113	%	60 - 140
A675178	BYM	LCS	Biochemical Oxygen Demand	2022/08/15		104	%	85 - 115
A676375	JB9	LCS	Total Oil and grease	2022/08/12		114	%	70 - 130
A676656	HE1	LCS	Total Dissolved Solids	2022/08/11		104	%	80 - 120
A677069	NK3	LCS	D10-ANTHRACENE (sur.)	2022/08/14		118	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		159 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		104	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		87	%	50 - 130
			Acenaphthene	2022/08/14		86	%	50 - 130
			Acenaphthylene	2022/08/14		92	%	50 - 130
			Acridine	2022/08/14		95	%	50 - 130
			Anthracene	2022/08/14		101	%	50 - 130
			Benzo(a)anthracene	2022/08/14		124	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzo(b&j)fluoranthene	2022/08/14		116	%	50 - 130
			Benzo(k)fluoranthene	2022/08/14		110	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/14		107	%	50 - 130
			Benzo(c)phenanthrene	2022/08/14		128	%	50 - 130
			Benzo(a)pyrene	2022/08/14		104	%	50 - 130
			Benzo(e)pyrene	2022/08/14		107	%	50 - 130
			Chrysene	2022/08/14		118	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/14		95	%	50 - 130
			Fluoranthene	2022/08/14		103	%	50 - 130
			Fluorene	2022/08/14		88	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/14		99	%	50 - 130
			1-Methylnaphthalene	2022/08/14		75	%	50 - 130
			2-Methylnaphthalene	2022/08/14		93	%	50 - 130
			Naphthalene	2022/08/14		91	%	50 - 130
			Phenanthrene	2022/08/14		97	%	50 - 130
			Perylene	2022/08/14		109	%	50 - 130
			Pyrene	2022/08/14		102	%	50 - 130
			Quinoline	2022/08/14		86	%	50 - 130
A677080	HCL	LCS	Turbidity	2022/08/11		103	%	80 - 120
A677082	GG3	LCS	O-TERPHENYL (sur.)	2022/08/12		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12		105	%	60 - 140
A677084	HE1	LCS	Total Suspended Solids	2022/08/11		96	%	80 - 120
A677220	FM0	LCS	True Colour	2022/08/11		92	%	80 - 120
A677354	JM0	LCS	Chemical Oxygen Demand	2022/08/11		101	%	80 - 120
A677426	CAU	LCS	O-TERPHENYL (sur.)	2022/08/13		110	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/13		111	%	60 - 140
A677529	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		96	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		94	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		95	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		98	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		100	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		96	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		99	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		91	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		91	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		102	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		93	%	80 - 120
			Dissolved Boron (B)	2022/08/11		100	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		96	%	80 - 120
A677562	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/11		103	%	80 - 120
A677565	JLD	LCS	pH	2022/08/11		100	%	97 - 103
A677568	JLD	LCS	Conductivity	2022/08/11		100	%	90 - 110
A677574	JLD	LCS	Dissolved Fluoride (F)	2022/08/11		93	%	80 - 120
A678143	ZWU	LCS	Dissolved Organic Carbon (C)	2022/08/12		104	%	80 - 120
A678194	AP1	LCS	Total Sulphide	2022/08/12		90	%	80 - 120
A678337	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/08/13		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13		96	%	60 - 130
			Toluene	2022/08/13		91	%	60 - 130
			Ethylbenzene	2022/08/13		95	%	60 - 130
			m & p-Xylene	2022/08/13		94	%	60 - 130

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			o-Xylene	2022/08/13		97	%	60 - 130
			F1 (C6-C10)	2022/08/13		102	%	60 - 140
A678429	ACR	LCS	Nitrite (N)	2022/08/12		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/12		100	%	80 - 120
A678734	TOR	LCS	Chloride (Cl)	2022/08/12		104	%	80 - 120
			Sulphate (SO4)	2022/08/12		97	%	80 - 120
A678803	MAP	LCS	Total Nitrogen (N)	2022/08/12		103	%	80 - 120
A679432	MKJ	LCS	Dissolved Aluminum (Al)	2022/08/13		113	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/13		91	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/13		91	%	80 - 120
			Dissolved Copper (Cu)	2022/08/13		91	%	80 - 120
			Dissolved Lead (Pb)	2022/08/13		94	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/13		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/13		96	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/13		91	%	80 - 120
			Dissolved Selenium (Se)	2022/08/13		88	%	80 - 120
			Dissolved Silver (Ag)	2022/08/13		93	%	80 - 120
			Dissolved Arsenic (As)	2022/08/13		86	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/13		93	%	80 - 120
			Dissolved Tin (Sn)	2022/08/13		94	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/13		88	%	80 - 120
			Dissolved Uranium (U)	2022/08/13		93	%	80 - 120
			Dissolved Vanadium (V)	2022/08/13		93	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/13		86	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/13		93	%	80 - 120
A679464	ACR	LCS	Total Ammonia (N)	2022/08/14		103	%	80 - 120
A679921	ZWU	LCS	Total Organic Carbon (C)	2022/08/14		107	%	80 - 120
A680418	STI	LCS	Total Aluminum (Al)	2022/08/15		98	%	80 - 120
			Total Chromium (Cr)	2022/08/15		95	%	80 - 120
			Total Cobalt (Co)	2022/08/15		96	%	80 - 120
			Total Copper (Cu)	2022/08/15		93	%	80 - 120
			Total Lead (Pb)	2022/08/15		100	%	80 - 120
			Total Antimony (Sb)	2022/08/15		107	%	80 - 120
			Total Molybdenum (Mo)	2022/08/15		100	%	80 - 120
			Total Nickel (Ni)	2022/08/15		94	%	80 - 120
			Total Selenium (Se)	2022/08/15		100	%	80 - 120
			Total Silver (Ag)	2022/08/15		100	%	80 - 120
			Total Arsenic (As)	2022/08/15		94	%	80 - 120
			Total Thallium (Tl)	2022/08/15		97	%	80 - 120
			Total Tin (Sn)	2022/08/15		100	%	80 - 120
			Total Titanium (Ti)	2022/08/15		94	%	80 - 120
			Total Uranium (U)	2022/08/15		101	%	80 - 120
			Total Vanadium (V)	2022/08/15		97	%	80 - 120
			Total Zinc (Zn)	2022/08/15		97	%	80 - 120
			Total Beryllium (Be)	2022/08/15		103	%	80 - 120
A680420	MPU	LCS	Total Iron (Fe)	2022/08/15		103	%	80 - 120
			Total Lithium (Li)	2022/08/15		101	%	80 - 120
			Total Magnesium (Mg)	2022/08/15		100	%	80 - 120
			Total Manganese (Mn)	2022/08/15		99	%	80 - 120
			Total Potassium (K)	2022/08/15		104	%	80 - 120
			Total Sodium (Na)	2022/08/15		102	%	80 - 120
			Total Strontium (Sr)	2022/08/15		99	%	80 - 120

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Sulphur (S)	2022/08/15		93	%	80 - 120
			Total Phosphorus (P)	2022/08/15		95	%	80 - 120
			Total Barium (Ba)	2022/08/15		105	%	80 - 120
			Total Silicon (Si)	2022/08/15		99	%	80 - 120
			Total Boron (B)	2022/08/15		101	%	80 - 120
			Total Calcium (Ca)	2022/08/15		100	%	80 - 120
A680713	BAL	LCS	Dissolved Mercury (Hg)	2022/08/15		92	%	80 - 120
A680717	BAL	LCS	Total Mercury (Hg)	2022/08/15		93	%	80 - 120
A678803	MAP	SRM	Total Nitrogen (N)	2022/08/12		96	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Method blank above criteria. Data inspected. All data < RDL or greater than 10x Method Blank.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258688
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Sandy Yuan, M.Sc., QP, Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
Phone: (403) 291-3077
Fax: (403) 735-2240
Toll Free: (800) 386-7247

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9331 - 48 Street, T6B 2R4
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Fax: (780) 450-4187
Toll Free: (800) 386-7247

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EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

ALQ

C of C # 299410

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: Worley (Advisian)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150, 205 Quarry Park Blvd SE Calgary, AB T2C 3E7	Address: 150, 205 Quarry Park Blvd SE Calgary, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): ~~Alex Haigh~~ Stacy Gibb / ~~Alex H~~ NEAL TALWA	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED
1	AEMP-07 DUP		X			17	2022/08/06	14:40	✓	
2	TRIP BLANK				X	4	2022/08/06	18:00		
3										
4										
5										
6										
7										
8										
9										
10										

ANALYSIS REQUESTED

	SEDIMENT PRESENT	VOC/HT	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☑ DIS ☐	MERCURY TOTAL ☐ DISSOLVED ☑	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	True Color, TSS, TDS, Turbidity	Nitrate, Nitrite, Ammonia - N/Total	Carbon (DOC)	Total # sulphide	Total & dissolved sulphur	O. & G. grease	Fluoride
1		✓	✓	✓					✓	✓	✓	✓					✓		✓	✓	✓	✓	✓	✓	✓
2				✓																					
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): NA

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email Canada.chemistry@worley.com
~~Carol.lordatatrack@worley.com~~
* BOD Frozen as per agreement cannot meet hold times

JARS USED & NOT SUBMITTED (Enter N/A for Water): NA

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	/		TEMP °C	6	5	5
SEAL INTACT	/			1	2	3
COOLING MEDIA PRESENT	/					

	YES	NO	COOLER ID # MCAL			
SEAL PRESENT	✓		TEMP °C	4	4	4
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C			
SEAL INTACT				1	2	3
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C258675 C258688 ISY 22/08/09
SAMPLES
LABELED BY: ISY
VERIFIED BY: ALQ

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	STACY GIBB	2022/08/08	10:00	1. Maryjodie Pandher	Maryjodie Pandher	2022/08/09	16:50
2.	Iuliia Sycheva	2022/08/09	20:01	2. Joban	JOBAN RAJU	2022/08/10	06:30
3.				3.			

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Sent to: **Bureau Veritas Vancouver**
4606 Canada Way
Burnaby, BC, V5G 1K5
Tel: (604) 734-7276

BUREAU VERITAS INTERLAB CHAIN OF CUSTODY RECORD

COC # C258688-MVAN-01-01

REPORT INFORMATION	
Company:	Bureau Veritas
Address:	4000 19st N.E, Calgary, Alberta, T2E 6P8
Contact Name:	Namita Sahni
Email:	Namita.Sahni@bureauveritas.com, Customersolutionswest@bureauveritas.com
Phone:	(604) 639-2614
Bureau Veritas Project #:	C258688
Client Invoice To:	Imperial Oil Ltd - Worley Parsons (12794)
Client Report To:	Advisian (38038)

Incl. on Report? Yes / No

C258688

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Mercury (Dissolved) by CV	Mercury (Total) by CV	ADDITIONAL SAMPLE INFORMATION
1	AZE252-AEMP-07 DUP	SW	2022/08/06	14:40	SG	2	X	X	(P: 13, 14)
2									
3									
4									
5									
6									
7									
8									
9									
10									

ANALYSIS REQUESTED

C258688_ISUB;COC

SITE LOCATION:	REGULATORY CRITERIA	SPECIAL INSTRUCTIONS	REQUIRED EDDs	TURNAROUND TIME
NORMAN WELLS, NT		Please inform Bureau Veritas immediately if you are not accredited for the requested test(s). **Please return a copy of this form with the report.**	National Excel (N001) Worley Parsons Komex Equis (N026) Standard DBF (Old DBase Names) (A002)	☐ Rush Required 2022/08/15 Date Required *Please inform us if rush charges will be incurred.*

SITE #:	PROJECT #:	PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:
N/A	417085-42051-22200	A2601436, PENDING-10

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present	X					
Custody Seal Intact	X					
Cooling Media Present	X					
				7	6	5

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present	X					
Custody Seal Intact	X					
Cooling Media Present	X					
				1	3	2

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY

Bureau Veritas Job #: C258688

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. Nick Batty	2022/08/11	15:00	1. Edeliene Caoili	2022/08/12	08:00	NBT	SRM
2.			2.				

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299417

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216610
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258698
Received: 2022/08/09, 16:48

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 3)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 4)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (2, 5)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (2)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 5)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 5)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 6)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 7)	3	AB SOP-00005	SM 23 4500-H+B m

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299417

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216610
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258698
Received: 2022/08/09, 16:48

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 8)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5
(3) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(4) Silica gel clean up employed.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299417

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216610
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258698

Received: 2022/08/09, 16:48

(5) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(6) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(7) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(8) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
16 Aug 2022 13:13:36

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZE319	AZE320	AZE321		
Sampling Date		2022/08/06 16:00	2022/08/06 14:00	2022/08/06 15:00		
COC Number		299417	299417	299417		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A677082
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A678337
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A675719
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A675719
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A678337
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	97	93	95		A677082
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	102	102	101		A678337
4-Bromofluorobenzene (sur.)	%	97	98	97		A678337
D4-1,2-Dichloroethane (sur.)	%	104	104	104		A678337

RDL = Reportable Detection Limit

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZE319			AZE320		AZE321		
Sampling Date		2022/08/06 16:00			2022/08/06 14:00		2022/08/06 15:00		
COC Number		299417			299417		299417		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**AEMP-08**	**RDL**	**QC Batch**
Calculated Parameters									
Nitrate (N)	mg/L	0.055	0.010	A675669	0.053	0.010	0.052	0.010	A675669
Nitrate (NO3)	mg/L	0.25	0.044	A675931	0.23	0.044	0.23	0.044	A675931
Nitrite (NO2)	mg/L	<0.033	0.033	A675931	<0.033	0.033	<0.033	0.033	A675931
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.27	0.020	A676017	0.65	0.20	0.31	0.020	A676017
Nutrients									
Nitrite (N)	mg/L	<0.010	0.010	A677318	<0.010	0.010	<0.010	0.010	A677325
Nitrate plus Nitrite (N)	mg/L	0.055	0.010	A677318	0.053	0.010	0.052	0.010	A677325
Total Nitrogen (N)	mg/L	0.33	0.020	A678107	0.70 (1)	0.20	0.36	0.020	A678107

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE319	AZE320	AZE321			AZE321		
Sampling Date		2022/08/06 16:00	2022/08/06 14:00	2022/08/06 15:00			2022/08/06 15:00		
COC Number		299417	299417	299417			299417		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-08 Lab-Dup**	**RDL**	**QC Batch**
Elements									
Total Cadmium (Cd)	mg/L	0.00012	0.00071	0.00014	0.000020	A675970			
Total Aluminum (Al)	mg/L	1.6	8.5	1.7	0.0030	A680418	1.7	0.0030	A680418
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A680418	<0.00060	0.00060	A680418
Total Arsenic (As)	mg/L	0.0017	0.0093	0.0019	0.00020	A680418	0.0019	0.00020	A680418
Total Barium (Ba)	mg/L	0.10	0.39	0.11	0.010	A680420	0.11	0.010	A680420
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418	<0.0010	0.0010	A680418
Total Boron (B)	mg/L	<0.020	0.023	<0.020	0.020	A680420	<0.020	0.020	A680420
Total Calcium (Ca)	mg/L	36	75	39	0.30	A680420	38	0.30	A680420
Total Chromium (Cr)	mg/L	0.0025	0.014	0.0025	0.0010	A680418	0.0024	0.0010	A680418
Total Cobalt (Co)	mg/L	0.0016	0.010	0.0018	0.00030	A680418	0.0018	0.00030	A680418
Total Copper (Cu)	mg/L	0.0044	0.021	0.0048	0.0010	A680418	0.0045	0.0010	A680418
Total Iron (Fe)	mg/L	3.9	24	4.2	0.060	A680420	4.2	0.060	A680420
Total Lead (Pb)	mg/L	0.0020	0.012	0.0022	0.00020	A680418	0.0021	0.00020	A680418
Total Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A680420	<0.020	0.020	A680420
Total Magnesium (Mg)	mg/L	11	23	12	0.20	A680420	12	0.20	A680420
Total Manganese (Mn)	mg/L	0.080	0.53	0.090	0.0040	A680420	0.090	0.0040	A680420
Total Molybdenum (Mo)	mg/L	0.0011	0.0025	0.0012	0.00020	A680418	0.0011	0.00020	A680418
Total Nickel (Ni)	mg/L	0.0057	0.030	0.0060	0.00050	A680418	0.0062	0.00050	A680418
Total Phosphorus (P)	mg/L	<0.10	0.61	<0.10	0.10	A680420	0.10	0.10	A680420
Total Potassium (K)	mg/L	1.8	3.1	1.9	0.30	A680420	1.9	0.30	A680420
Total Selenium (Se)	mg/L	0.00036	0.00099	0.00036	0.00020	A680418	0.00037	0.00020	A680418
Total Silicon (Si)	mg/L	7.0	12	7.1	0.10	A680420	7.3	0.10	A680420
Total Silver (Ag)	mg/L	<0.00010	0.00015	<0.00010	0.00010	A680418	<0.00010	0.00010	A680418
Total Sodium (Na)	mg/L	7.7	8.1	8.4	0.50	A680420	8.3	0.50	A680420
Total Strontium (Sr)	mg/L	0.21	0.29	0.26	0.020	A680420	0.26	0.020	A680420
Total Sulphur (S)	mg/L	11	12	12	0.20	A680420	12	0.20	A680420
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680418	<0.00020	0.00020	A680418
Total Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418	<0.0010	0.0010	A680418
Total Titanium (Ti)	mg/L	0.022	0.089	0.027	0.0010	A680418	0.026	0.0010	A680418
Total Uranium (U)	mg/L	0.00070	0.0016	0.00077	0.00010	A680418	0.00078	0.00010	A680418

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE319	AZE320	AZE321			AZE321		
Sampling Date		2022/08/06 16:00	2022/08/06 14:00	2022/08/06 15:00			2022/08/06 15:00		
COC Number		299417	299417	299417			299417		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**	**AEMP-08 Lab-Dup**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	0.0046	0.026	0.0050	0.0010	A680418	0.0050	0.0010	A680418
Total Zinc (Zn)	mg/L	0.069	0.17	0.074	0.0030	A680418	0.086	0.0030	A680418

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE319			AZE319			AZE320		
Sampling Date		2022/08/06 16:00			2022/08/06 16:00			2022/08/06 14:00		
COC Number		299417			299417			299417		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	120	0.50	A675929				110	0.50	A675929
Ion Balance (% Difference)	%	2.0	N/A	A675721				3.9	N/A	A675721
Sulphide (as H2S)	mg/L	0.0050	0.0020	A675950				0.030	0.010	A675950
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A675178				<2.0	2.0	A675178
Chemical Oxygen Demand	mg/L	27	10	A677354				86	10	A677354
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A675611				<0.000020	0.000020	A675611
Misc. Inorganics										
Conductivity	uS/cm	260	2.0	A677568				260	2.0	A677568
Dissolved Organic Carbon (C)	mg/L	5.1	0.50	A678143				5.4	0.50	A678143
pH	pH	7.76	N/A	A677565				7.69	N/A	A677565
Total Organic Carbon (C)	mg/L	4.8	0.50	A679921				5.0	0.50	A679921
Total Dissolved Solids	mg/L	170	10	A676656				180	10	A676656
Total Suspended Solids	mg/L	140	0.97	A677084	140	0.97	A677084	700 (1)	3.0	A677084
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Alkalinity (Total as CaCO3)	mg/L	87	1.0	A677562				87	1.0	A677562
Bicarbonate (HCO3)	mg/L	110	1.0	A677562				110	1.0	A677562
Carbonate (CO3)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Dissolved Fluoride (F)	mg/L	0.082	0.050	A677574				0.084	0.050	A677574
Hydroxide (OH)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Total Sulphide	mg/L	0.0047	0.0018	A678194				0.028 (2)	0.0090	A678194
Chloride (Cl)	mg/L	8.3	1.0	A677336				7.4	1.0	A677336
Sulphate (SO4)	mg/L	38	1.0	A677336				38	1.0	A677336
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A679464				0.032	0.015	A679464

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Detection limit raised based on sample volume used for analysis.
(2) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE319			AZE319			AZE320		
Sampling Date		2022/08/06 16:00			2022/08/06 16:00			2022/08/06 14:00		
COC Number		299417			299417			299417		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Misc. Organics										
Total Oil and grease	mg/L	3.0	2.0	A676375				3.0	2.0	A676375
Physical Properties										
True Colour	PtCo units	11	2.0	A677443				13	2.0	A677443
Physical Properties										
Turbidity	NTU	71	0.10	A677080				300 (1)	0.50	A677080

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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Bureau Veritas Job #: C258698
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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE321		
Sampling Date		2022/08/06 15:00		
COC Number		299417		
	UNITS	**AEMP-08**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	120	0.50	A675929
Ion Balance (% Difference)	%	1.4	N/A	A675721
Sulphide (as H2S)	mg/L	0.026	0.0020	A675950
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A675178
Chemical Oxygen Demand	mg/L	21	10	A677354
Elements				
Dissolved Cadmium (Cd)	mg/L	0.000030	0.000020	A675611
Misc. Inorganics				
Conductivity	uS/cm	270	2.0	A677568
Dissolved Organic Carbon (C)	mg/L	4.9	0.50	A678143
pH	pH	7.76	N/A	A677565
Total Organic Carbon (C)	mg/L	4.7	0.50	A679921
Total Dissolved Solids	mg/L	180	10	A676656
Total Suspended Solids	mg/L	160	1.0	A677084
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A677562
Alkalinity (Total as CaCO3)	mg/L	87	1.0	A677562
Bicarbonate (HCO3)	mg/L	110	1.0	A677562
Carbonate (CO3)	mg/L	<1.0	1.0	A677562
Dissolved Fluoride (F)	mg/L	0.085	0.050	A677574
Hydroxide (OH)	mg/L	<1.0	1.0	A677562
Total Sulphide	mg/L	0.025	0.0018	A678194
Chloride (Cl)	mg/L	8.9	1.0	A677336
Sulphate (SO4)	mg/L	40	1.0	A677336
Nutrients				
Total Ammonia (N)	mg/L	<0.015	0.015	A679464
Misc. Organics				
Total Oil and grease	mg/L	4.0	2.0	A676375

RDL = Reportable Detection Limit
N/A = Not Applicable

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE321		
Sampling Date		2022/08/06 15:00		
COC Number		299417		
	UNITS	**AEMP-08**	**RDL**	**QC Batch**
Physical Properties				
True Colour	PtCo units	11	2.0	A677443
Physical Properties				
Turbidity	NTU	80 (1)	0.20	A677080

RDL = Reportable Detection Limit

(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AZE319	AZE320	AZE321		
Sampling Date		2022/08/06 16:00	2022/08/06 14:00	2022/08/06 15:00		
COC Number		299417	299417	299417		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A675933
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A677069
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A677069
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A677069
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A677069
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A677069
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A677069
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A677069
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	115	108	107		A677069
D8-ACENAPHTHYLENE (sur.)	%	96	93	91		A677069
D8-NAPHTHALENE (sur.)	%	73	73	73		A677069
TERPHENYL-D14 (sur.)	%	153 (1)	143 (1)	149 (1)		A677069

RDL = Reportable Detection Limit
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZE319	AZE320	AZE321		
Sampling Date		2022/08/06 16:00	2022/08/06 14:00	2022/08/06 15:00		
COC Number		299417	299417	299417		
	UNITS	**AEMP-06**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A680713
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A680717
RDL = Reportable Detection Limit						

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE319		AZE320	AZE321		
Sampling Date		2022/08/06 16:00		2022/08/06 14:00	2022/08/06 15:00		
COC Number		299417		299417	299417		
	UNITS	**AEMP-06**	**QC Batch**	**AEMP-07**	**AEMP-08**	**RDL**	**QC Batch**
Elements							
Dissolved Aluminum (Al)	mg/L	0.018	A677344	0.011	0.12	0.0030	A677344
Dissolved Antimony (Sb)	mg/L	<0.00060	A677344	<0.00060	<0.00060	0.00060	A677344
Dissolved Arsenic (As)	mg/L	0.00032	A677344	0.00050	0.00053	0.00020	A677344
Dissolved Barium (Ba)	mg/L	0.052	A677489	0.054	0.057	0.010	A677489
Dissolved Beryllium (Be)	mg/L	<0.0010	A677344	<0.0010	<0.0010	0.0010	A677344
Dissolved Boron (B)	mg/L	<0.020	A677489	<0.020	<0.020	0.020	A677489
Dissolved Calcium (Ca)	mg/L	33	A677489	30	32	0.30	A677489
Dissolved Chromium (Cr)	mg/L	<0.0010	A677344	<0.0010	<0.0010	0.0010	A677344
Dissolved Cobalt (Co)	mg/L	<0.00030	A677344	<0.00030	0.00032	0.00030	A677344
Dissolved Copper (Cu)	mg/L	0.0021	A677344	<0.0010	0.0024	0.0010	A677344
Dissolved Iron (Fe)	mg/L	<0.060	A677489	<0.060	0.34	0.060	A677489
Dissolved Lead (Pb)	mg/L	<0.00020	A677344	<0.00020	0.00058	0.00020	A677344
Dissolved Lithium (Li)	mg/L	<0.020	A677489	<0.020	<0.020	0.020	A677489
Dissolved Magnesium (Mg)	mg/L	10	A677489	8.5	9.5	0.20	A677489
Dissolved Manganese (Mn)	mg/L	0.0073	A677489	0.067	0.030	0.0040	A677489
Dissolved Molybdenum (Mo)	mg/L	0.0010	A677344	0.0011	0.00080	0.00020	A677344
Dissolved Nickel (Ni)	mg/L	0.0011	A677344	0.0012	0.0017	0.00050	A677344
Dissolved Phosphorus (P)	mg/L	<0.10	A677489	<0.10	<0.10	0.10	A677489
Dissolved Potassium (K)	mg/L	0.91	A677489	0.94	0.95	0.30	A677489
Dissolved Selenium (Se)	mg/L	0.00022	A677344	0.00028	0.00024	0.00020	A677344
Dissolved Silicon (Si)	mg/L	1.7	A677489	1.6	2.0	0.10	A677489
Dissolved Silver (Ag)	mg/L	<0.00010	A677344	<0.00010	<0.00010	0.00010	A677344
Dissolved Sodium (Na)	mg/L	8.6	A677489	7.4	7.9	0.50	A677489
Dissolved Strontium (Sr)	mg/L	0.30	A681830	0.20	0.24	0.020	A677489
Dissolved Sulphur (S)	mg/L	13	A677489	10	12	0.20	A677489
Dissolved Thallium (Tl)	mg/L	<0.00020	A677344	<0.00020	<0.00020	0.00020	A677344
Dissolved Tin (Sn)	mg/L	<0.0010	A677344	<0.0010	<0.0010	0.0010	A677344
Dissolved Titanium (Ti)	mg/L	0.0011	A677344	0.0011	0.0027	0.0010	A677344
Dissolved Uranium (U)	mg/L	0.00060	A677344	0.00062	0.00061	0.00010	A677344
Dissolved Vanadium (V)	mg/L	<0.0010	A677344	<0.0010	<0.0010	0.0010	A677344
Dissolved Zinc (Zn)	mg/L	<0.0030	A677344	<0.0030	0.0057	0.0030	A677344
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE319
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A677336	N/A	2022/08/11	Tyler Orr
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A677318	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A676017	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679921	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

Bureau Veritas ID: AZE319 Dup
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong

Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE320
Sample ID: AEMP-07
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A677336	N/A	2022/08/11	Tyler Orr
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A677325	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A676017	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679921	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

Bureau Veritas ID: AZE321
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling

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Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE321
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A675178	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A677336	N/A	2022/08/11	Tyler Orr
COD by Colorimeter	M/PROB	A677354	N/A	2022/08/11	Jennifer Mee
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A677325	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A676017	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679921	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

Bureau Veritas ID: AZE321 Dup
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Temperatures upon receipt at Bureau Veritas Labs burnaby
Package 1: [2] degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AZE319 [AEMP-06] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity.

Sample AZE320 [AEMP-07] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity.

Sample AZE321 [AEMP-08] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity.

Sample AZE319, Elements by ICP - Dissolved: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A675178	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/15	<2.0		mg/L	
A676375	JB9	Method Blank	Total Oil and grease	2022/08/12	<2.0		mg/L	
A676656	HE1	Method Blank	Total Dissolved Solids	2022/08/11	<10		mg/L	
A677069	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/14		108	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		143 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		85	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		63	%	50 - 130
			Acenaphthene	2022/08/14	<0.00010		mg/L	
			Acenaphthylene	2022/08/14	<0.00010		mg/L	
			Acridine	2022/08/14	<0.000040		mg/L	
			Anthracene	2022/08/14	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/14	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/14	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/08/14	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/14	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/08/14	<0.000050		mg/L	
			Chrysene	2022/08/14	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/14	<0.0000075		mg/L	
			Fluoranthene	2022/08/14	<0.000010		mg/L	
			Fluorene	2022/08/14	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/14	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			Naphthalene	2022/08/14	<0.00010		mg/L	
			Phenanthrene	2022/08/14	<0.000050		mg/L	
			Perylene	2022/08/14	<0.000050		mg/L	
			Pyrene	2022/08/14	<0.000020		mg/L	
			Quinoline	2022/08/14	<0.00020		mg/L	
A677080	HCL	Method Blank	Turbidity	2022/08/11	<0.10		NTU	
A677082	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/12		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12	<0.10		mg/L	
A677084	HE1	Method Blank	Total Suspended Solids	2022/08/11	<0.95		mg/L	
A677318	ACR	Method Blank	Nitrite (N)	2022/08/11	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/11	<0.010		mg/L	
A677325	ACR	Method Blank	Nitrite (N)	2022/08/11	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/11	<0.010		mg/L	
A677336	TOR	Method Blank	Chloride (Cl)	2022/08/11	<1.0		mg/L	
			Sulphate (SO4)	2022/08/11	<1.0		mg/L	
A677344	RY3	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A677354	JM0	Method Blank	Chemical Oxygen Demand	2022/08/11	<10		mg/L	
A677443	FM0	Method Blank	True Colour	2022/08/11	<2.0		PtCo units	
A677489	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A677562	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/11	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/11	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/11	<1.0		mg/L	
			Carbonate (CO3)	2022/08/11	<1.0		mg/L	
			Hydroxide (OH)	2022/08/11	<1.0		mg/L	
A677568	JLD	Method Blank	Conductivity	2022/08/11	<2.0		uS/cm	
A677574	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/11	<0.050		mg/L	
A678107	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A678143	ZWU	Method Blank	Dissolved Organic Carbon (C)	2022/08/12	<0.50		mg/L	
A678194	AP1	Method Blank	Total Sulphide	2022/08/12	<0.0018		mg/L	
A678337	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/13		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13	<0.00040		mg/L	
			Toluene	2022/08/13	<0.00040		mg/L	
			Ethylbenzene	2022/08/13	<0.00040		mg/L	
			m & p-Xylene	2022/08/13	<0.00080		mg/L	
			o-Xylene	2022/08/13	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/13	<0.10		mg/L	
A679464	ACR	Method Blank	Total Ammonia (N)	2022/08/13	<0.015		mg/L	
A679921	ZWU	Method Blank	Total Organic Carbon (C)	2022/08/14	<0.50		mg/L	
A680418	STI	Method Blank	Total Aluminum (Al)	2022/08/15	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/15	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/15	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/15	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/15	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/15	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/15	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/15	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/15	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/15	<0.00010		mg/L	

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			Total Arsenic (As)	2022/08/15	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/15	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/15	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/15	<0.0010		mg/L	
			Total Uranium (U)	2022/08/15	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/15	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/15	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/15	<0.0010		mg/L	
A680420	MPU	Method Blank	Total Iron (Fe)	2022/08/15	<0.060		mg/L	
			Total Lithium (Li)	2022/08/15	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/15	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/15	<0.0040		mg/L	
			Total Potassium (K)	2022/08/15	<0.30		mg/L	
			Total Sodium (Na)	2022/08/15	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/15	<0.020		mg/L	
			Total Sulphur (S)	2022/08/15	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/15	<0.10		mg/L	
			Total Barium (Ba)	2022/08/15	<0.010		mg/L	
			Total Silicon (Si)	2022/08/15	0.11, RDL=0.10 (2)		mg/L	
			Total Boron (B)	2022/08/15	<0.020		mg/L	
			Total Calcium (Ca)	2022/08/15	<0.30		mg/L	
A680713	BAL	Method Blank	Dissolved Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A680717	BAL	Method Blank	Total Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A681830	MPU	Method Blank	Dissolved Strontium (Sr)	2022/08/16	<0.020		mg/L	
A677084	HE1	RPD [AZE319-02]	Total Suspended Solids	2022/08/11	0.69		%	20
A680418	STI	RPD [AZE321-06]	Total Aluminum (Al)	2022/08/15	1.7		%	20
			Total Chromium (Cr)	2022/08/15	4.0		%	20
			Total Cobalt (Co)	2022/08/15	0.84		%	20
			Total Copper (Cu)	2022/08/15	5.7		%	20
			Total Lead (Pb)	2022/08/15	0.61		%	20
			Total Antimony (Sb)	2022/08/15	NC		%	20
			Total Molybdenum (Mo)	2022/08/15	10		%	20
			Total Nickel (Ni)	2022/08/15	4.5		%	20
			Total Selenium (Se)	2022/08/15	3.4		%	20
			Total Silver (Ag)	2022/08/15	NC		%	20
			Total Arsenic (As)	2022/08/15	0.43		%	20
			Total Thallium (Tl)	2022/08/15	NC		%	20
			Total Tin (Sn)	2022/08/15	NC		%	20
			Total Titanium (Ti)	2022/08/15	3.9		%	20
			Total Uranium (U)	2022/08/15	1.0		%	20
			Total Vanadium (V)	2022/08/15	0.20		%	20
			Total Zinc (Zn)	2022/08/15	16		%	20
			Total Beryllium (Be)	2022/08/15	NC		%	20
A680420	MPU	RPD [AZE321-06]	Total Iron (Fe)	2022/08/15	0.41		%	20
			Total Lithium (Li)	2022/08/15	NC		%	20
			Total Magnesium (Mg)	2022/08/15	1.4		%	20
			Total Manganese (Mn)	2022/08/15	0.78		%	20
			Total Potassium (K)	2022/08/15	0.87		%	20
			Total Sodium (Na)	2022/08/15	1.1		%	20
			Total Strontium (Sr)	2022/08/15	0.19		%	20
			Total Sulphur (S)	2022/08/15	1.3		%	20

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			Total Phosphorus (P)	2022/08/15	3.6		%	20
			Total Barium (Ba)	2022/08/15	1.3		%	20
			Total Silicon (Si)	2022/08/15	3.3		%	20
			Total Boron (B)	2022/08/15	NC		%	20
			Total Calcium (Ca)	2022/08/15	1.3		%	20
A677084	HE1	Matrix Spike [AZE320-02]	Total Suspended Solids	2022/08/11		NC	%	80 - 120
A680418	STI	Matrix Spike [AZE319-06]	Total Aluminum (Al)	2022/08/15		NC	%	80 - 120
			Total Chromium (Cr)	2022/08/15		94	%	80 - 120
			Total Cobalt (Co)	2022/08/15		93	%	80 - 120
			Total Copper (Cu)	2022/08/15		90	%	80 - 120
			Total Lead (Pb)	2022/08/15		100	%	80 - 120
			Total Antimony (Sb)	2022/08/15		103	%	80 - 120
			Total Molybdenum (Mo)	2022/08/15		99	%	80 - 120
			Total Nickel (Ni)	2022/08/15		91	%	80 - 120
			Total Selenium (Se)	2022/08/15		99	%	80 - 120
			Total Silver (Ag)	2022/08/15		96	%	80 - 120
			Total Arsenic (As)	2022/08/15		93	%	80 - 120
			Total Thallium (Tl)	2022/08/15		71 (1)	%	80 - 120
			Total Tin (Sn)	2022/08/15		101	%	80 - 120
			Total Titanium (Ti)	2022/08/15		93	%	80 - 120
			Total Uranium (U)	2022/08/15		103	%	80 - 120
			Total Vanadium (V)	2022/08/15		97	%	80 - 120
			Total Zinc (Zn)	2022/08/15		104	%	80 - 120
			Total Beryllium (Be)	2022/08/15		105	%	80 - 120
A675178	BYM	LCS	Biochemical Oxygen Demand	2022/08/15		104	%	85 - 115
A676375	JB9	LCS	Total Oil and grease	2022/08/12		114	%	70 - 130
A676656	HE1	LCS	Total Dissolved Solids	2022/08/11		104	%	80 - 120
A677069	NK3	LCS	D10-ANTHRACENE (sur.)	2022/08/14		118	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		159 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		104	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		87	%	50 - 130
			Acenaphthene	2022/08/14		86	%	50 - 130
			Acenaphthylene	2022/08/14		92	%	50 - 130
			Acridine	2022/08/14		95	%	50 - 130
			Anthracene	2022/08/14		101	%	50 - 130
			Benzo(a)anthracene	2022/08/14		124	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/14		116	%	50 - 130
			Benzo(k)fluoranthene	2022/08/14		110	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/14		107	%	50 - 130
			Benzo(c)phenanthrene	2022/08/14		128	%	50 - 130
			Benzo(a)pyrene	2022/08/14		104	%	50 - 130
			Benzo(e)pyrene	2022/08/14		107	%	50 - 130
			Chrysene	2022/08/14		118	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/14		95	%	50 - 130
			Fluoranthene	2022/08/14		103	%	50 - 130
			Fluorene	2022/08/14		88	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/14		99	%	50 - 130
			1-Methylnaphthalene	2022/08/14		75	%	50 - 130
			2-Methylnaphthalene	2022/08/14		93	%	50 - 130
			Naphthalene	2022/08/14		91	%	50 - 130
			Phenanthrene	2022/08/14		97	%	50 - 130
			Perylene	2022/08/14		109	%	50 - 130

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			Pyrene	2022/08/14		102	%	50 - 130
			Quinoline	2022/08/14		86	%	50 - 130
A677080	HCL	LCS	Turbidity	2022/08/11		103	%	80 - 120
A677082	GG3	LCS	O-TERPHENYL (sur.)	2022/08/12		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12		105	%	60 - 140
A677084	HE1	LCS	Total Suspended Solids	2022/08/11		96	%	80 - 120
A677318	ACR	LCS	Nitrite (N)	2022/08/11		98	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/11		97	%	80 - 120
A677325	ACR	LCS	Nitrite (N)	2022/08/11		98	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/11		99	%	80 - 120
A677336	TOR	LCS	Chloride (Cl)	2022/08/11		102	%	80 - 120
			Sulphate (SO4)	2022/08/11		98	%	80 - 120
A677344	RY3	LCS	Dissolved Aluminum (Al)	2022/08/12		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/12		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/12		101	%	80 - 120
			Dissolved Copper (Cu)	2022/08/12		99	%	80 - 120
			Dissolved Lead (Pb)	2022/08/12		101	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/12		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/12		107	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/12		100	%	80 - 120
			Dissolved Selenium (Se)	2022/08/12		101	%	80 - 120
			Dissolved Silver (Ag)	2022/08/12		118	%	80 - 120
			Dissolved Arsenic (As)	2022/08/12		99	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/12		102	%	80 - 120
			Dissolved Tin (Sn)	2022/08/12		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/12		102	%	80 - 120
			Dissolved Uranium (U)	2022/08/12		93	%	80 - 120
			Dissolved Vanadium (V)	2022/08/12		101	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/12		101	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/12		107	%	80 - 120
A677354	JM0	LCS	Chemical Oxygen Demand	2022/08/11		101	%	80 - 120
A677443	FM0	LCS	True Colour	2022/08/11		92	%	80 - 120
A677489	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		102	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		100	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		104	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		104	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		100	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		101	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		97	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		98	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		105	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		101	%	80 - 120
			Dissolved Boron (B)	2022/08/11		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		101	%	80 - 120
A677562	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/11		103	%	80 - 120
A677565	JLD	LCS	pH	2022/08/11		100	%	97 - 103
A677568	JLD	LCS	Conductivity	2022/08/11		100	%	90 - 110
A677574	JLD	LCS	Dissolved Fluoride (F)	2022/08/11		93	%	80 - 120
A678107	MAP	LCS	Total Nitrogen (N)	2022/08/12		105	%	80 - 120
A678143	ZWU	LCS	Dissolved Organic Carbon (C)	2022/08/12		104	%	80 - 120
A678194	AP1	LCS	Total Sulphide	2022/08/12		90	%	80 - 120

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A678337	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/08/13		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13		96	%	60 - 130
			Toluene	2022/08/13		91	%	60 - 130
			Ethylbenzene	2022/08/13		95	%	60 - 130
			m & p-Xylene	2022/08/13		94	%	60 - 130
			o-Xylene	2022/08/13		97	%	60 - 130
			F1 (C6-C10)	2022/08/13		102	%	60 - 140
A679464	ACR	LCS	Total Ammonia (N)	2022/08/14		103	%	80 - 120
A679921	ZWU	LCS	Total Organic Carbon (C)	2022/08/14		107	%	80 - 120
A680418	STI	LCS	Total Aluminum (Al)	2022/08/15		98	%	80 - 120
			Total Chromium (Cr)	2022/08/15		95	%	80 - 120
			Total Cobalt (Co)	2022/08/15		96	%	80 - 120
			Total Copper (Cu)	2022/08/15		93	%	80 - 120
			Total Lead (Pb)	2022/08/15		100	%	80 - 120
			Total Antimony (Sb)	2022/08/15		107	%	80 - 120
			Total Molybdenum (Mo)	2022/08/15		100	%	80 - 120
			Total Nickel (Ni)	2022/08/15		94	%	80 - 120
			Total Selenium (Se)	2022/08/15		100	%	80 - 120
			Total Silver (Ag)	2022/08/15		100	%	80 - 120
			Total Arsenic (As)	2022/08/15		94	%	80 - 120
			Total Thallium (Tl)	2022/08/15		97	%	80 - 120
			Total Tin (Sn)	2022/08/15		100	%	80 - 120
			Total Titanium (Ti)	2022/08/15		94	%	80 - 120
			Total Uranium (U)	2022/08/15		101	%	80 - 120
			Total Vanadium (V)	2022/08/15		97	%	80 - 120
			Total Zinc (Zn)	2022/08/15		97	%	80 - 120
			Total Beryllium (Be)	2022/08/15		103	%	80 - 120
A680420	MPU	LCS	Total Iron (Fe)	2022/08/15		103	%	80 - 120
			Total Lithium (Li)	2022/08/15		101	%	80 - 120
			Total Magnesium (Mg)	2022/08/15		100	%	80 - 120
			Total Manganese (Mn)	2022/08/15		99	%	80 - 120
			Total Potassium (K)	2022/08/15		104	%	80 - 120
			Total Sodium (Na)	2022/08/15		102	%	80 - 120
			Total Strontium (Sr)	2022/08/15		99	%	80 - 120
			Total Sulphur (S)	2022/08/15		93	%	80 - 120
			Total Phosphorus (P)	2022/08/15		95	%	80 - 120
			Total Barium (Ba)	2022/08/15		105	%	80 - 120
			Total Silicon (Si)	2022/08/15		99	%	80 - 120
			Total Boron (B)	2022/08/15		101	%	80 - 120
			Total Calcium (Ca)	2022/08/15		100	%	80 - 120
A680713	BAL	LCS	Dissolved Mercury (Hg)	2022/08/15		92	%	80 - 120
A680717	BAL	LCS	Total Mercury (Hg)	2022/08/15		93	%	80 - 120
A681830	MPU	LCS	Dissolved Strontium (Sr)	2022/08/16		102	%	80 - 120

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258698
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A678107	MAP	SRM	Total Nitrogen (N)	2022/08/12		102	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Method blank above criteria. Data inspected. All data < RDL or greater than 10x Method Blank.

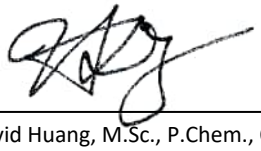
Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258698
Report Date: 2022/08/16

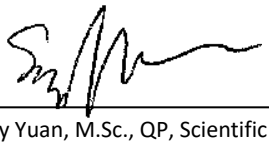
Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



David Huang, M.Sc., P.Chem., QP, Scientific Services Manager



Sandy Yuan, M.Sc., QP, Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
Phone: (403) 291-3077
Fax: (403) 735-2240
Toll Free: (800) 386-7247

☒ Edmonton
9331 - 48 Street, T6B 2R4
Phone: (780) 577-7100
Fax: (780) 450-4187
Toll Free: (800) 386-7247

197

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

ALQ

C of C # 299417

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 105, 205 Quarry Park Blvd SE CALGARY, AB T2C 3E7	Address: 150, 205 QUARRY PARK BLVD SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): STACY GIBB / NEAL TANNA	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☑ DIS ☑	MERCURY TOTAL ☑ DISSOLVED ☑	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOUR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	Total SULPHIDE	Total & DISSOLVED SULPHUR	OIL & GREASE	FLUORIDE
1	AEMP-06		X			17	2022/08/06	16:00	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
2	AEMP-08		X			17	2022/08/06	15:00	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
3	AEMP-07		X			17	2022/08/06	14:00	✓			✓	✓							✓	✓					✓			✓	✓	✓	✓	✓	✓	✓
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): NA

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email Canada.chemistry@worley.com cated.ior data track@worley.com
* BOD FROZEN AS PER INSTRUCTIONS CANNOT MEET HOLD TIMES *

JARS USED & NOT SUBMITTED (Enter N/A for Water): NA

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #				YES	NO	COOLER ID # MCAL				YES	NO	COOLER ID #			
SEAL PRESENT	/		TEMP °C	6 (1)	5 (2)	3 (3)	V		TEMP °C	5 (1)	5 (2)	5 (3)			TEMP °C	1	2	3
SEAL INTACT	/						V											
COOLING MEDIA PRESENT	/						V											

LAB USE ONLY
MAXXAM JOB # C258698

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	STACY GIBB	2022/08/08	10:00	1. Mandher	Manjinder Pandher	2022/08/09	16:48
2.	Iuliia Syrenova	2022/08/09	21:18	2.	JOBAN RAJU	2022/08/10	06:30
3.				3.			

SAMPLES
LABELED BY: ISY
VERIFIED BY: ALQ

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Sent to: **Bureau Veritas Vancouver**
4606 Canada Way
Burnaby, BC, V5G 1K5
Tel: (604) 734-7276

BUREAU VERITAS INTERLAB CHAIN OF CUSTODY RECORD

COC # C258698-MVAN-01-01

REPORT INFORMATION	
Company:	Bureau Veritas
Address:	4000 19st N.E, Calgary, Alberta, T2E 6P8
Contact Name:	Namita Sahni
Email:	Namita.Sahni@bureauveritas.com, Customersolutionswest@bureauveritas.com
Phone:	(604) 639-2614
Bureau Veritas Project #:	C258698
Client Invoice To:	Imperial Oil Ltd - Worley Parsons (12794)
Client Report To:	Advisian (38038)

Incl. on Report? Yes / No

ANALYSIS REQUESTED

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Mercury (Dissolved) by CV	Mercury (Total) by CV	ADDITIONAL SAMPLE INFORMATION
1	AZE319-AEMP-06	SW	2022/08/06	16:00	SG	2	X	X	(P: 12, 13)
2	AZE320-AEMP-07	SW	2022/08/06	14:00	SG	2	X	X	(P: 12, 13)
3	AZE321-AEMP-08	SW	2022/08/06	15:00	SG	2	X	X	(P: 12, 13)
4									
5									
6									
7									
8									
9									
10									

C258698

C258698_ISUB;COC

SITE LOCATION:
NORMAN WELLS, NT

SITE #:
N/A

PROJECT #:
417085-42051-22200

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM:
A2601436, PENDING-10

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Bureau Veritas immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Worley Parsons Komex Equis (N026)
Standard DBF (Old DBase Names) (A002)

TURNAROUND TIME
☐ Rush Required
2022/08/15
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present	X					
Custody Seal Intact	X					
Cooling Media Present	X					

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present	X			1	3	2
Custody Seal Intact	X					
Cooling Media Present	X					

COOLER ID:	YES	NO	Temp: (°C)			
Custody Seal Present						
Custody Seal Intact						
Cooling Media Present						

RECEIVING LAB USE ONLY
Bureau Veritas Job #
C258698

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. Nick Barty	2022/08/11	15:00	Edelane Caoili	2022/08/12	08:00	NBT	SRM
2.							

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299418

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216916
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258729
Received: 2022/08/09, 16:47

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 3)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 4)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (2, 5)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (2)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 5)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 5)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 6)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 7)	3	AB SOP-00005	SM 23 4500-H+B m

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299418

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216916
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258729
Received: 2022/08/09, 16:47

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 8)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) This test was performed by Bureau Veritas Vancouver, 4606 Canada Way , Burnaby, BC, V5G 1K5
(3) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(4) Silica gel clean up employed.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299418

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/16
Report #: R3216916
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258729

Received: 2022/08/09, 16:47

(5) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(6) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(7) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(8) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
16 Aug 2022 19:50:14

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZE389	AZE390	AZE391		
Sampling Date		2022/08/06 14:30	2022/08/06 15:30	2022/08/06 16:30		
COC Number		299418	299418	299418		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-04**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A677082
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A678337
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A675719
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A675719
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A678337
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	97	98	98		A677082
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	101	101	102		A678337
4-Bromofluorobenzene (sur.)	%	98	98	97		A678337
D4-1,2-Dichloroethane (sur.)	%	104	104	104		A678337

RDL = Reportable Detection Limit

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZE389			AZE389			AZE390		
Sampling Date		2022/08/06 14:30			2022/08/06 14:30			2022/08/06 15:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Calculated Parameters										
Nitrate (N)	mg/L	0.048	0.010	A675669				0.050	0.010	A675669
Nitrate (NO3)	mg/L	0.21	0.044	A675931				0.22	0.044	A675931
Nitrite (NO2)	mg/L	<0.033	0.033	A675931				<0.033	0.033	A675931
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.19	0.020	A675314				0.18	0.020	A675314
Nutrients										
Nitrite (N)	mg/L	<0.010	0.010	A678429				<0.010	0.010	A678429
Nitrate plus Nitrite (N)	mg/L	0.048	0.010	A678429				0.050	0.010	A678429
Total Nitrogen (N)	mg/L	0.24	0.020	A678107	0.21	0.020	A678107	0.23	0.020	A678107

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		AZE391		
Sampling Date		2022/08/06 16:30		
COC Number		299418		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**
Calculated Parameters				
Nitrate (N)	mg/L	0.064	0.010	A675669
Nitrate (NO3)	mg/L	0.28	0.044	A675931
Nitrite (NO2)	mg/L	<0.033	0.033	A675931
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.18	0.020	A675314
Nutrients				
Nitrite (N)	mg/L	<0.010	0.010	A678429
Nitrate plus Nitrite (N)	mg/L	0.064	0.010	A678429
Total Nitrogen (N)	mg/L	0.25	0.020	A678803

RDL = Reportable Detection Limit

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE389	AZE390	AZE391		
Sampling Date		2022/08/06 14:30	2022/08/06 15:30	2022/08/06 16:30		
COC Number		299418	299418	299418		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-04**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A675970
Total Aluminum (Al)	mg/L	0.019	0.018	0.015	0.0030	A680418
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A680418
Total Arsenic (As)	mg/L	0.00024	0.00026	0.00024	0.00020	A680418
Total Barium (Ba)	mg/L	0.081	0.084	0.085	0.010	A680420
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418
Total Boron (B)	mg/L	0.033	0.033	0.037	0.020	A680420
Total Calcium (Ca)	mg/L	74	77	79	0.30	A680420
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	0.00030	A680418
Total Copper (Cu)	mg/L	<0.0010	<0.0010	0.0050	0.0010	A680418
Total Iron (Fe)	mg/L	0.063	0.065	0.062	0.060	A680420
Total Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680418
Total Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A680420
Total Magnesium (Mg)	mg/L	27	28	29	0.20	A680420
Total Manganese (Mn)	mg/L	0.0060	0.0053	0.0074	0.0040	A680420
Total Molybdenum (Mo)	mg/L	0.0017	0.0019	0.0018	0.00020	A680418
Total Nickel (Ni)	mg/L	0.00073	0.00062	0.00091	0.00050	A680418
Total Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A680420
Total Potassium (K)	mg/L	1.1	1.1	1.2	0.30	A680420
Total Selenium (Se)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680418
Total Silicon (Si)	mg/L	2.2	2.3	2.4	0.10	A680420
Total Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A680418
Total Sodium (Na)	mg/L	23	24	26	0.50	A680420
Total Strontium (Sr)	mg/L	1.4	1.4	1.5	0.020	A680420
Total Sulphur (S)	mg/L	44	45	46	0.20	A680420
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680418
Total Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418
Total Titanium (Ti)	mg/L	<0.0010	0.0016	<0.0010	0.0010	A680418
Total Uranium (U)	mg/L	0.0011	0.0011	0.0011	0.00010	A680418
Total Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680418
RDL = Reportable Detection Limit						

Bureau Veritas Job #: C258729
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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE389	AZE390	AZE391		
Sampling Date		2022/08/06 14:30	2022/08/06 15:30	2022/08/06 16:30		
COC Number		299418	299418	299418		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-04**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.0078	<0.0030	0.0072	0.0030	A680418
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE389			AZE389			AZE390		
Sampling Date		2022/08/06 14:30			2022/08/06 14:30			2022/08/06 15:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	310	0.50	A675929				310	0.50	A675929
Ion Balance (% Difference)	%	0.083	N/A	A675721				0.68	N/A	A675721
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A675950				<0.0020	0.0020	A675950
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A676189				<2.0 (1)	2.0	A676189
Chemical Oxygen Demand	mg/L	24	10	A678513				15	10	A678513
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A675611				<0.000020	0.000020	A675611
Misc. Inorganics										
Conductivity	uS/cm	680	2.0	A677568				680	2.0	A677568
Dissolved Organic Carbon (C)	mg/L	3.4	0.50	A678143				3.6	0.50	A682700
pH	pH	8.28	N/A	A677565				8.27	N/A	A677565
Total Organic Carbon (C)	mg/L	2.7	0.50	A679922				2.5	0.50	A679922
Total Dissolved Solids	mg/L	430	10	A676656				430	10	A676656
Total Suspended Solids	mg/L	4.7	0.99	A677084				1.0	0.95	A677084
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Alkalinity (Total as CaCO3)	mg/L	180	1.0	A677562				180	1.0	A677562
Bicarbonate (HCO3)	mg/L	220	1.0	A677562				220	1.0	A677562
Carbonate (CO3)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Dissolved Fluoride (F)	mg/L	0.20	0.050	A677574				0.20	0.050	A677574
Hydroxide (OH)	mg/L	<1.0	1.0	A677562				<1.0	1.0	A677562
Total Sulphide	mg/L	<0.0018	0.0018	A678194	<0.0018	0.0018	A678194	<0.0018	0.0018	A678194
Chloride (Cl)	mg/L	28	1.0	A678506				28	1.0	A678506
Sulphate (SO4)	mg/L	150	5.0	A678506				150	5.0	A678506
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A679464				<0.015	0.015	A679464

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE389			AZE389			AZE390		
Sampling Date		2022/08/06 14:30			2022/08/06 14:30			2022/08/06 15:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Misc. Organics										
Total Oil and grease	mg/L	8.0	2.0	A676375				7.0	2.0	A676375
Physical Properties										
True Colour	PtCo units	6.4	2.0	A677443				6.4	2.0	A677443
Physical Properties										
Turbidity	NTU	1.5	0.10	A677815				0.82	0.10	A677815

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE390			AZE391			AZE391		
Sampling Date		2022/08/06 15:30			2022/08/06 16:30			2022/08/06 16:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-03 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L				300	0.50	A675929			
Ion Balance (% Difference)	%				2.8	N/A	A675721			
Sulphide (as H2S)	mg/L				<0.0020	0.0020	A675950			
Demand Parameters										
Biochemical Oxygen Demand	mg/L				<2.0 (1)	2.0	A676189			
Chemical Oxygen Demand	mg/L				16	10	A678513			
Elements										
Dissolved Cadmium (Cd)	mg/L				<0.000020	0.000020	A675611			
Misc. Inorganics										
Conductivity	uS/cm				690	2.0	A677568			
Dissolved Organic Carbon (C)	mg/L				3.1	0.50	A682700	3.2	0.50	A682700
pH	pH				8.23	N/A	A677565			
Total Organic Carbon (C)	mg/L	2.6	0.50	A679922	2.7	0.50	A679922			
Total Dissolved Solids	mg/L				430	10	A676656			
Total Suspended Solids	mg/L				<1.0	1.0	A677084			
Anions										
Alkalinity (PP as CaCO3)	mg/L				<1.0	1.0	A677562			
Alkalinity (Total as CaCO3)	mg/L				180	1.0	A677562			
Bicarbonate (HCO3)	mg/L				220	1.0	A677562			
Carbonate (CO3)	mg/L				<1.0	1.0	A677562			
Dissolved Fluoride (F)	mg/L				0.20	0.050	A677574			
Hydroxide (OH)	mg/L				<1.0	1.0	A677562			
Total Sulphide	mg/L				<0.0018	0.0018	A678194			
Chloride (Cl)	mg/L				27	1.0	A678506			
Sulphate (SO4)	mg/L				150	5.0	A678506			
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A679464	<0.015	0.015	A679464			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Method blank exceeds 0.2 mg/L stipulated in Reference Method. No other Quality Control measures affected

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Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE390			AZE391			AZE391		
Sampling Date		2022/08/06 15:30			2022/08/06 16:30			2022/08/06 16:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-03 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**
Misc. Organics										
Total Oil and grease	mg/L				3.0	2.0	A676375			
Physical Properties										
True Colour	PtCo units				6.6	2.0	A677443			
Physical Properties										
Turbidity	NTU				0.54	0.10	A677815			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AZE389	AZE390	AZE391		
Sampling Date		2022/08/06 14:30	2022/08/06 15:30	2022/08/06 16:30		
COC Number		299418	299418	299418		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-04**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A675933
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A677069
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A677069
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A677069
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A677069
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A677069
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A677069
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A677069
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A677069
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A677069
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A677069
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	110	111	104		A677069
D8-ACENAPHTHYLENE (sur.)	%	99	96	91		A677069
D8-NAPHTHALENE (sur.)	%	76	76	70		A677069
TERPHENYL-D14 (sur.)	%	156 (1)	148 (1)	148 (1)		A677069

RDL = Reportable Detection Limit

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZE389	AZE390	AZE391		
Sampling Date		2022/08/06 14:30	2022/08/06 15:30	2022/08/06 16:30		
COC Number		299418	299418	299418		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-04**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A680713
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A680717
RDL = Reportable Detection Limit						

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE389			AZE389			AZE390		
Sampling Date		2022/08/06 14:30			2022/08/06 14:30			2022/08/06 15:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Elements										
Dissolved Aluminum (Al)	mg/L	<0.0030	0.0030	A679432	<0.0030	0.0030	A679432	<0.0030	0.0030	A679428
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A679432	<0.00060	0.00060	A679432	<0.00060	0.00060	A679428
Dissolved Arsenic (As)	mg/L	0.00035	0.00020	A679432	0.00030	0.00020	A679432	0.00029	0.00020	A679428
Dissolved Barium (Ba)	mg/L	0.082	0.010	A677669				0.084	0.010	A677669
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428
Dissolved Boron (B)	mg/L	0.036	0.020	A677669				0.035	0.020	A677669
Dissolved Calcium (Ca)	mg/L	79	0.30	A677669				79	0.30	A677669
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A679432	<0.00030	0.00030	A679432	<0.00030	0.00030	A679428
Dissolved Copper (Cu)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A677669				<0.060	0.060	A677669
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A679432	<0.00020	0.00020	A679432	<0.00020	0.00020	A679428
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677669				<0.020	0.020	A677669
Dissolved Magnesium (Mg)	mg/L	29	0.20	A677669				29	0.20	A677669
Dissolved Manganese (Mn)	mg/L	0.0061	0.0040	A677669				0.0045	0.0040	A677669
Dissolved Molybdenum (Mo)	mg/L	0.0018	0.00020	A679432	0.0019	0.00020	A679432	0.0018	0.00020	A679428
Dissolved Nickel (Ni)	mg/L	0.00053	0.00050	A679432	0.00064	0.00050	A679432	0.00064	0.00050	A679428
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677669				<0.10	0.10	A677669
Dissolved Potassium (K)	mg/L	1.2	0.30	A677669				1.1	0.30	A677669
Dissolved Selenium (Se)	mg/L	<0.00020	0.00020	A679432	<0.00020	0.00020	A679432	<0.00020	0.00020	A679428
Dissolved Silicon (Si)	mg/L	2.2	0.10	A677669				2.2	0.10	A677669
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A679432	<0.00010	0.00010	A679432	<0.00010	0.00010	A679428
Dissolved Sodium (Na)	mg/L	24	0.50	A677669				24	0.50	A677669
Dissolved Strontium (Sr)	mg/L	1.4	0.020	A677669				1.4	0.020	A677669
Dissolved Sulphur (S)	mg/L	47	0.20	A677669				47	0.20	A677669
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A679432	<0.00020	0.00020	A679432	<0.00020	0.00020	A679428
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428
Dissolved Uranium (U)	mg/L	0.0010	0.00010	A679432	0.0010	0.00010	A679432	0.0010	0.00010	A679428
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A679432	<0.0010	0.0010	A679432	<0.0010	0.0010	A679428

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE389			AZE389			AZE390		
Sampling Date		2022/08/06 14:30			2022/08/06 14:30			2022/08/06 15:30		
COC Number		299418			299418			299418		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	<0.0030	0.0030	A679432	<0.0030	0.0030	A679432	<0.0030	0.0030	A679428

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE391		
Sampling Date		2022/08/06 16:30		
COC Number		299418		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**
Elements				
Dissolved Aluminum (Al)	mg/L	<0.0030	0.0030	A679432
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A679432
Dissolved Arsenic (As)	mg/L	0.00035	0.00020	A679432
Dissolved Barium (Ba)	mg/L	0.082	0.010	A677529
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A679432
Dissolved Boron (B)	mg/L	0.037	0.020	A677529
Dissolved Calcium (Ca)	mg/L	75	0.30	A677529
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A679432
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A679432
Dissolved Copper (Cu)	mg/L	<0.0010	0.0010	A679432
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A677529
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A679432
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677529
Dissolved Magnesium (Mg)	mg/L	27	0.20	A677529
Dissolved Manganese (Mn)	mg/L	0.0065	0.0040	A677529
Dissolved Molybdenum (Mo)	mg/L	0.0019	0.00020	A679432
Dissolved Nickel (Ni)	mg/L	0.00070	0.00050	A679432
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677529
Dissolved Potassium (K)	mg/L	1.1	0.30	A677529
Dissolved Selenium (Se)	mg/L	<0.00020	0.00020	A679432
Dissolved Silicon (Si)	mg/L	2.0	0.10	A677529
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A679432
Dissolved Sodium (Na)	mg/L	24	0.50	A677529
Dissolved Strontium (Sr)	mg/L	1.4	0.020	A677529
Dissolved Sulphur (S)	mg/L	44	0.20	A677529
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A679432
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A679432
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A679432
Dissolved Uranium (U)	mg/L	0.0010	0.00010	A679432
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A679432
Dissolved Zinc (Zn)	mg/L	<0.0030	0.0030	A679432
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE389
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A678506	N/A	2022/08/12	Tyler Orr
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A678143	N/A	2022/08/12	Zoe Wu
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677669	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A679432	N/A	2022/08/13	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/12	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A678429	N/A	2022/08/12	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/12	2022/08/12	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677815	N/A	2022/08/11	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: AZE389 Dup
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS - Dissolved	ICPM	A679432	N/A	2022/08/13	Mandeep Kaur

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE389 Dup
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz

Bureau Veritas ID: AZE390
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A678506	N/A	2022/08/12	Tyler Orr
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A682700	N/A	2022/08/16	Ming Dong
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677669	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A679428	N/A	2022/08/13	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/12	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A678429	N/A	2022/08/12	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/12	2022/08/12	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE390
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	TURB	A677815	N/A	2022/08/11	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: AZE390 Dup
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu

Bureau Veritas ID: AZE391
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A677562	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675970	N/A	2022/08/15	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A678506	N/A	2022/08/12	Tyler Orr
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A677443	N/A	2022/08/11	Fadia Mostafa
Carbon (DOC)	TECH	A682700	N/A	2022/08/16	Ming Dong
Conductivity @25C	COND	A677568	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A677574	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A677082	2022/08/12	2022/08/12	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675950	N/A	2022/08/12	Automated Statchk
Hardness	CALC	A675929	N/A	2022/08/15	Automated Statchk
Mercury (Dissolved) by CV	CV	A680713	2022/08/15	2022/08/15	Baoer Li
Mercury (Total) by CV	CV	A680717	2022/08/15	2022/08/15	Baoer Li
Elements by ICP - Dissolved	ICPA	A677529	N/A	2022/08/11	Mohammad Pousti
Elements by ICP - Total	ICPA	A680420	2022/08/15	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A679432	N/A	2022/08/13	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A680418	2022/08/15	2022/08/15	Serena Tian
Ion Balance	CALC	A675721	N/A	2022/08/15	Automated Statchk
Ammonia-N (Total)	KONE	A679464	N/A	2022/08/13	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675931	N/A	2022/08/12	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A678429	N/A	2022/08/12	Ana Katrina Cariaga
Nitrate (as N)	CALC	A675669	2022/08/12	2022/08/12	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675933	N/A	2022/08/14	Automated Statchk
PAH in Water by GC/MS	GC/MS	A677069	2022/08/12	2022/08/14	Nora Kazemian

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Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE391
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH @25°C	AT/ALK	A677565	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A678194	N/A	2022/08/12	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/13	Automated Statchk
Nitrogen (Total)	AC/COL	A678803	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A677084	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677815	N/A	2022/08/11	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: AZE391 Dup
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/08
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC)	TECH	A682700	N/A	2022/08/16	Ming Dong

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.7°C

Temperatures upon receipt at Bureau Veritas Labs calgary
Package 1: 6.6 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Temperatures upon receipt at Bureau Veritas Labs burnaby
Package 1: 2 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AZE389 [AEMP-02] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample AZE390 [AEMP-03] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample AZE391 [AEMP-04] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Results relate only to the items tested.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A676189	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/16	<2.0		mg/L	
A676375	JB9	Method Blank	Total Oil and grease	2022/08/12	<2.0		mg/L	
A676656	HE1	Method Blank	Total Dissolved Solids	2022/08/11	<10		mg/L	
A677069	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/14		108	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		143 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		85	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		63	%	50 - 130
			Acenaphthene	2022/08/14	<0.00010		mg/L	
			Acenaphthylene	2022/08/14	<0.00010		mg/L	
			Acridine	2022/08/14	<0.000040		mg/L	
			Anthracene	2022/08/14	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/14	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/08/14	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/14	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/08/14	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/14	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/08/14	<0.000050		mg/L	
			Chrysene	2022/08/14	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/14	<0.0000075		mg/L	
			Fluoranthene	2022/08/14	<0.000010		mg/L	
			Fluorene	2022/08/14	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/14	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/14	<0.00010		mg/L	
			Naphthalene	2022/08/14	<0.00010		mg/L	
			Phenanthrene	2022/08/14	<0.000050		mg/L	
			Perylene	2022/08/14	<0.000050		mg/L	
			Pyrene	2022/08/14	<0.000020		mg/L	
			Quinoline	2022/08/14	<0.00020		mg/L	
A677082	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/12		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12	<0.10		mg/L	
A677084	HE1	Method Blank	Total Suspended Solids	2022/08/11	<0.95		mg/L	
A677443	FM0	Method Blank	True Colour	2022/08/11	<2.0		PtCo units	
A677529	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/11	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/11	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/11	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/11	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/11	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/11	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/11	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/11	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/11	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/11	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/11	0.14, RDL=0.10 (2)		mg/L	
			Dissolved Boron (B)	2022/08/11	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/11	<0.30		mg/L	
A677562	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/11	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/11	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/11	<1.0		mg/L	
			Carbonate (CO3)	2022/08/11	<1.0		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Hydroxide (OH)	2022/08/11	<1.0		mg/L	
A677568	JLD	Method Blank	Conductivity	2022/08/11	<2.0		uS/cm	
A677574	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/11	<0.050		mg/L	
A677669	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A677815	KK9	Method Blank	Turbidity	2022/08/11	<0.10		NTU	
A678107	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A678143	ZWU	Method Blank	Dissolved Organic Carbon (C)	2022/08/12	<0.50		mg/L	
A678194	AP1	Method Blank	Total Sulphide	2022/08/12	<0.0018		mg/L	
A678337	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/13		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13	<0.00040		mg/L	
			Toluene	2022/08/13	<0.00040		mg/L	
			Ethylbenzene	2022/08/13	<0.00040		mg/L	
			m & p-Xylene	2022/08/13	<0.00080		mg/L	
			o-Xylene	2022/08/13	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/13	<0.10		mg/L	
A678429	ACR	Method Blank	Nitrite (N)	2022/08/12	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/12	<0.010		mg/L	
A678506	TOR	Method Blank	Chloride (Cl)	2022/08/12	<1.0		mg/L	
			Sulphate (SO4)	2022/08/12	<1.0		mg/L	
A678513	AP1	Method Blank	Chemical Oxygen Demand	2022/08/12	<10		mg/L	
A678803	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A679428	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	

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			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A679432	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A679464	ACR	Method Blank	Total Ammonia (N)	2022/08/13	<0.015		mg/L	
A679922	ZWU	Method Blank	Total Organic Carbon (C)	2022/08/14	<0.50		mg/L	
A680418	STI	Method Blank	Total Aluminum (Al)	2022/08/15	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/15	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/15	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/15	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/15	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/15	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/15	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/15	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/15	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/15	<0.00010		mg/L	
			Total Arsenic (As)	2022/08/15	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/15	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/15	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/15	<0.0010		mg/L	
			Total Uranium (U)	2022/08/15	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/15	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/15	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/15	<0.0010		mg/L	
A680420	MPU	Method Blank	Total Iron (Fe)	2022/08/15	<0.060		mg/L	
			Total Lithium (Li)	2022/08/15	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/15	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/15	<0.0040		mg/L	
			Total Potassium (K)	2022/08/15	<0.30		mg/L	
			Total Sodium (Na)	2022/08/15	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/15	<0.020		mg/L	
			Total Sulphur (S)	2022/08/15	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/15	<0.10		mg/L	
			Total Barium (Ba)	2022/08/15	<0.010		mg/L	
			Total Silicon (Si)	2022/08/15	0.11, RDL=0.10 (2)		mg/L	
			Total Boron (B)	2022/08/15	<0.020		mg/L	

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			Total Calcium (Ca)	2022/08/15	<0.30		mg/L	
A680713	BAL	Method Blank	Dissolved Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A680717	BAL	Method Blank	Total Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A682700	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/08/16	<0.50		mg/L	
A678107	MAP	RPD [AZE389-05]	Total Nitrogen (N)	2022/08/12	14		%	20
A678194	AP1	RPD [AZE389-07]	Total Sulphide	2022/08/12	NC		%	20
A679432	MKJ	RPD [AZE389-09]	Dissolved Aluminum (Al)	2022/08/13	NC		%	20
			Dissolved Chromium (Cr)	2022/08/13	NC		%	20
			Dissolved Cobalt (Co)	2022/08/13	NC		%	20
			Dissolved Copper (Cu)	2022/08/13	NC		%	20
			Dissolved Lead (Pb)	2022/08/13	NC		%	20
			Dissolved Antimony (Sb)	2022/08/13	NC		%	20
			Dissolved Molybdenum (Mo)	2022/08/13	2.9		%	20
			Dissolved Nickel (Ni)	2022/08/13	19		%	20
			Dissolved Selenium (Se)	2022/08/13	NC		%	20
			Dissolved Silver (Ag)	2022/08/13	NC		%	20
			Dissolved Arsenic (As)	2022/08/13	16		%	20
			Dissolved Thallium (Tl)	2022/08/13	NC		%	20
			Dissolved Tin (Sn)	2022/08/13	NC		%	20
			Dissolved Titanium (Ti)	2022/08/13	NC		%	20
			Dissolved Uranium (U)	2022/08/13	4.0		%	20
			Dissolved Vanadium (V)	2022/08/13	NC		%	20
			Dissolved Zinc (Zn)	2022/08/13	NC		%	20
			Dissolved Beryllium (Be)	2022/08/13	NC		%	20
A679464	ACR	RPD [AZE390-12]	Total Ammonia (N)	2022/08/13	NC		%	20
A679922	ZWU	RPD [AZE390-05]	Total Organic Carbon (C)	2022/08/14	5.6		%	20
A682700	MDO	RPD [AZE391-06]	Dissolved Organic Carbon (C)	2022/08/16	2.4		%	20
A678107	MAP	Matrix Spike [AZE389-05]	Total Nitrogen (N)	2022/08/12		111	%	80 - 120
A678194	AP1	Matrix Spike [AZE390-07]	Total Sulphide	2022/08/12		112	%	80 - 120
A679432	MKJ	Matrix Spike [AZE389-09]	Dissolved Aluminum (Al)	2022/08/13		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/13		87	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/13		86	%	80 - 120
			Dissolved Copper (Cu)	2022/08/13		86	%	80 - 120
			Dissolved Lead (Pb)	2022/08/13		89	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/13		94	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/13		93	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/13		84	%	80 - 120
			Dissolved Selenium (Se)	2022/08/13		87	%	80 - 120
			Dissolved Silver (Ag)	2022/08/13		89	%	80 - 120
			Dissolved Arsenic (As)	2022/08/13		85	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/13		90	%	80 - 120
			Dissolved Tin (Sn)	2022/08/13		91	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/13		88	%	80 - 120
			Dissolved Uranium (U)	2022/08/13		89	%	80 - 120
			Dissolved Vanadium (V)	2022/08/13		88	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/13		84	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/13		91	%	80 - 120
A679464	ACR	Matrix Spike [AZE390-12]	Total Ammonia (N)	2022/08/13		111	%	80 - 120
A679922	ZWU	Matrix Spike [AZE390-05]	Total Organic Carbon (C)	2022/08/14		109	%	80 - 120
A680420	MPU	Matrix Spike [AZE390-08]	Total Iron (Fe)	2022/08/15		101	%	80 - 120
			Total Lithium (Li)	2022/08/15		99	%	80 - 120
			Total Magnesium (Mg)	2022/08/15		95	%	80 - 120

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			Total Manganese (Mn)	2022/08/15		97	%	80 - 120
			Total Potassium (K)	2022/08/15		103	%	80 - 120
			Total Sodium (Na)	2022/08/15		100	%	80 - 120
			Total Strontium (Sr)	2022/08/15		92	%	80 - 120
			Total Sulphur (S)	2022/08/15		90	%	80 - 120
			Total Phosphorus (P)	2022/08/15		93	%	80 - 120
			Total Barium (Ba)	2022/08/15		102	%	80 - 120
			Total Silicon (Si)	2022/08/15		95	%	80 - 120
			Total Boron (B)	2022/08/15		99	%	80 - 120
			Total Calcium (Ca)	2022/08/15		NC	%	80 - 120
A682700	MDO	Matrix Spike [AZE391-06]	Dissolved Organic Carbon (C)	2022/08/16		103	%	80 - 120
A676189	BYM	LCS	Biochemical Oxygen Demand	2022/08/16		93	%	85 - 115
A676375	JB9	LCS	Total Oil and grease	2022/08/12		114	%	70 - 130
A676656	HE1	LCS	Total Dissolved Solids	2022/08/11		104	%	80 - 120
A677069	NK3	LCS	D10-ANTHRACENE (sur.)	2022/08/14		118	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/14		159 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/14		104	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/14		87	%	50 - 130
			Acenaphthene	2022/08/14		86	%	50 - 130
			Acenaphthylene	2022/08/14		92	%	50 - 130
			Acridine	2022/08/14		95	%	50 - 130
			Anthracene	2022/08/14		101	%	50 - 130
			Benzo(a)anthracene	2022/08/14		124	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/14		116	%	50 - 130
			Benzo(k)fluoranthene	2022/08/14		110	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/14		107	%	50 - 130
			Benzo(c)phenanthrene	2022/08/14		128	%	50 - 130
			Benzo(a)pyrene	2022/08/14		104	%	50 - 130
			Benzo(e)pyrene	2022/08/14		107	%	50 - 130
			Chrysene	2022/08/14		118	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/14		95	%	50 - 130
			Fluoranthene	2022/08/14		103	%	50 - 130
			Fluorene	2022/08/14		88	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/14		99	%	50 - 130
			1-Methylnaphthalene	2022/08/14		75	%	50 - 130
			2-Methylnaphthalene	2022/08/14		93	%	50 - 130
			Naphthalene	2022/08/14		91	%	50 - 130
			Phenanthrene	2022/08/14		97	%	50 - 130
			Perylene	2022/08/14		109	%	50 - 130
			Pyrene	2022/08/14		102	%	50 - 130
			Quinoline	2022/08/14		86	%	50 - 130
A677082	GG3	LCS	O-TERPHENYL (sur.)	2022/08/12		104	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/12		105	%	60 - 140
A677084	HE1	LCS	Total Suspended Solids	2022/08/11		96	%	80 - 120
A677443	FM0	LCS	True Colour	2022/08/11		92	%	80 - 120
A677529	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		96	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		94	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		95	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		98	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		100	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		96	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		99	%	80 - 120

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			Dissolved Sulphur (S)	2022/08/11		91	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		91	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		102	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		93	%	80 - 120
			Dissolved Boron (B)	2022/08/11		100	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		96	%	80 - 120
A677562	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/11		103	%	80 - 120
A677565	JLD	LCS	pH	2022/08/11		100	%	97 - 103
A677568	JLD	LCS	Conductivity	2022/08/11		100	%	90 - 110
A677574	JLD	LCS	Dissolved Fluoride (F)	2022/08/11		93	%	80 - 120
A677669	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		101	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		97	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		102	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		101	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		98	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		95	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		96	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		102	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		98	%	80 - 120
			Dissolved Boron (B)	2022/08/11		101	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		99	%	80 - 120
A677815	KK9	LCS	Turbidity	2022/08/11		103	%	80 - 120
A678107	MAP	LCS	Total Nitrogen (N)	2022/08/12		105	%	80 - 120
A678143	ZWU	LCS	Dissolved Organic Carbon (C)	2022/08/12		104	%	80 - 120
A678194	AP1	LCS	Total Sulphide	2022/08/12		90	%	80 - 120
A678337	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/08/13		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13		96	%	60 - 130
			Toluene	2022/08/13		91	%	60 - 130
			Ethylbenzene	2022/08/13		95	%	60 - 130
			m & p-Xylene	2022/08/13		94	%	60 - 130
			o-Xylene	2022/08/13		97	%	60 - 130
			F1 (C6-C10)	2022/08/13		102	%	60 - 140
A678429	ACR	LCS	Nitrite (N)	2022/08/12		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/12		100	%	80 - 120
A678506	TOR	LCS	Chloride (Cl)	2022/08/12		103	%	80 - 120
			Sulphate (SO4)	2022/08/12		99	%	80 - 120
A678513	AP1	LCS	Chemical Oxygen Demand	2022/08/12		102	%	80 - 120
A678803	MAP	LCS	Total Nitrogen (N)	2022/08/12		103	%	80 - 120
A679428	MKJ	LCS	Dissolved Aluminum (Al)	2022/08/13		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/13		88	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/13		89	%	80 - 120
			Dissolved Copper (Cu)	2022/08/13		88	%	80 - 120
			Dissolved Lead (Pb)	2022/08/13		91	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/13		94	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/13		94	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/13		89	%	80 - 120
			Dissolved Selenium (Se)	2022/08/13		87	%	80 - 120
			Dissolved Silver (Ag)	2022/08/13		92	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Arsenic (As)	2022/08/13		85	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/13		90	%	80 - 120
			Dissolved Tin (Sn)	2022/08/13		89	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/13		84	%	80 - 120
			Dissolved Uranium (U)	2022/08/13		91	%	80 - 120
			Dissolved Vanadium (V)	2022/08/13		89	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/13		87	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/13		91	%	80 - 120
A679432	MKJ	LCS	Dissolved Aluminum (Al)	2022/08/13		113	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/13		91	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/13		91	%	80 - 120
			Dissolved Copper (Cu)	2022/08/13		91	%	80 - 120
			Dissolved Lead (Pb)	2022/08/13		94	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/13		98	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/13		96	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/13		91	%	80 - 120
			Dissolved Selenium (Se)	2022/08/13		88	%	80 - 120
			Dissolved Silver (Ag)	2022/08/13		93	%	80 - 120
			Dissolved Arsenic (As)	2022/08/13		86	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/13		93	%	80 - 120
			Dissolved Tin (Sn)	2022/08/13		94	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/13		88	%	80 - 120
			Dissolved Uranium (U)	2022/08/13		93	%	80 - 120
			Dissolved Vanadium (V)	2022/08/13		93	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/13		86	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/13		93	%	80 - 120
A679464	ACR	LCS	Total Ammonia (N)	2022/08/14		103	%	80 - 120
A679922	ZWU	LCS	Total Organic Carbon (C)	2022/08/14		105	%	80 - 120
A680418	STI	LCS	Total Aluminum (Al)	2022/08/15		98	%	80 - 120
			Total Chromium (Cr)	2022/08/15		95	%	80 - 120
			Total Cobalt (Co)	2022/08/15		96	%	80 - 120
			Total Copper (Cu)	2022/08/15		93	%	80 - 120
			Total Lead (Pb)	2022/08/15		100	%	80 - 120
			Total Antimony (Sb)	2022/08/15		107	%	80 - 120
			Total Molybdenum (Mo)	2022/08/15		100	%	80 - 120
			Total Nickel (Ni)	2022/08/15		94	%	80 - 120
			Total Selenium (Se)	2022/08/15		100	%	80 - 120
			Total Silver (Ag)	2022/08/15		100	%	80 - 120
			Total Arsenic (As)	2022/08/15		94	%	80 - 120
			Total Thallium (Tl)	2022/08/15		97	%	80 - 120
			Total Tin (Sn)	2022/08/15		100	%	80 - 120
			Total Titanium (Ti)	2022/08/15		94	%	80 - 120
			Total Uranium (U)	2022/08/15		101	%	80 - 120
			Total Vanadium (V)	2022/08/15		97	%	80 - 120
			Total Zinc (Zn)	2022/08/15		97	%	80 - 120
			Total Beryllium (Be)	2022/08/15		103	%	80 - 120
A680420	MPU	LCS	Total Iron (Fe)	2022/08/15		103	%	80 - 120
			Total Lithium (Li)	2022/08/15		101	%	80 - 120
			Total Magnesium (Mg)	2022/08/15		100	%	80 - 120
			Total Manganese (Mn)	2022/08/15		99	%	80 - 120
			Total Potassium (K)	2022/08/15		104	%	80 - 120
			Total Sodium (Na)	2022/08/15		102	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Strontium (Sr)	2022/08/15		99	%	80 - 120
			Total Sulphur (S)	2022/08/15		93	%	80 - 120
			Total Phosphorus (P)	2022/08/15		95	%	80 - 120
			Total Barium (Ba)	2022/08/15		105	%	80 - 120
			Total Silicon (Si)	2022/08/15		99	%	80 - 120
			Total Boron (B)	2022/08/15		101	%	80 - 120
			Total Calcium (Ca)	2022/08/15		100	%	80 - 120
A680713	BAL	LCS	Dissolved Mercury (Hg)	2022/08/15		92	%	80 - 120
A680717	BAL	LCS	Total Mercury (Hg)	2022/08/15		93	%	80 - 120
A682700	MDO	LCS	Dissolved Organic Carbon (C)	2022/08/16		110	%	80 - 120
A678107	MAP	SRM	Total Nitrogen (N)	2022/08/12		102	%	80 - 120
A678803	MAP	SRM	Total Nitrogen (N)	2022/08/12		96	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Method blank above criteria. Data inspected. All data < RDL or greater than 10x Method Blank.

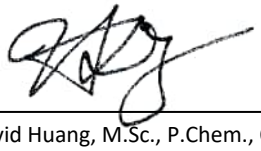
Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258729
Report Date: 2022/08/16

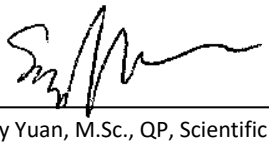
Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



David Huang, M.Sc., P.Chem., QP, Scientific Services Manager



Sandy Yuan, M.Sc., QP, Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

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9331 - 48 Street, T6B 2R4
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Toll Free: (800) 386-7247

196 DWz

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 299418

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 105, 205 Quarry Park Blvd SE CALGARY, AB T2C 3E7	Address: 105, 205 QUARRY Park Blvd SE CALGARY, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): STACY GIBB/NEAL TANNA	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☐ DIS ☑	MERCURY: TOTAL ☑ DISSOLVED ☑	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY: pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOUR, TSS, TDS, TURBIDITY	NITRATE, NITRITE, AMMONIA-N (TOTAL)	CARBON (DOC)	TOTAL SULPHIDE	TOTAL & DISSOLVED SULPHUR	OIL & GREASE	FLUORIDE
1	AEMP-02		X			17	2022/08/06	14:30	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓
2	AEMP-03		X			17	2022/08/06	15:30	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓
3	AEMP-04		X			17	2022/08/06	16:30	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓
4																																		
5																																		
6																																		
7																																		
8																																		
9																																		
10																																		

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS
email canada.chemistry@worley.com, cacal.ioldatadrop@worley.com
* for frozen as per instructions cannot meet hold times *

JARS USED & NOT SUBMITTED (Enter N/A for Water): NA

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	8	6	6
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # MCAL			
SEAL PRESENT	✓		TEMP °C	6.3	6.3	7.3
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C			
SEAL INTACT				1	2	3
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C258729

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	NEAL TANNA	2022/08/08	10:00	1. MRandher	Manjinder Randher	2022/08/09	16:47
2. MRandher	Manjinder Randher	2022/08/10	09:03	2.	Sarah Dolan	2022/08/10	15:30
3.				3.			

SAMPLES
LABELED BY: MPN
VERIFIED BY: DWz

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Sent to: **Bureau Veritas Vancouver**
4606 Canada Way
Burnaby, BC, V5G 1K5
Tel: (604) 734-7276

BUREAU VERITAS INTERLAB CHAIN OF CUSTODY RECORD

COC # C258729-MVAN-01-01

REPORT INFORMATION	
Company:	Bureau Veritas
Address:	4000 19st N.E, Calgary, Alberta, T2E 6P8
Contact Name:	Namita Sahni
Email:	Namita.Sahni@bureauveritas.com, Customersolutionswest@bureauveritas.com
Phone:	(604) 639-2614
Bureau Veritas Project #:	C258729
Client Invoice To:	Imperial Oil Ltd - Worley Parsons (12794)
Client Report To:	Advisian (38038)

Incl. on Report? Yes / No

C258729

#	SAMPLE ID	MATRIX	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	SAMPLER INITIALS	# CONT.	Mercury (Dissolved) by CV	Mercury (Total) by CV	ADDITIONAL SAMPLE INFORMATION
1	AZE389-AEMP-02	SW	2022/08/06	14:30	SG	2	X	X	(P: 13, 14)
2	AZE390-AEMP-03	SW	2022/08/06	15:30	SG	2	X	X	(P: 13, 14)
3	AZE391-AEMP-04	SW	2022/08/06	16:30	SG	2	X	X	(P: 13, 14)
4									
5									
6									
7									
8									
9									
10									

C258729_ISUB;COC

SITE LOCATION: NORMAN WELLS, NT

SITE #: N/A

PROJECT #: 417085-42051-22200

PO/AFE, TASK ORDER/SERVICE ORDER, LINE ITEM: A2601436, PENDING-10

REGULATORY CRITERIA

SPECIAL INSTRUCTIONS
Please inform Bureau Veritas immediately if you are not accredited for the requested test(s).
Please return a copy of this form with the report.

REQUIRED EDDs
National Excel (N001)
Worley Parsons Komex Equis (N026)
Standard DBF (Old DBase Names) (A002)

TURNAROUND TIME
☐ Rush Required
2022/08/15
Date Required
Please inform us if rush charges will be incurred.

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present	X		7 6 5
Custody Seal Intact	X		
Cooling Media Present	X		

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present	X		1 3 2
Custody Seal Intact	X		
Cooling Media Present	X		

COOLER ID:	YES	NO	Temp: (°C)
Custody Seal Present			
Custody Seal Intact			
Cooling Media Present			

RECEIVING LAB USE ONLY
Bureau Veritas Job #
C258729

RELINQUISHED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (SIGN & PRINT)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	Samples Labelled By:	Labels Verified By:
1. Nick Baty	2022/08/11	15:10	1. Eddiane Cavil	2022/08/12	08:00	NBT	SRM
2.			2.				

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299413

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/15
Report #: R3216318
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258748
Received: 2022/08/09, 16:44

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	4		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299413

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/15
Report #: R3216318
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258748
Received: 2022/08/09, 16:44

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299413

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/15
Report #: R3216318
Version: 1 - Final

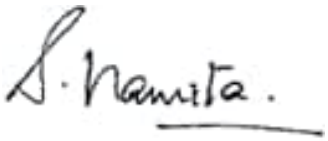
CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C258748

Received: 2022/08/09, 16:44

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Namita Sahni
Customer Solutions Representative
16 Aug 2022 10:21:57

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZE473	AZE474	AZE475		
Sampling Date		2022/08/05 15:08	2022/08/05 15:22	2022/08/06 10:30		
COC Number		299413	299413	299413		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A674799
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A678337
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A678337
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A675719
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A675719
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A678337
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	98	98	95		A674799
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	102	101	101		A678337
4-Bromofluorobenzene (sur.)	%	97	98	97		A678337
D4-1,2-Dichloroethane (sur.)	%	105	104	105		A678337

RDL = Reportable Detection Limit

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZE473		AZE474		AZE475		
Sampling Date		2022/08/05 15:08		2022/08/05 15:22		2022/08/06 10:30		
COC Number		299413		299413		299413		
	UNITS	**AEMP-05**	**QC Batch**	**AEMP-13**	**QC Batch**	**AEMP-01**	**RDL**	**QC Batch**
Calculated Parameters								
Nitrate (N)	mg/L	<0.010	A675669	0.024	A675669	0.033	0.010	A675669
Nitrate (NO3)	mg/L	<0.044	A675489	0.10	A675489	0.15	0.044	A675489
Nitrite (NO2)	mg/L	<0.033	A675489	<0.033	A675489	<0.033	0.033	A675489
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.65	A675314	0.24	A675314	0.31	0.020	A675314
Nutrients								
Nitrite (N)	mg/L	<0.010	A676421	<0.010	A676421	<0.010	0.010	A676425
Nitrate plus Nitrite (N)	mg/L	<0.010	A676421	0.024	A676421	0.033	0.010	A676425
Total Nitrogen (N)	mg/L	0.65	A677098	0.26	A678107	0.34	0.020	A677098
RDL = Reportable Detection Limit								

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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE473	AZE474	AZE475		
Sampling Date		2022/08/05 15:08	2022/08/05 15:22	2022/08/06 10:30		
COC Number		299413	299413	299413		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	<0.000020	0.000046	0.000074	0.000020	A675182
Total Aluminum (Al)	mg/L	0.0083	0.56	0.97	0.0030	A678469
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A678469
Total Arsenic (As)	mg/L	0.0012	0.00080	0.0012	0.00020	A678469
Total Barium (Ba)	mg/L	0.13	0.069	0.085	0.010	A678476
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A678469
Total Boron (B)	mg/L	<0.020	<0.020	<0.020	0.020	A678476
Total Calcium (Ca)	mg/L	42	39	41	0.30	A678476
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0018	0.0010	A678469
Total Cobalt (Co)	mg/L	<0.00030	0.00044	0.00097	0.00030	A678469
Total Copper (Cu)	mg/L	<0.0010	0.0022	0.0033	0.0010	A678469
Total Iron (Fe)	mg/L	0.15	0.93	2.3	0.060	A678476
Total Lead (Pb)	mg/L	<0.00020	0.00051	0.0011	0.00020	A678469
Total Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A678476
Total Magnesium (Mg)	mg/L	14	11	12	0.20	A678476
Total Manganese (Mn)	mg/L	0.012	0.033	0.051	0.0040	A678476
Total Molybdenum (Mo)	mg/L	0.0017	0.0011	0.0012	0.00020	A678469
Total Nickel (Ni)	mg/L	0.0014	0.0026	0.0041	0.00050	A678469
Total Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A678476
Total Potassium (K)	mg/L	1.1	1.3	1.6	0.30	A678476
Total Selenium (Se)	mg/L	<0.00020	0.00040	0.00046	0.00020	A678469
Total Silicon (Si)	mg/L	0.45	3.9	5.3	0.10	A678476
Total Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A678469
Total Sodium (Na)	mg/L	4.5	7.7	7.6	0.50	A678476
Total Strontium (Sr)	mg/L	0.20	0.23	0.23	0.020	A678476
Total Sulphur (S)	mg/L	5.6	16	16	0.20	A678476
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A678469
Total Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A678469
Total Titanium (Ti)	mg/L	<0.0010	0.014	0.014	0.0010	A678469
Total Uranium (U)	mg/L	0.00033	0.00080	0.00081	0.00010	A678469
Total Vanadium (V)	mg/L	<0.0010	0.0017	0.0029	0.0010	A678469
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZE473	AZE474	AZE475		
Sampling Date		2022/08/05 15:08	2022/08/05 15:22	2022/08/06 10:30		
COC Number		299413	299413	299413		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	<0.0030	0.0049	0.080	0.0030	A678469
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE473			AZE473			AZE474		
Sampling Date		2022/08/05 15:08			2022/08/05 15:08			2022/08/05 15:22		
COC Number		299413			299413			299413		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	150	0.50	A675622				150	0.50	A675622
Ion Balance (% Difference)	%	4.4	N/A	A675721				3.2	N/A	A675721
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A675184				<0.0020	0.0020	A675184
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A676189				<2.0	2.0	A676189
Chemical Oxygen Demand	mg/L	42	10	A678513				19	10	A678513
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A675611				<0.000020	0.000020	A675611
Misc. Inorganics										
Conductivity	uS/cm	300	2.0	A676645				300	2.0	A676645
Dissolved Organic Carbon (C)	mg/L	12	0.50	A679919				5.7	0.50	A679919
pH	pH	8.13	N/A	A676604				7.73	N/A	A676604
Total Organic Carbon (C)	mg/L	13	0.50	A679922				5.7	0.50	A679922
Total Dissolved Solids	mg/L	200	10	A676656	190	10	A676656	200	10	A676656
Total Suspended Solids	mg/L	4.3	1.0	A676594				15	1.0	A676594
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A676602				<1.0	1.0	A676602
Alkalinity (Total as CaCO3)	mg/L	150	1.0	A676602				99	1.0	A676602
Bicarbonate (HCO3)	mg/L	180	1.0	A676602				120	1.0	A676602
Carbonate (CO3)	mg/L	<1.0	1.0	A676602				<1.0	1.0	A676602
Dissolved Fluoride (F)	mg/L	0.11	0.050	A676652				0.099	0.050	A676652
Hydroxide (OH)	mg/L	<1.0	1.0	A676602				<1.0	1.0	A676602
Total Sulphide	mg/L	<0.0018	0.0018	A676796				<0.0018	0.0018	A676796
Chloride (Cl)	mg/L	3.5	1.0	A676942				7.3	1.0	A676942
Sulphate (SO4)	mg/L	17	1.0	A676942				48	1.0	A676942
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A677139				<0.015	0.015	A677145
Misc. Organics										
Total Oil and grease	mg/L	3.0	2.0	A676375				<2.0	2.0	A676375

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE473			AZE473			AZE474		
Sampling Date		2022/08/05 15:08			2022/08/05 15:08			2022/08/05 15:22		
COC Number		299413			299413			299413		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Physical Properties										
True Colour	PtCo units	20	2.0	A676281				12	2.0	A676281
Physical Properties										
Turbidity	NTU	1.3	0.10	A677080				26	0.10	A677080

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE475		
Sampling Date		2022/08/06 10:30		
COC Number		299413		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	140	0.50	A675622
Ion Balance (% Difference)	%	0.96	N/A	A675721
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A675184
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A676189
Chemical Oxygen Demand	mg/L	22	10	A678513
Elements				
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A675611
Misc. Inorganics				
Conductivity	uS/cm	290	2.0	A676645
Dissolved Organic Carbon (C)	mg/L	6.4	0.50	A679919
pH	pH	7.75	N/A	A676604
Total Organic Carbon (C)	mg/L	5.3	0.50	A679922
Total Dissolved Solids	mg/L	200	10	A676656
Total Suspended Solids	mg/L	63	1.0	A676600
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A676602
Alkalinity (Total as CaCO3)	mg/L	94	1.0	A676602
Bicarbonate (HCO3)	mg/L	110	1.0	A676602
Carbonate (CO3)	mg/L	<1.0	1.0	A676602
Dissolved Fluoride (F)	mg/L	0.090	0.050	A676652
Hydroxide (OH)	mg/L	<1.0	1.0	A676602
Total Sulphide	mg/L	<0.0018	0.0018	A676796
Chloride (Cl)	mg/L	7.1	1.0	A676942
Sulphate (SO4)	mg/L	47	1.0	A676942
Nutrients				
Total Ammonia (N)	mg/L	<0.015	0.015	A677139
Misc. Organics				
Total Oil and grease	mg/L	3.0	2.0	A676375

RDL = Reportable Detection Limit
N/A = Not Applicable

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Bureau Veritas Job #: C258748
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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZE475		
Sampling Date		2022/08/06 10:30		
COC Number		299413		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**
Physical Properties				
True Colour	PtCo units	14	2.0	A676281
Physical Properties				
Turbidity	NTU	45	0.10	A676402
RDL = Reportable Detection Limit				

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		AZE473	AZE474	AZE475		
Sampling Date		2022/08/05 15:08	2022/08/05 15:22	2022/08/06 10:30		
COC Number		299413	299413	299413		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A675188
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A673040
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A673040
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A673040
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A673040
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A673040
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A673040
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A673040
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A673040
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A673040
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A673040
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	124	124	123		A673040
D8-ACENAPHTHYLENE (sur.)	%	107	112	114		A673040
D8-NAPHTHALENE (sur.)	%	81	92	95		A673040
TERPHENYL-D14 (sur.)	%	176 (1)	176 (1)	182 (1)		A673040

RDL = Reportable Detection Limit

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZE473	AZE474	AZE475		
Sampling Date		2022/08/05 15:08	2022/08/05 15:22	2022/08/06 10:30		
COC Number		299413	299413	299413		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0024	0.0019	A678177
Total Mercury (Hg)	ug/L	0.0036	<0.0019	0.0068	0.0019	A677249
RDL = Reportable Detection Limit						

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Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE473			AZE473			AZE474		
Sampling Date		2022/08/05 15:08			2022/08/05 15:08			2022/08/05 15:22		
COC Number		299413			299413			299413		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Elements										
Dissolved Aluminum (Al)	mg/L	<0.0030	0.0030	A677344				0.031	0.0030	A677344
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A677344				<0.00060	0.00060	A677344
Dissolved Arsenic (As)	mg/L	0.00084	0.00020	A677344				0.00048	0.00020	A677344
Dissolved Barium (Ba)	mg/L	0.12	0.010	A677489	0.12	0.010	A677489	0.055	0.010	A677510
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A677344				<0.0010	0.0010	A677344
Dissolved Boron (B)	mg/L	<0.020	0.020	A677489	<0.020	0.020	A677489	<0.020	0.020	A677510
Dissolved Calcium (Ca)	mg/L	38	0.30	A677489	40	0.30	A677489	39	0.30	A677510
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A677344				<0.0010	0.0010	A677344
Dissolved Cobalt (Co)	mg/L	0.00038	0.00030	A677344				<0.00030	0.00030	A677344
Dissolved Copper (Cu)	mg/L	0.0023	0.0010	A677344				0.0044	0.0010	A680184
Dissolved Iron (Fe)	mg/L	0.065	0.060	A677489	0.070	0.060	A677489	<0.060	0.060	A677510
Dissolved Lead (Pb)	mg/L	0.00031	0.00020	A677344				0.00029	0.00020	A677344
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677489	<0.020	0.020	A677489	<0.020	0.020	A677510
Dissolved Magnesium (Mg)	mg/L	12	0.20	A677489	13	0.20	A677489	12	0.20	A677510
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	A677489	0.0040	0.0040	A677489	0.0096	0.0040	A677510
Dissolved Molybdenum (Mo)	mg/L	0.0016	0.00020	A677344				0.0012	0.00020	A677344
Dissolved Nickel (Ni)	mg/L	0.0012	0.00050	A680184				0.0016	0.00050	A677344
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677489	<0.10	0.10	A677489	<0.10	0.10	A677510
Dissolved Potassium (K)	mg/L	1.0	0.30	A677489	1.0	0.30	A677489	1.1	0.30	A677510
Dissolved Selenium (Se)	mg/L	<0.00020	0.00020	A677344				0.00038	0.00020	A677344
Dissolved Silicon (Si)	mg/L	0.36	0.10	A677489	0.39	0.10	A677489	1.8	0.10	A677510
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A677344				<0.00010	0.00010	A677344
Dissolved Sodium (Na)	mg/L	4.1	0.50	A677489	4.2	0.50	A677489	10	0.50	A677510
Dissolved Strontium (Sr)	mg/L	0.19	0.020	A677489	0.19	0.020	A677489	0.25	0.020	A677510
Dissolved Sulphur (S)	mg/L	4.7	0.20	A677489	5.0	0.20	A677489	20	0.20	A677510
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A677344				<0.00020	0.00020	A677344
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A677344				<0.0010	0.0010	A677344
Dissolved Titanium (Ti)	mg/L	<0.0010	0.0010	A677344				<0.0010	0.0010	A677344
Dissolved Uranium (U)	mg/L	0.00031	0.00010	A677344				0.00072	0.00010	A677344
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A677344				<0.0010	0.0010	A677344

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE473			AZE473			AZE474		
Sampling Date		2022/08/05 15:08			2022/08/05 15:08			2022/08/05 15:22		
COC Number		299413			299413			299413		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	0.0083	0.0030	A677344				0.0073	0.0030	A677344

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZE475		
Sampling Date		2022/08/06 10:30		
COC Number		299413		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**
Elements				
Dissolved Aluminum (Al)	mg/L	0.039	0.0030	A677344
Dissolved Antimony (Sb)	mg/L	<0.00060	0.00060	A677344
Dissolved Arsenic (As)	mg/L	0.00038	0.00020	A677344
Dissolved Barium (Ba)	mg/L	0.053	0.010	A677489
Dissolved Beryllium (Be)	mg/L	<0.0010	0.0010	A677344
Dissolved Boron (B)	mg/L	<0.020	0.020	A677489
Dissolved Calcium (Ca)	mg/L	38	0.30	A677489
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	A677344
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00030	A677344
Dissolved Copper (Cu)	mg/L	0.0017	0.0010	A677344
Dissolved Iron (Fe)	mg/L	<0.060	0.060	A677489
Dissolved Lead (Pb)	mg/L	<0.00020	0.00020	A677344
Dissolved Lithium (Li)	mg/L	<0.020	0.020	A677489
Dissolved Magnesium (Mg)	mg/L	11	0.20	A677489
Dissolved Manganese (Mn)	mg/L	<0.0040	0.0040	A677489
Dissolved Molybdenum (Mo)	mg/L	0.0010	0.00020	A677344
Dissolved Nickel (Ni)	mg/L	0.0015	0.00050	A677344
Dissolved Phosphorus (P)	mg/L	<0.10	0.10	A677489
Dissolved Potassium (K)	mg/L	1.1	0.30	A677489
Dissolved Selenium (Se)	mg/L	0.00035	0.00020	A677344
Dissolved Silicon (Si)	mg/L	1.9	0.10	A677489
Dissolved Silver (Ag)	mg/L	<0.00010	0.00010	A677344
Dissolved Sodium (Na)	mg/L	8.0	0.50	A677489
Dissolved Strontium (Sr)	mg/L	0.23	0.020	A677489
Dissolved Sulphur (S)	mg/L	16	0.20	A677489
Dissolved Thallium (Tl)	mg/L	<0.00020	0.00020	A677344
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	A677344
Dissolved Titanium (Ti)	mg/L	0.0011	0.0010	A677344
Dissolved Uranium (U)	mg/L	0.00070	0.00010	A677344
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	A677344
Dissolved Zinc (Zn)	mg/L	0.0037	0.0030	A677344
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE473
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A676602	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675182	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A676942	N/A	2022/08/11	Carlo Truong
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A679919	N/A	2022/08/15	Ming Dong
Conductivity @25C	COND	A676645	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675184	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675622	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A678177	2022/08/12	2022/08/12	Jason Bao
Mercury (Total) by CV	CV	A677249	2022/08/11	2022/08/12	Jason Bao
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/11	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677139	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675489	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676421	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675188	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A676604	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A676796	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/11	Automated Statchk
Nitrogen (Total)	AC/COL	A677098	2022/08/11	2022/08/11	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A676594	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

Bureau Veritas ID: AZE473 Dup
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/11	Mohammad Pousti

Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE473 Dup
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong

Bureau Veritas ID: AZE474
Sample ID: AEMP-13
Matrix: Water

Collected: 2022/08/05
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A676602	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675182	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A676942	N/A	2022/08/11	Carlo Truong
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A679919	N/A	2022/08/15	Ming Dong
Conductivity @25C	COND	A676645	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675184	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675622	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A678177	2022/08/12	2022/08/12	Jason Bao
Mercury (Total) by CV	CV	A677249	2022/08/11	2022/08/12	Jason Bao
Elements by ICP - Dissolved	ICPA	A677510	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677145	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675489	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676421	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675188	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A676604	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A676796	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/12	Automated Statchk
Nitrogen (Total)	AC/COL	A678107	2022/08/12	2022/08/12	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A676594	2022/08/11	2022/08/11	Haydee Estilong
Turbidity	TURB	A677080	N/A	2022/08/11	Hedy Cortes Lopez

Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZE475
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/08/06
Relinquished: 2022/08/06
Received: 2022/08/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A676602	N/A	2022/08/11	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A676189	2022/08/10	2022/08/15	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A678337	N/A	2022/08/13	Darrus Ong
F1-BTEX	CALC/MS	A675719	N/A	2022/08/13	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A675611	N/A	2022/08/14	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A675182	N/A	2022/08/13	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A676942	N/A	2022/08/11	Carlo Truong
COD by Colorimeter	M/PROB	A678513	N/A	2022/08/12	Amy Phan
True Colour	SPEC/COL	A676281	N/A	2022/08/10	Fadia Mostafa
Carbon (DOC)	TECH	A679919	N/A	2022/08/15	Ming Dong
Conductivity @25C	COND	A676645	N/A	2022/08/11	Tracy (Jing) Ling
Fluoride	AT	A676652	N/A	2022/08/11	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A674799	2022/08/11	2022/08/11	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A675184	N/A	2022/08/11	Automated Statchk
Hardness	CALC	A675622	N/A	2022/08/12	Automated Statchk
Mercury (Dissolved) by CV	CV	A678177	2022/08/12	2022/08/12	Jason Bao
Mercury (Total) by CV	CV	A677249	2022/08/11	2022/08/12	Jason Bao
Elements by ICP - Dissolved	ICPA	A677489	N/A	2022/08/12	Mohammad Pousti
Elements by ICP - Total	ICPA	A678476	2022/08/12	2022/08/12	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A677344	N/A	2022/08/13	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A678469	2022/08/12	2022/08/13	Rikuto Yamazaki
Ion Balance	CALC	A675721	N/A	2022/08/12	Automated Statchk
Ammonia-N (Total)	KONE	A677139	N/A	2022/08/11	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A675489	N/A	2022/08/11	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A676425	N/A	2022/08/10	Shanna McKort
Nitrate (as N)	CALC	A675669	2022/08/11	2022/08/11	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A676375	2022/08/12	2022/08/12	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A675188	N/A	2022/08/12	Automated Statchk
PAH in Water by GC/MS	GC/MS	A673040	2022/08/11	2022/08/12	Nora Kazemian
pH @25°C	AT/ALK	A676604	N/A	2022/08/11	Tracy (Jing) Ling
Total Sulphide	SPEC	A676796	N/A	2022/08/11	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A676656	2022/08/11	2022/08/11	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A675314	N/A	2022/08/11	Automated Statchk
Nitrogen (Total)	AC/COL	A677098	2022/08/11	2022/08/11	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A679922	N/A	2022/08/14	Zoe Wu
Total Suspended Solids (NFR)	BAL	A676600	2022/08/11	2022/08/11	Hedy Cortes Lopez
Turbidity	TURB	A676402	N/A	2022/08/10	Hedy Cortes Lopez

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.0°C

Note: Container received empty. One BTEX vial for sample AEMP-01 was received empty. Proceeded on the two remaining BTEX vials; client was notified via email.

Temperatures upon receipt at Bureau Veritas Labs calgary
Package 1: 8 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AZE473 [AEMP-05] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for Turbidity.

Sample AZE474 [AEMP-13] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for Turbidity.

Sample AZE475 [AEMP-01] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample AZE473, Elements by ICPMS - Dissolved: Test repeated.
Sample AZE474, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A673040	NK3	Method Blank	D10-ANTHRACENE (sur.)	2022/08/12		118	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/12		164 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/12		89	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/12		57	%	50 - 130
			Acenaphthene	2022/08/12	<0.00010		mg/L	
			Acenaphthylene	2022/08/12	<0.00010		mg/L	
			Acridine	2022/08/12	<0.000040		mg/L	
			Anthracene	2022/08/12	<0.000010		mg/L	
			Benzo(a)anthracene	2022/08/12	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/08/12	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/08/12	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/08/12	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/08/12	<0.000050		mg/L	
			Benzo(a)pyrene	2022/08/12	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/08/12	<0.000050		mg/L	
			Chrysene	2022/08/12	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/08/12	<0.0000075		mg/L	
			Fluoranthene	2022/08/12	<0.000010		mg/L	
			Fluorene	2022/08/12	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/08/12	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/08/12	<0.00010		mg/L	
			2-Methylnaphthalene	2022/08/12	<0.00010		mg/L	
			Naphthalene	2022/08/12	<0.00010		mg/L	
			Phenanthrene	2022/08/12	<0.000050		mg/L	
			Perylene	2022/08/12	<0.000050		mg/L	
			Pyrene	2022/08/12	<0.000020		mg/L	
			Quinoline	2022/08/12	<0.00020		mg/L	
A674799	GG3	Method Blank	O-TERPHENYL (sur.)	2022/08/11		94	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11	<0.10		mg/L	
A676189	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/16	<2.0		mg/L	
A676281	FM0	Method Blank	True Colour	2022/08/10	<2.0		PtCo units	
A676375	JB9	Method Blank	Total Oil and grease	2022/08/12	<2.0		mg/L	
A676402	HCL	Method Blank	Turbidity	2022/08/10	<0.10		NTU	
A676421	SKM	Method Blank	Nitrite (N)	2022/08/10	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/10	<0.010		mg/L	
A676425	SKM	Method Blank	Nitrite (N)	2022/08/10	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/10	<0.010		mg/L	
A676594	HE1	Method Blank	Total Suspended Solids	2022/08/11	<1.0		mg/L	
A676600	HCL	Method Blank	Total Suspended Solids	2022/08/11	<1.0		mg/L	
A676602	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/11	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/11	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/11	<1.0		mg/L	
			Carbonate (CO3)	2022/08/11	<1.0		mg/L	
			Hydroxide (OH)	2022/08/11	<1.0		mg/L	
A676645	JLD	Method Blank	Conductivity	2022/08/11	<2.0		uS/cm	
A676652	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/11	<0.050		mg/L	
A676656	HE1	Method Blank	Total Dissolved Solids	2022/08/11	<10		mg/L	
A676796	AP1	Method Blank	Total Sulphide	2022/08/11	<0.0018		mg/L	
A676942	CTU	Method Blank	Chloride (Cl)	2022/08/11	<1.0		mg/L	
			Sulphate (SO4)	2022/08/11	<1.0		mg/L	
A677080	HCL	Method Blank	Turbidity	2022/08/11	<0.10		NTU	
A677098	MAP	Method Blank	Total Nitrogen (N)	2022/08/11	<0.020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677139	ACR	Method Blank	Total Ammonia (N)	2022/08/11	<0.015		mg/L	
A677145	ACR	Method Blank	Total Ammonia (N)	2022/08/11	<0.015		mg/L	
A677249	JAB	Method Blank	Total Mercury (Hg)	2022/08/12	<0.0019		ug/L	
A677344	RY3	Method Blank	Dissolved Aluminum (Al)	2022/08/13	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/13	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/13	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/13	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/13	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/13	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/13	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/13	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/13	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/13	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/13	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/13	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/13	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/13	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/13	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/13	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/13	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/13	<0.0010		mg/L	
A677489	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A677510	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/12	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/12	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/12	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/12	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/12	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/12	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/12	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/12	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/12	<0.30		mg/L	
A678107	MAP	Method Blank	Total Nitrogen (N)	2022/08/12	<0.020		mg/L	
A678177	JAB	Method Blank	Dissolved Mercury (Hg)	2022/08/12	<0.0019		ug/L	
A678337	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/13		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Benzene	2022/08/13	<0.00040		mg/L	
			Toluene	2022/08/13	<0.00040		mg/L	
			Ethylbenzene	2022/08/13	<0.00040		mg/L	
			m & p-Xylene	2022/08/13	<0.00080		mg/L	
			o-Xylene	2022/08/13	<0.00040		mg/L	
			F1 (C6-C10)	2022/08/13	<0.10		mg/L	
A678469	RY3	Method Blank	Total Aluminum (Al)	2022/08/12	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/12	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/12	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/12	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/12	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/12	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/12	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/12	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/12	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/12	<0.00010		mg/L	
			Total Arsenic (As)	2022/08/12	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/12	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/12	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/12	<0.0010		mg/L	
			Total Uranium (U)	2022/08/12	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/12	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/12	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/12	<0.0010		mg/L	
A678476	MPU	Method Blank	Total Iron (Fe)	2022/08/12	<0.060		mg/L	
			Total Lithium (Li)	2022/08/12	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/12	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/12	<0.0040		mg/L	
			Total Potassium (K)	2022/08/12	<0.30		mg/L	
			Total Sodium (Na)	2022/08/12	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/12	<0.020		mg/L	
			Total Sulphur (S)	2022/08/12	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/12	<0.10		mg/L	
			Total Barium (Ba)	2022/08/12	<0.010		mg/L	
			Total Silicon (Si)	2022/08/12	<0.10		mg/L	
			Total Boron (B)	2022/08/12	<0.020		mg/L	
			Total Calcium (Ca)	2022/08/12	<0.30		mg/L	
A678513	AP1	Method Blank	Chemical Oxygen Demand	2022/08/12	<10		mg/L	
A679919	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/08/15	<0.50		mg/L	
A679922	ZWU	Method Blank	Total Organic Carbon (C)	2022/08/14	<0.50		mg/L	
A680184	STI	Method Blank	Dissolved Copper (Cu)	2022/08/14	<0.0010		mg/L	
			Dissolved Nickel (Ni)	2022/08/14	<0.00050		mg/L	
A676656	HE1	RPD [AZE473-02]	Total Dissolved Solids	2022/08/11	4.2		%	20
A677489	MPU	RPD [AZE473-08]	Dissolved Iron (Fe)	2022/08/11	8.2		%	20
			Dissolved Lithium (Li)	2022/08/11	NC		%	20
			Dissolved Magnesium (Mg)	2022/08/11	5.3		%	20
			Dissolved Manganese (Mn)	2022/08/11	0		%	20
			Dissolved Potassium (K)	2022/08/11	0.76		%	20
			Dissolved Sodium (Na)	2022/08/11	3.7		%	20
			Dissolved Strontium (Sr)	2022/08/11	2.2		%	20
			Dissolved Sulphur (S)	2022/08/11	5.8		%	20
			Dissolved Phosphorus (P)	2022/08/11	NC		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Barium (Ba)	2022/08/11	2.6		%	20
			Dissolved Silicon (Si)	2022/08/11	9.1		%	20
			Dissolved Boron (B)	2022/08/11	NC		%	20
			Dissolved Calcium (Ca)	2022/08/11	3.7		%	20
A676656	HE1	Matrix Spike [AZE473-02]	Total Dissolved Solids	2022/08/11		99	%	80 - 120
A677489	MPU	Matrix Spike [AZE473-08]	Dissolved Iron (Fe)	2022/08/11		110	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		101	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		104	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		112	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		108	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		103	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		104	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		106	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		107	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		109	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		100	%	80 - 120
			Dissolved Boron (B)	2022/08/11		113	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		103	%	80 - 120
A673040	NK3	LCS	D10-ANTHRACENE (sur.)	2022/08/12		117	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/08/12		151 (1)	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/08/12		100	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/08/12		67	%	50 - 130
			Acenaphthene	2022/08/12		77	%	50 - 130
			Acenaphthylene	2022/08/12		90	%	50 - 130
			Acridine	2022/08/12		96	%	50 - 130
			Anthracene	2022/08/12		94	%	50 - 130
			Benzo(a)anthracene	2022/08/12		112	%	50 - 130
			Benzo(b&j)fluoranthene	2022/08/12		107	%	50 - 130
			Benzo(k)fluoranthene	2022/08/12		94	%	50 - 130
			Benzo(g,h,i)perylene	2022/08/12		102	%	50 - 130
			Benzo(c)phenanthrene	2022/08/12		113	%	50 - 130
			Benzo(a)pyrene	2022/08/12		97	%	50 - 130
			Benzo(e)pyrene	2022/08/12		94	%	50 - 130
			Chrysene	2022/08/12		105	%	50 - 130
			Dibenz(a,h)anthracene	2022/08/12		101	%	50 - 130
			Fluoranthene	2022/08/12		106	%	50 - 130
			Fluorene	2022/08/12		83	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/08/12		103	%	50 - 130
			1-Methylnaphthalene	2022/08/12		65	%	50 - 130
			2-Methylnaphthalene	2022/08/12		79	%	50 - 130
			Naphthalene	2022/08/12		82	%	50 - 130
			Phenanthrene	2022/08/12		83	%	50 - 130
			Perylene	2022/08/12		96	%	50 - 130
			Pyrene	2022/08/12		101	%	50 - 130
			Quinoline	2022/08/12		79	%	50 - 130
A674799	GG3	LCS	O-TERPHENYL (sur.)	2022/08/11		98	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/11		87	%	60 - 140
A676189	BYM	LCS	Biochemical Oxygen Demand	2022/08/16		93	%	85 - 115
A676281	FM0	LCS	True Colour	2022/08/10		96	%	80 - 120
A676375	JB9	LCS	Total Oil and grease	2022/08/12		114	%	70 - 130
A676402	HCL	LCS	Turbidity	2022/08/10		103	%	80 - 120
A676421	SKM	LCS	Nitrite (N)	2022/08/10		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Nitrate plus Nitrite (N)	2022/08/10		100	%	80 - 120
A676425	SKM	LCS	Nitrite (N)	2022/08/10		98	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/10		99	%	80 - 120
A676594	HE1	LCS	Total Suspended Solids	2022/08/11		91	%	80 - 120
A676600	HCL	LCS	Total Suspended Solids	2022/08/11		87	%	80 - 120
A676602	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/11		99	%	80 - 120
A676604	JLD	LCS	pH	2022/08/11		100	%	97 - 103
A676645	JLD	LCS	Conductivity	2022/08/11		99	%	90 - 110
A676652	JLD	LCS	Dissolved Fluoride (F)	2022/08/11		99	%	80 - 120
A676656	HE1	LCS	Total Dissolved Solids	2022/08/11		104	%	80 - 120
A676796	AP1	LCS	Total Sulphide	2022/08/11		92	%	80 - 120
A676942	CTU	LCS	Chloride (Cl)	2022/08/11		105	%	80 - 120
			Sulphate (SO4)	2022/08/11		103	%	80 - 120
A677080	HCL	LCS	Turbidity	2022/08/11		103	%	80 - 120
A677098	MAP	LCS	Total Nitrogen (N)	2022/08/11		104	%	80 - 120
A677139	ACR	LCS	Total Ammonia (N)	2022/08/11		100	%	80 - 120
A677145	ACR	LCS	Total Ammonia (N)	2022/08/11		100	%	80 - 120
A677249	JAB	LCS	Total Mercury (Hg)	2022/08/12		110	%	80 - 120
A677344	RY3	LCS	Dissolved Aluminum (Al)	2022/08/12		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/12		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/12		101	%	80 - 120
			Dissolved Copper (Cu)	2022/08/12		99	%	80 - 120
			Dissolved Lead (Pb)	2022/08/12		101	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/12		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/12		107	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/12		100	%	80 - 120
			Dissolved Selenium (Se)	2022/08/12		101	%	80 - 120
			Dissolved Silver (Ag)	2022/08/12		118	%	80 - 120
			Dissolved Arsenic (As)	2022/08/12		99	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/12		102	%	80 - 120
			Dissolved Tin (Sn)	2022/08/12		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/12		102	%	80 - 120
			Dissolved Uranium (U)	2022/08/12		93	%	80 - 120
			Dissolved Vanadium (V)	2022/08/12		101	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/12		101	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/12		107	%	80 - 120
A677489	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		102	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		98	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		100	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/11		104	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		104	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		100	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		101	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		97	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		98	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		105	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		101	%	80 - 120
			Dissolved Boron (B)	2022/08/11		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		101	%	80 - 120
A677510	MPU	LCS	Dissolved Iron (Fe)	2022/08/11		104	%	80 - 120
			Dissolved Lithium (Li)	2022/08/11		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/11		100	%	80 - 120

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Manganese (Mn)	2022/08/11		106	%	80 - 120
			Dissolved Potassium (K)	2022/08/11		103	%	80 - 120
			Dissolved Sodium (Na)	2022/08/11		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/11		101	%	80 - 120
			Dissolved Sulphur (S)	2022/08/11		95	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/11		96	%	80 - 120
			Dissolved Barium (Ba)	2022/08/11		105	%	80 - 120
			Dissolved Silicon (Si)	2022/08/11		98	%	80 - 120
			Dissolved Boron (B)	2022/08/11		103	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/11		100	%	80 - 120
A678107	MAP	LCS	Total Nitrogen (N)	2022/08/12		105	%	80 - 120
A678177	JAB	LCS	Dissolved Mercury (Hg)	2022/08/12		111	%	80 - 120
A678337	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/08/13		94	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/13		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/13		103	%	50 - 140
			Benzene	2022/08/13		96	%	60 - 130
			Toluene	2022/08/13		91	%	60 - 130
			Ethylbenzene	2022/08/13		95	%	60 - 130
			m & p-Xylene	2022/08/13		94	%	60 - 130
			o-Xylene	2022/08/13		97	%	60 - 130
			F1 (C6-C10)	2022/08/13		102	%	60 - 140
A678469	RY3	LCS	Total Aluminum (Al)	2022/08/12		100	%	80 - 120
			Total Chromium (Cr)	2022/08/12		97	%	80 - 120
			Total Cobalt (Co)	2022/08/12		97	%	80 - 120
			Total Copper (Cu)	2022/08/12		96	%	80 - 120
			Total Lead (Pb)	2022/08/12		102	%	80 - 120
			Total Antimony (Sb)	2022/08/12		101	%	80 - 120
			Total Molybdenum (Mo)	2022/08/12		98	%	80 - 120
			Total Nickel (Ni)	2022/08/12		97	%	80 - 120
			Total Selenium (Se)	2022/08/12		100	%	80 - 120
			Total Silver (Ag)	2022/08/12		115	%	80 - 120
			Total Arsenic (As)	2022/08/12		96	%	80 - 120
			Total Thallium (Tl)	2022/08/12		101	%	80 - 120
			Total Tin (Sn)	2022/08/12		98	%	80 - 120
			Total Titanium (Ti)	2022/08/12		102	%	80 - 120
			Total Uranium (U)	2022/08/12		98	%	80 - 120
			Total Vanadium (V)	2022/08/12		100	%	80 - 120
			Total Zinc (Zn)	2022/08/12		98	%	80 - 120
			Total Beryllium (Be)	2022/08/12		102	%	80 - 120
A678476	MPU	LCS	Total Iron (Fe)	2022/08/12		111	%	80 - 120
			Total Lithium (Li)	2022/08/12		103	%	80 - 120
			Total Magnesium (Mg)	2022/08/12		105	%	80 - 120
			Total Manganese (Mn)	2022/08/12		110	%	80 - 120
			Total Potassium (K)	2022/08/12		110	%	80 - 120
			Total Sodium (Na)	2022/08/12		102	%	80 - 120
			Total Strontium (Sr)	2022/08/12		101	%	80 - 120
			Total Sulphur (S)	2022/08/12		105	%	80 - 120
			Total Phosphorus (P)	2022/08/12		103	%	80 - 120
			Total Barium (Ba)	2022/08/12		107	%	80 - 120
			Total Silicon (Si)	2022/08/12		108	%	80 - 120
			Total Boron (B)	2022/08/12		107	%	80 - 120
			Total Calcium (Ca)	2022/08/12		100	%	80 - 120

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258748
Report Date: 2022/08/15

Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A678513	AP1	LCS	Chemical Oxygen Demand	2022/08/12		102	%	80 - 120
A679919	MDO	LCS	Dissolved Organic Carbon (C)	2022/08/15		112	%	80 - 120
A679922	ZWU	LCS	Total Organic Carbon (C)	2022/08/14		105	%	80 - 120
A680184	STI	LCS	Dissolved Copper (Cu)	2022/08/14		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/14		99	%	80 - 120
A677098	MAP	SRM	Total Nitrogen (N)	2022/08/11		100	%	80 - 120
A678107	MAP	SRM	Total Nitrogen (N)	2022/08/12		102	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

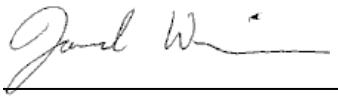
Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C258748
Report Date: 2022/08/15

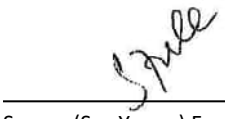
Advisian
Task Order#: 417085-42051.22200
Site#: N/A
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

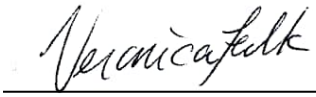
The analytical data and all QC contained in this report were reviewed and validated by:



Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

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☑ Edmonton
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Toll Free: (800) 386-7247

194 AMY

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 299413

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: Worley (Advisian)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150, 205 Quarry Park Blvd SE Calgary, AB T2C 3E7	Address: 150, 205 Quarry Park Blvd SE Calgary, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587 897 6249	Ph: 587 897 6249
Sampler Name (Print): Stacy Gibb / Neal Tanna	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	MATRIX: SURFACE WATER	MATRIX: SOIL	MATRIX: OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	SAMPLING: TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☒ DIS ☒	MERCURY: TOTAL ☒ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY: pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	cOD, TOC, TKN, BOD	True color, TSS, TPS, Turbidity	Nitrate, Nitrite, Ammonia-N (Total)	DOC	total sulphide	total and dissolved sulphur	Oil & Grease (TPH IR)	Fluoride
1	AEMP-05		X			17	2022/08/05	15:08	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓
2	AEMP-13		X			17	2022/08/05	15:22	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓
3	AEMP-01		X			17	2022/08/06	10:30	✓			✓	✓							✓	✓					✓		✓	✓	✓	✓	✓	✓	✓	✓
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS
Email:
canada.chemistry@worley.com
cacal.IOR data track@worley.com
BOD Frozen as per instructions can not meet hold times

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	8	7	6
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID # MCAL			
SEAL PRESENT	✓		TEMP °C	7	9	8
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C			
SEAL INTACT				1	2	3
COOLING MEDIA PRESENT						

LAB USE ONLY
MAXXAM JOB # C258748

SAMPLES
LABELED BY: AMY
VERIFIED BY: MPN

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	STACY GIBB	2022/08/06	11:00	1. Manjinder Pandher	Manjinder Pandher	2022/08/09	16:44
2. Alana Morris	Alana Morris	2022/08/16	0951	2.	Sarah Dolan	2022/08/10	15:30
3.				3.			

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299400

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/22
Report #: R3219560
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C259965
Received: 2022/08/13, 09:52

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	2	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	2		
Biochemical Oxygen Demand (1)	2	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	2	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	2		Auto Calc
Cadmium - low level CCME - Dissolved (1)	2		Auto Calc
Cadmium - low level CCME (Total) (1)	2		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	2	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	2	AB SOP-00016	SM 23 5220D m
True Colour (1)	2	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	2	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	2	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	2	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	2	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	2		Auto Calc
Hardness (1)	2		Auto Calc
Mercury (Dissolved) by CV (1, 4)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	2	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	2	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	2	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	2	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	2	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	2		Auto Calc
Ammonia-N (Total) (1)	2	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	2		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	2	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	2		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	2	AB SOP-00092	SM 23 5520B/5520F m
pH @25°C (1, 5)	2	AB SOP-00005	SM 23 4500-H+B m
Total Sulphide (1)	2	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	2	AB SOP-00065	SM 23 2540 C m

Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299400

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/22
Report #: R3219560
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C259965
Received: 2022/08/13, 09:52

Sample Matrix: Water
Samples Received: 2

Analyses	Quantity	Laboratory Method	Analytical Method
Total Kjeldahl Nitrogen (Total) (1)	2	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	2	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 6)	2	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	2	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	2	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.

Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200
Your C.O.C. #: 299400

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/08/22
Report #: R3219560
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C259965

Received: 2022/08/13, 09:52

(6) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Mary (Xiaohong) Xu
Customer Solutions Representative
22 Aug 2022 11:47:37

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C259965
Report Date: 2022/08/22

Advisian
Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		AZL876	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25		
COC Number		299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon					
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	0.10	A680179
Volatiles					
Benzene	mg/L	<0.00040	<0.00040	0.00040	A680853
Toluene	mg/L	<0.00040	<0.00040	0.00040	A680853
Ethylbenzene	mg/L	<0.00040	<0.00040	0.00040	A680853
m & p-Xylene	mg/L	<0.00080	<0.00080	0.00080	A680853
o-Xylene	mg/L	<0.00040	<0.00040	0.00040	A680853
Xylenes (Total)	mg/L	<0.00089	<0.00089	0.00089	A680088
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	0.10	A680088
F1 (C6-C10)	mg/L	<0.10	<0.10	0.10	A680853
Extraction Surrogate Recovery (%)					
O-TERPHENYL (sur.)	%	102	106		A680179
Instrument Surrogate Recovery (%)					
1,4-Difluorobenzene (sur.)	%	103	104		A680853
4-Bromofluorobenzene (sur.)	%	98	99		A680853
D4-1,2-Dichloroethane (sur.)	%	100	100		A680853
RDL = Reportable Detection Limit					

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TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		AZL876	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25		
COC Number		299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**RDL**	**QC Batch**
Calculated Parameters					
Total Total Kjeldahl Nitrogen (Calc)	mg/L	<0.20	<0.20	0.20	A680106
Nutrients					
Total Nitrogen (N)	mg/L	<0.20 (1)	0.21 (1)	0.20	A682059

RDL = Reportable Detection Limit

(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZL876	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25		
COC Number		299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.000077	0.000069	0.000020	A680090
Total Aluminum (Al)	mg/L	0.84	0.91	0.0030	A682453
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A682453
Total Arsenic (As)	mg/L	0.0010	0.0011	0.00020	A682453
Total Barium (Ba)	mg/L	0.075	0.081	0.010	A682460
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A682453
Total Boron (B)	mg/L	<0.020	0.020	0.020	A682460
Total Calcium (Ca)	mg/L	35	34	0.30	A682460
Total Chromium (Cr)	mg/L	<0.0010	0.0014	0.0010	A682453
Total Cobalt (Co)	mg/L	0.00076	0.0010	0.00030	A682453
Total Copper (Cu)	mg/L	0.0024	0.0028	0.0010	A682453
Total Iron (Fe)	mg/L	1.6	2.3	0.060	A682460
Total Lead (Pb)	mg/L	0.00088	0.0012	0.00020	A682453
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A682460
Total Magnesium (Mg)	mg/L	10	10	0.20	A682460
Total Manganese (Mn)	mg/L	0.037	0.051	0.0040	A682460
Total Molybdenum (Mo)	mg/L	0.00086	0.00087	0.00020	A682453
Total Nickel (Ni)	mg/L	0.0033	0.0039	0.00050	A682453
Total Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A682460
Total Potassium (K)	mg/L	1.3	1.4	0.30	A682460
Total Selenium (Se)	mg/L	0.00030	0.00032	0.00020	A682453
Total Silicon (Si)	mg/L	4.6	4.9	0.10	A682460
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A682453
Total Sodium (Na)	mg/L	7.2	7.0	0.50	A682460
Total Strontium (Sr)	mg/L	0.21	0.20	0.020	A682460
Total Sulphur (S)	mg/L	12	11	0.20	A682460
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A682453
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A682453
Total Titanium (Ti)	mg/L	0.015	0.015	0.0010	A682453
Total Uranium (U)	mg/L	0.00076	0.00071	0.00010	A682453
Total Vanadium (V)	mg/L	0.0024	0.0030	0.0010	A682453
RDL = Reportable Detection Limit					

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REGULATED METALS (CCME/AT1) - TOTAL

Bureau Veritas ID		AZL876	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25		
COC Number		299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**RDL**	**QC Batch**
Total Zinc (Zn)	mg/L	0.0097	0.053	0.0030	A682453
RDL = Reportable Detection Limit					

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Task Order#: 417085-42051.22200
Site#:
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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZL876			AZL876			AZL877		
Sampling Date		2022/08/10 13:58			2022/08/10 13:58			2022/08/10 14:25		
COC Number		299400			299400			299400		
	UNITS	**AEMP-10**	**RDL**	**QC Batch**	**AEMP-10 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-11**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	120	0.50	A680094				120	0.50	A680094
Ion Balance (% Difference)	%	0.50	N/A	A680097				1.9	N/A	A680097
Nitrate (N)	mg/L	0.048	0.010	A680101				0.057	0.010	A680101
Nitrate (NO3)	mg/L	0.21	0.044	A680100				0.25	0.044	A680100
Nitrite (NO2)	mg/L	<0.033	0.033	A680100				<0.033	0.033	A680100
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A680132				0.012	0.0020	A680132
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0	2.0	A680140	<2.0	2.0	A680140	<2.0	2.0	A680140
Chemical Oxygen Demand	mg/L	15	10	A680325	18	10	A680325	14	10	A680325
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A680137				<0.000020	0.000020	A680137
Misc. Inorganics										
Conductivity	uS/cm	270	2.0	A681363				260	2.0	A681363
Dissolved Organic Carbon (C)	mg/L	4.6	0.50	A683814				5.2	0.50	A683814
pH	pH	7.68	N/A	A681362				7.65	N/A	A681362
Total Organic Carbon (C)	mg/L	3.9	0.50	A683581				4.1	0.50	A683581
Total Dissolved Solids	mg/L	160	10	A681813				160	10	A681813
Total Suspended Solids	mg/L	52	0.97	A680407				91	0.99	A680407
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A681360				<1.0	1.0	A681360
Alkalinity (Total as CaCO3)	mg/L	90	1.0	A681360				88	1.0	A681360
Bicarbonate (HCO3)	mg/L	110	1.0	A681360				110	1.0	A681360
Carbonate (CO3)	mg/L	<1.0	1.0	A681360				<1.0	1.0	A681360
Dissolved Fluoride (F)	mg/L	0.089	0.050	A681365				0.093	0.050	A681365
Hydroxide (OH)	mg/L	<1.0	1.0	A681360				<1.0	1.0	A681360
Total Sulphide	mg/L	<0.0018	0.0018	A680656				0.012	0.0018	A680656
Chloride (Cl)	mg/L	7.9	1.0	A680182				8.2	1.0	A680182
Sulphate (SO4)	mg/L	38	1.0	A680182				38	1.0	A680182

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable

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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AZL876			AZL876			AZL877		
Sampling Date		2022/08/10 13:58			2022/08/10 13:58			2022/08/10 14:25		
COC Number		299400			299400			299400		
	UNITS	**AEMP-10**	**RDL**	**QC Batch**	**AEMP-10 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-11**	**RDL**	**QC Batch**
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A683249				<0.015	0.015	A683249
Nitrite (N)	mg/L	<0.010	0.010	A680029				<0.010	0.010	A680029
Nitrate plus Nitrite (N)	mg/L	0.048	0.010	A680029				0.057	0.010	A680029
Misc. Organics										
Total Oil and grease	mg/L	4.0	2.0	A677663				<2.0	2.0	A677663
Physical Properties										
True Colour	PtCo units	9.3	2.0	A681906				9.1	2.0	A681906
Physical Properties										
Turbidity	NTU	40	0.10	A679935				49	0.10	A679935

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		AZL877		
Sampling Date		2022/08/10 14:25		
COC Number		299400		
	UNITS	**AEMP-11 Lab-Dup**	**RDL**	**QC Batch**
Misc. Inorganics				
Total Organic Carbon (C)	mg/L	4.2	0.50	A683581
Physical Properties				
True Colour	PtCo units	9.1	2.0	A681906

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		AZL876	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25		
COC Number		299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**RDL**	**QC Batch**
Elements					
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A680849
Total Mercury (Hg)	ug/L	0.0034	0.0041	0.0019	A683598
RDL = Reportable Detection Limit					

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZL876	AZL877	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25	2022/08/10 14:25		
COC Number		299400	299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**AEMP-11 Lab-Dup**	**RDL**	**QC Batch**
Elements						
Dissolved Aluminum (Al)	mg/L	0.022	0.019	0.018	0.0030	A680181
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A680181
Dissolved Arsenic (As)	mg/L	0.00029	0.00030	0.00031	0.00020	A680181
Dissolved Barium (Ba)	mg/L	0.051	0.045	0.045	0.010	A680658
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680181
Dissolved Boron (B)	mg/L	<0.020	<0.020	<0.020	0.020	A680658
Dissolved Calcium (Ca)	mg/L	34	32	32	0.30	A680658
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680181
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	0.00030	A680181
Dissolved Copper (Cu)	mg/L	0.0028	<0.0010	0.0010	0.0010	A680181
Dissolved Iron (Fe)	mg/L	<0.060	<0.060	<0.060	0.060	A680658
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680181
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A680658
Dissolved Magnesium (Mg)	mg/L	9.9	9.3	9.3	0.20	A680658
Dissolved Manganese (Mn)	mg/L	<0.0040	<0.0040	<0.0040	0.0040	A680658
Dissolved Molybdenum (Mo)	mg/L	0.00082	0.00083	0.00081	0.00020	A680181
Dissolved Nickel (Ni)	mg/L	0.0011	0.0010	0.0012	0.00050	A680181
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A680658
Dissolved Potassium (K)	mg/L	0.97	0.94	0.93	0.30	A680658
Dissolved Selenium (Se)	mg/L	0.00026	<0.00020	0.00025	0.00020	A680181
Dissolved Silicon (Si)	mg/L	1.8	1.5	1.6	0.10	A680658
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A680181
Dissolved Sodium (Na)	mg/L	7.7	7.4	7.5	0.50	A680658
Dissolved Strontium (Sr)	mg/L	0.21	0.20	0.20	0.020	A680658
Dissolved Sulphur (S)	mg/L	13	12	12	0.20	A680658
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A680181
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680181
Dissolved Titanium (Ti)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680181
Dissolved Uranium (U)	mg/L	0.00068	0.00059	0.00060	0.00010	A680181
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A680181

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		AZL876	AZL877	AZL877		
Sampling Date		2022/08/10 13:58	2022/08/10 14:25	2022/08/10 14:25		
COC Number		299400	299400	299400		
	UNITS	**AEMP-10**	**AEMP-11**	**AEMP-11 Lab-Dup**	**RDL**	**QC Batch**
Dissolved Zinc (Zn)	mg/L	0.0031	<0.0030	<0.0030	0.0030	A680181

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZL876
Sample ID: AEMP-10
Matrix: Water

Collected: 2022/08/10
Relinquished: 2022/08/10
Received: 2022/08/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A681360	N/A	2022/08/15	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A680140	2022/08/14	2022/08/19	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A680853	N/A	2022/08/16	Muhammad Shamir
F1-BTEX	CALC/MS	A680088	N/A	2022/08/17	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A680137	N/A	2022/08/15	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A680090	N/A	2022/08/17	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A680182	N/A	2022/08/14	Adam Fishleigh
COD by Colorimeter	M/PROB	A680325	N/A	2022/08/15	Bailey Morrison
True Colour	SPEC/COL	A681906	N/A	2022/08/16	Fadia Mostafa
Carbon (DOC)	TECH	A683814	N/A	2022/08/17	Ming Dong
Conductivity @25C	COND	A681363	N/A	2022/08/15	Tracy (Jing) Ling
Fluoride	AT	A681365	N/A	2022/08/15	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A680179	2022/08/15	2022/08/15	Elizabeth Chacko
Sulphide (as H2S)	CALC	A680132	N/A	2022/08/15	Automated Statchk
Hardness	CALC	A680094	N/A	2022/08/15	Automated Statchk
Mercury (Dissolved) by CV	CV	A680849	2022/08/15	2022/08/15	Kiran Kumari
Mercury (Total) by CV	CV	A683598	2022/08/17	2022/08/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A680658	N/A	2022/08/15	Mohammad Pousti
Elements by ICP - Total	ICPA	A682460	2022/08/16	2022/08/16	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A680181	N/A	2022/08/14	Serena Tian
Elements by ICPMS - Total	ICPM	A682453	2022/08/16	2022/08/17	Serena Tian
Ion Balance	CALC	A680097	N/A	2022/08/16	Automated Statchk
Ammonia-N (Total)	KONE	A683249	N/A	2022/08/16	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A680100	N/A	2022/08/15	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A680029	N/A	2022/08/14	Ana Katrina Cariaga
Nitrate (as N)	CALC	A680101	2022/08/15	2022/08/15	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A677663	2022/08/15	2022/08/15	Junyan Ban
pH @25°C	AT/ALK	A681362	N/A	2022/08/15	Tracy (Jing) Ling
Total Sulphide	SPEC	A680656	N/A	2022/08/15	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A681813	2022/08/16	2022/08/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A680106	N/A	2022/08/17	Automated Statchk
Nitrogen (Total)	AC/COL	A682059	2022/08/16	2022/08/17	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A683581	N/A	2022/08/17	Ming Dong
Total Suspended Solids (NFR)	BAL	A680407	2022/08/15	2022/08/15	Haydee Estilong
Turbidity	TURB	A679935	N/A	2022/08/14	Hedy Cortes Lopez

Bureau Veritas ID: AZL876 Dup
Sample ID: AEMP-10
Matrix: Water

Collected: 2022/08/10
Relinquished: 2022/08/10
Received: 2022/08/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A680140	2022/08/14	2022/08/19	Bailey Morrison
COD by Colorimeter	M/PROB	A680325	N/A	2022/08/15	Bailey Morrison

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Site#:
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Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZL877
Sample ID: AEMP-11
Matrix: Water

Collected: 2022/08/10
Relinquished: 2022/08/10
Received: 2022/08/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A681360	N/A	2022/08/15	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A680140	2022/08/14	2022/08/19	Bailey Morrison
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A680853	N/A	2022/08/16	Muhammad Shamir
F1-BTEX	CALC/MS	A680088	N/A	2022/08/17	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A680137	N/A	2022/08/15	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A680090	N/A	2022/08/17	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A680182	N/A	2022/08/14	Adam Fishleigh
COD by Colorimeter	M/PROB	A680325	N/A	2022/08/15	Bailey Morrison
True Colour	SPEC/COL	A681906	N/A	2022/08/16	Fadia Mostafa
Carbon (DOC)	TECH	A683814	N/A	2022/08/17	Ming Dong
Conductivity @25C	COND	A681363	N/A	2022/08/15	Tracy (Jing) Ling
Fluoride	AT	A681365	N/A	2022/08/15	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A680179	2022/08/15	2022/08/15	Elizabeth Chacko
Sulphide (as H2S)	CALC	A680132	N/A	2022/08/15	Automated Statchk
Hardness	CALC	A680094	N/A	2022/08/15	Automated Statchk
Mercury (Dissolved) by CV	CV	A680849	2022/08/15	2022/08/15	Kiran Kumari
Mercury (Total) by CV	CV	A683598	2022/08/17	2022/08/17	Jason Bao
Elements by ICP - Dissolved	ICPA	A680658	N/A	2022/08/15	Mohammad Pousti
Elements by ICP - Total	ICPA	A682460	2022/08/16	2022/08/16	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A680181	N/A	2022/08/14	Serena Tian
Elements by ICPMS - Total	ICPM	A682453	2022/08/16	2022/08/17	Serena Tian
Ion Balance	CALC	A680097	N/A	2022/08/16	Automated Statchk
Ammonia-N (Total)	KONE	A683249	N/A	2022/08/16	Ana Katrina Cariaga
Nitrate and Nitrite	CALC	A680100	N/A	2022/08/15	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A680029	N/A	2022/08/14	Ana Katrina Cariaga
Nitrate (as N)	CALC	A680101	2022/08/15	2022/08/15	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A677663	2022/08/15	2022/08/15	Junyan Ban
pH @25°C	AT/ALK	A681362	N/A	2022/08/15	Tracy (Jing) Ling
Total Sulphide	SPEC	A680656	N/A	2022/08/15	Amy Phan
Total Dissolved Solids (Filt. Residue)	BAL	A681813	2022/08/16	2022/08/16	Haydee Estilong
Total Kjeldahl Nitrogen (Total)	CALC	A680106	N/A	2022/08/17	Automated Statchk
Nitrogen (Total)	AC/COL	A682059	2022/08/16	2022/08/17	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A683581	N/A	2022/08/17	Ming Dong
Total Suspended Solids (NFR)	BAL	A680407	2022/08/15	2022/08/15	Haydee Estilong
Turbidity	TURB	A679935	N/A	2022/08/14	Hedy Cortes Lopez

Bureau Veritas ID: AZL877 Dup
Sample ID: AEMP-11
Matrix: Water

Collected: 2022/08/10
Relinquished: 2022/08/10
Received: 2022/08/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
True Colour	SPEC/COL	A681906	N/A	2022/08/16	Fadia Mostafa
Elements by ICP - Dissolved	ICPA	A680658	N/A	2022/08/15	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A680181	N/A	2022/08/14	Serena Tian

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Bureau Veritas Job #: C259965
Report Date: 2022/08/22

Advisian
Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

TEST SUMMARY

Bureau Veritas ID: AZL877 Dup
Sample ID: AEMP-11
Matrix: Water

Collected: 2022/08/10
Relinquished: 2022/08/10
Received: 2022/08/13

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (Total Organic)	TECH	A683581	N/A	2022/08/17	Ming Dong

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Bureau Veritas Job #: C259965
Report Date: 2022/08/22

Advisian
Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.0°C

Temperatures upon receipt at Bureau Veritas Labs calgary
Package 1: 8.6 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample AZL876 [AEMP-10] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Sample AZL877 [AEMP-11] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water. Sample was analyzed past method specified hold time for True Colour.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
AZL876	AEMP-10	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AZL876	AEMP-10	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AZL876	AEMP-10	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AZL877	AEMP-11	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AZL877	AEMP-11	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
AZL877	AEMP-11	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A677663	JB9	Method Blank	Total Oil and grease	2022/08/15	<2.0		mg/L	
A679935	HCL	Method Blank	Turbidity	2022/08/14	<0.10		NTU	
A680029	ACR	Method Blank	Nitrite (N)	2022/08/14	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/08/14	<0.010		mg/L	
A680140	BYM	Method Blank	Biochemical Oxygen Demand	2022/08/19	<2.0		mg/L	
A680179	EC0	Method Blank	O-TERPHENYL (sur.)	2022/08/15		95	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/15	<0.10		mg/L	
A680181	STI	Method Blank	Dissolved Aluminum (Al)	2022/08/14	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/08/14	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/08/14	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/08/14	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/08/14	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/08/14	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/08/14	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/08/14	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/08/14	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/08/14	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/08/14	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/08/14	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/08/14	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/08/14	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/08/14	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/08/14	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/08/14	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/08/14	<0.0010		mg/L	
A680182	AFI	Method Blank	Chloride (Cl)	2022/08/14	<1.0		mg/L	
			Sulphate (SO4)	2022/08/14	<1.0		mg/L	
A680325	BYM	Method Blank	Chemical Oxygen Demand	2022/08/15	<10		mg/L	
A680407	HE1	Method Blank	Total Suspended Solids	2022/08/15	<1.0		mg/L	
A680656	AP1	Method Blank	Total Sulphide	2022/08/15	<0.0018		mg/L	
A680658	MPU	Method Blank	Dissolved Iron (Fe)	2022/08/15	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/08/15	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/08/15	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/08/15	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/08/15	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/08/15	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/08/15	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/08/15	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/08/15	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/08/15	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/08/15	<0.10		mg/L	
			Dissolved Boron (B)	2022/08/15	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/08/15	<0.30		mg/L	
A680849	KKM	Method Blank	Dissolved Mercury (Hg)	2022/08/15	<0.0019		ug/L	
A680853	M1S	Method Blank	1,4-Difluorobenzene (sur.)	2022/08/16		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		99	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		100	%	50 - 140
			Benzene	2022/08/16	<0.00040		mg/L	
			Toluene	2022/08/16	<0.00040		mg/L	
			Ethylbenzene	2022/08/16	<0.00040		mg/L	
			m & p-Xylene	2022/08/16	<0.00080		mg/L	
			o-Xylene	2022/08/16	<0.00040		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			F1 (C6-C10)	2022/08/16	<0.10		mg/L	
A681360	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/08/15	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/08/15	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/08/15	<1.0		mg/L	
			Carbonate (CO3)	2022/08/15	<1.0		mg/L	
			Hydroxide (OH)	2022/08/15	<1.0		mg/L	
A681363	JLD	Method Blank	Conductivity	2022/08/15	<2.0		uS/cm	
A681365	JLD	Method Blank	Dissolved Fluoride (F)	2022/08/15	<0.050		mg/L	
A681813	HE1	Method Blank	Total Dissolved Solids	2022/08/16	<10		mg/L	
A681906	FM0	Method Blank	True Colour	2022/08/16	<2.0		PtCo units	
A682059	MAP	Method Blank	Total Nitrogen (N)	2022/08/17	<0.020		mg/L	
A682453	STI	Method Blank	Total Aluminum (Al)	2022/08/17	<0.0030		mg/L	
			Total Chromium (Cr)	2022/08/17	<0.0010		mg/L	
			Total Cobalt (Co)	2022/08/17	<0.00030		mg/L	
			Total Copper (Cu)	2022/08/17	<0.0010		mg/L	
			Total Lead (Pb)	2022/08/17	<0.00020		mg/L	
			Total Antimony (Sb)	2022/08/17	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/08/17	<0.00020		mg/L	
			Total Nickel (Ni)	2022/08/17	<0.00050		mg/L	
			Total Selenium (Se)	2022/08/17	<0.00020		mg/L	
			Total Silver (Ag)	2022/08/17	<0.00010		mg/L	
			Total Arsenic (As)	2022/08/17	<0.00020		mg/L	
			Total Thallium (Tl)	2022/08/17	<0.00020		mg/L	
			Total Tin (Sn)	2022/08/17	<0.0010		mg/L	
			Total Titanium (Ti)	2022/08/17	<0.0010		mg/L	
			Total Uranium (U)	2022/08/17	<0.00010		mg/L	
			Total Vanadium (V)	2022/08/17	<0.0010		mg/L	
			Total Zinc (Zn)	2022/08/17	<0.0030		mg/L	
			Total Beryllium (Be)	2022/08/17	<0.0010		mg/L	
A682460	MPU	Method Blank	Total Iron (Fe)	2022/08/16	<0.060		mg/L	
			Total Lithium (Li)	2022/08/16	<0.020		mg/L	
			Total Magnesium (Mg)	2022/08/16	<0.20		mg/L	
			Total Manganese (Mn)	2022/08/16	<0.0040		mg/L	
			Total Potassium (K)	2022/08/16	<0.30		mg/L	
			Total Sodium (Na)	2022/08/16	<0.50		mg/L	
			Total Strontium (Sr)	2022/08/16	<0.020		mg/L	
			Total Sulphur (S)	2022/08/16	<0.20		mg/L	
			Total Phosphorus (P)	2022/08/16	<0.10		mg/L	
			Total Barium (Ba)	2022/08/16	<0.010		mg/L	
			Total Silicon (Si)	2022/08/16	<0.10		mg/L	
			Total Boron (B)	2022/08/16	<0.020		mg/L	
			Total Calcium (Ca)	2022/08/16	<0.30		mg/L	
A683249	ACR	Method Blank	Total Ammonia (N)	2022/08/16	<0.015		mg/L	
A683581	MDO	Method Blank	Total Organic Carbon (C)	2022/08/17	<0.50		mg/L	
A683598	JAB	Method Blank	Total Mercury (Hg)	2022/08/17	<0.0019		ug/L	
A683814	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/08/17	<0.50		mg/L	
A680140	BYM	RPD [AZL876-03]	Biochemical Oxygen Demand	2022/08/19	NC		%	20
A680325	BYM	RPD [AZL876-10]	Chemical Oxygen Demand	2022/08/15	19		%	20
A680181	STI	RPD [AZL877-06]	Dissolved Aluminum (Al)	2022/08/14	6.1		%	20
			Dissolved Chromium (Cr)	2022/08/14	NC		%	20
			Dissolved Cobalt (Co)	2022/08/14	NC		%	20
			Dissolved Copper (Cu)	2022/08/14	4.2		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Lead (Pb)	2022/08/14	NC		%	20
			Dissolved Antimony (Sb)	2022/08/14	NC		%	20
			Dissolved Molybdenum (Mo)	2022/08/14	3.2		%	20
			Dissolved Nickel (Ni)	2022/08/14	19		%	20
			Dissolved Selenium (Se)	2022/08/14	NC		%	20
			Dissolved Silver (Ag)	2022/08/14	NC		%	20
			Dissolved Arsenic (As)	2022/08/14	3.5		%	20
			Dissolved Thallium (Tl)	2022/08/14	NC		%	20
			Dissolved Tin (Sn)	2022/08/14	NC		%	20
			Dissolved Titanium (Ti)	2022/08/14	NC		%	20
			Dissolved Uranium (U)	2022/08/14	1.3		%	20
			Dissolved Vanadium (V)	2022/08/14	NC		%	20
			Dissolved Zinc (Zn)	2022/08/14	NC		%	20
			Dissolved Beryllium (Be)	2022/08/14	NC		%	20
A680658	MPU	RPD [AZL877-06]	Dissolved Iron (Fe)	2022/08/15	NC		%	20
			Dissolved Lithium (Li)	2022/08/15	NC		%	20
			Dissolved Magnesium (Mg)	2022/08/15	0.85		%	20
			Dissolved Manganese (Mn)	2022/08/15	NC		%	20
			Dissolved Potassium (K)	2022/08/15	1.7		%	20
			Dissolved Sodium (Na)	2022/08/15	1.1		%	20
			Dissolved Strontium (Sr)	2022/08/15	0.91		%	20
			Dissolved Sulphur (S)	2022/08/15	0.63		%	20
			Dissolved Phosphorus (P)	2022/08/15	NC		%	20
			Dissolved Barium (Ba)	2022/08/15	1.3		%	20
			Dissolved Silicon (Si)	2022/08/15	0.96		%	20
			Dissolved Boron (B)	2022/08/15	NC		%	20
			Dissolved Calcium (Ca)	2022/08/15	0.73		%	20
A681906	FM0	RPD [AZL877-01]	True Colour	2022/08/16	0.040		%	20
A683581	MDO	RPD [AZL877-10]	Total Organic Carbon (C)	2022/08/17	3.1		%	20
A680181	STI	Matrix Spike [AZL877-06]	Dissolved Aluminum (Al)	2022/08/14		95	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/14		93	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/14		92	%	80 - 120
			Dissolved Copper (Cu)	2022/08/14		91	%	80 - 120
			Dissolved Lead (Pb)	2022/08/14		96	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/14		101	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/14		97	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/14		92	%	80 - 120
			Dissolved Selenium (Se)	2022/08/14		99	%	80 - 120
			Dissolved Silver (Ag)	2022/08/14		95	%	80 - 120
			Dissolved Arsenic (As)	2022/08/14		91	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/14		96	%	80 - 120
			Dissolved Tin (Sn)	2022/08/14		97	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/14		91	%	80 - 120
			Dissolved Uranium (U)	2022/08/14		94	%	80 - 120
			Dissolved Vanadium (V)	2022/08/14		95	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/14		96	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/14		99	%	80 - 120
A680325	BYM	Matrix Spike [AZL876-10]	Chemical Oxygen Demand	2022/08/15		106	%	80 - 120
A680658	MPU	Matrix Spike [AZL877-06]	Dissolved Iron (Fe)	2022/08/15		103	%	80 - 120
			Dissolved Lithium (Li)	2022/08/15		101	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/15		101	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/15		100	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Potassium (K)	2022/08/15		105	%	80 - 120
			Dissolved Sodium (Na)	2022/08/15		101	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/15		97	%	80 - 120
			Dissolved Sulphur (S)	2022/08/15		98	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/15		100	%	80 - 120
			Dissolved Barium (Ba)	2022/08/15		104	%	80 - 120
			Dissolved Silicon (Si)	2022/08/15		95	%	80 - 120
			Dissolved Boron (B)	2022/08/15		104	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/15		101	%	80 - 120
A681906	FM0	Matrix Spike [AZL877-01]	True Colour	2022/08/16		90	%	80 - 120
A683581	MDO	Matrix Spike [AZL877-10]	Total Organic Carbon (C)	2022/08/17		108	%	80 - 120
A677663	JB9	LCS	Total Oil and grease	2022/08/15		114	%	70 - 130
A679935	HCL	LCS	Turbidity	2022/08/14		103	%	80 - 120
A680029	ACR	LCS	Nitrite (N)	2022/08/14		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/08/14		101	%	80 - 120
A680140	BYM	LCS	Biochemical Oxygen Demand	2022/08/19		92	%	85 - 115
A680179	EC0	LCS	O-TERPHENYL (sur.)	2022/08/15		99	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/08/15		104	%	60 - 140
A680181	STI	LCS	Dissolved Aluminum (Al)	2022/08/14		98	%	80 - 120
			Dissolved Chromium (Cr)	2022/08/14		96	%	80 - 120
			Dissolved Cobalt (Co)	2022/08/14		96	%	80 - 120
			Dissolved Copper (Cu)	2022/08/14		94	%	80 - 120
			Dissolved Lead (Pb)	2022/08/14		97	%	80 - 120
			Dissolved Antimony (Sb)	2022/08/14		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/08/14		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/08/14		95	%	80 - 120
			Dissolved Selenium (Se)	2022/08/14		102	%	80 - 120
			Dissolved Silver (Ag)	2022/08/14		98	%	80 - 120
			Dissolved Arsenic (As)	2022/08/14		95	%	80 - 120
			Dissolved Thallium (Tl)	2022/08/14		96	%	80 - 120
			Dissolved Tin (Sn)	2022/08/14		98	%	80 - 120
			Dissolved Titanium (Ti)	2022/08/14		84	%	80 - 120
			Dissolved Uranium (U)	2022/08/14		95	%	80 - 120
			Dissolved Vanadium (V)	2022/08/14		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/08/14		99	%	80 - 120
			Dissolved Beryllium (Be)	2022/08/14		99	%	80 - 120
A680182	AFI	LCS	Chloride (Cl)	2022/08/14		104	%	80 - 120
			Sulphate (SO4)	2022/08/14		101	%	80 - 120
A680325	BYM	LCS	Chemical Oxygen Demand	2022/08/15		102	%	80 - 120
A680407	HE1	LCS	Total Suspended Solids	2022/08/15		89	%	80 - 120
A680656	AP1	LCS	Total Sulphide	2022/08/15		92	%	80 - 120
A680658	MPU	LCS	Dissolved Iron (Fe)	2022/08/15		100	%	80 - 120
			Dissolved Lithium (Li)	2022/08/15		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/08/15		97	%	80 - 120
			Dissolved Manganese (Mn)	2022/08/15		96	%	80 - 120
			Dissolved Potassium (K)	2022/08/15		102	%	80 - 120
			Dissolved Sodium (Na)	2022/08/15		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/08/15		98	%	80 - 120
			Dissolved Sulphur (S)	2022/08/15		94	%	80 - 120
			Dissolved Phosphorus (P)	2022/08/15		95	%	80 - 120
			Dissolved Barium (Ba)	2022/08/15		103	%	80 - 120
			Dissolved Silicon (Si)	2022/08/15		94	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Boron (B)	2022/08/15		99	%	80 - 120
			Dissolved Calcium (Ca)	2022/08/15		98	%	80 - 120
A680849	KKM	LCS	Dissolved Mercury (Hg)	2022/08/15		114	%	80 - 120
A680853	M1S	LCS	1,4-Difluorobenzene (sur.)	2022/08/16		95	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/08/16		100	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/08/16		97	%	50 - 140
			Benzene	2022/08/16		93	%	60 - 130
			Toluene	2022/08/16		89	%	60 - 130
			Ethylbenzene	2022/08/16		94	%	60 - 130
			m & p-Xylene	2022/08/16		94	%	60 - 130
			o-Xylene	2022/08/16		96	%	60 - 130
			F1 (C6-C10)	2022/08/16		110	%	60 - 140
A681360	JLD	LCS	Alkalinity (Total as CaCO3)	2022/08/15		102	%	80 - 120
A681362	JLD	LCS	pH	2022/08/15		100	%	97 - 103
A681363	JLD	LCS	Conductivity	2022/08/15		101	%	90 - 110
A681365	JLD	LCS	Dissolved Fluoride (F)	2022/08/15		93	%	80 - 120
A681813	HE1	LCS	Total Dissolved Solids	2022/08/16		98	%	80 - 120
A681906	FM0	LCS	True Colour	2022/08/16		89	%	80 - 120
A682059	MAP	LCS	Total Nitrogen (N)	2022/08/17		86	%	80 - 120
A682453	STI	LCS	Total Aluminum (Al)	2022/08/17		86	%	80 - 120
			Total Chromium (Cr)	2022/08/17		90	%	80 - 120
			Total Cobalt (Co)	2022/08/17		94	%	80 - 120
			Total Copper (Cu)	2022/08/17		92	%	80 - 120
			Total Lead (Pb)	2022/08/17		96	%	80 - 120
			Total Antimony (Sb)	2022/08/17		106	%	80 - 120
			Total Molybdenum (Mo)	2022/08/17		100	%	80 - 120
			Total Nickel (Ni)	2022/08/17		92	%	80 - 120
			Total Selenium (Se)	2022/08/17		97	%	80 - 120
			Total Silver (Ag)	2022/08/17		102	%	80 - 120
			Total Arsenic (As)	2022/08/17		90	%	80 - 120
			Total Thallium (Tl)	2022/08/17		95	%	80 - 120
			Total Tin (Sn)	2022/08/17		102	%	80 - 120
			Total Titanium (Ti)	2022/08/17		94	%	80 - 120
			Total Uranium (U)	2022/08/17		96	%	80 - 120
			Total Vanadium (V)	2022/08/17		92	%	80 - 120
			Total Zinc (Zn)	2022/08/17		95	%	80 - 120
			Total Beryllium (Be)	2022/08/17		84	%	80 - 120
A682460	MPU	LCS	Total Iron (Fe)	2022/08/16		108	%	80 - 120
			Total Lithium (Li)	2022/08/16		102	%	80 - 120
			Total Magnesium (Mg)	2022/08/16		105	%	80 - 120
			Total Manganese (Mn)	2022/08/16		105	%	80 - 120
			Total Potassium (K)	2022/08/16		104	%	80 - 120
			Total Sodium (Na)	2022/08/16		100	%	80 - 120
			Total Strontium (Sr)	2022/08/16		100	%	80 - 120
			Total Sulphur (S)	2022/08/16		97	%	80 - 120
			Total Phosphorus (P)	2022/08/16		101	%	80 - 120
			Total Barium (Ba)	2022/08/16		104	%	80 - 120
			Total Silicon (Si)	2022/08/16		103	%	80 - 120
			Total Boron (B)	2022/08/16		103	%	80 - 120
			Total Calcium (Ca)	2022/08/16		102	%	80 - 120
A683249	ACR	LCS	Total Ammonia (N)	2022/08/17		104	%	80 - 120
A683581	MDO	LCS	Total Organic Carbon (C)	2022/08/17		112	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A683598	JAB	LCS	Total Mercury (Hg)	2022/08/17		99	%	80 - 120
A683814	MDO	LCS	Dissolved Organic Carbon (C)	2022/08/17		111	%	80 - 120
A682059	MAP	SRM	Total Nitrogen (N)	2022/08/17		86	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C259965
Report Date: 2022/08/22

Advisian
Task Order#: 417085-42051.22200
Site#:
Site Location: Norman Wells, NT
Project #: 417085-42051.22200

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Pushpa Gurung, Laboratory Supervisor

Sandy Yuan, M.Sc., QP, Scientific Specialist

Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist

Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

Bureau Veritas Proprietary Software
Logiciel Propriétaire de Bureau Veritas

Automated Statchk

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Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Maxxam
A Bureau Veritas Group Company

☐ Calgary
4000 19th St. NE, T2E 6P8
Phone: (403) 291-3077
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☒ Edmonton
9331 - 48 Street, T6B 2R4
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EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page 1 of 1

C of C # 299400

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: Worley (Advisian)
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150, 205 Quarry Park Blvd SE Calgary, AB T2C 3E7	Address: 150, 205 Quarry Pk Blvd SE Calgary, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): STACY GIBB / NEAL TANNA	Consultant Project #: 417085-42051-22200

FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	VOC	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	GRAIN SIZE (75 MICRON)	TEXTURE (% SAND, SILT, CLAY)	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS: TOT ☒ DIS ☒	MERCURY: TOTAL ☒ DISSOLVED ☒	SALINITY SOIL	FERTILIZER SOIL	FERTILIZER WATER	NUTRIENTS SOIL	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	BASIC CLASS II LANDFILL PKG	COD, TOC, TKN, BOD	TRUE COLOR, TSS, TOS, TURBIDITY	NITRATE, NITRITE, AMMONIA - N	carbon (DOC)	Total Sulphide	Total & diss. Lead	Oil & Grease	Fluoride
1 AEMP-10		X		~~X~~	1	2022/08/10	13:58	X				X							X	X					X			X	X	X	X	X	X	X	X
2 AEMP-11		X		~~X~~	1	2022/08/10	14:25	X				X							X	X					X			X	X	X	X	X	X	X	X	X
3																																				
4																																				
5																																				
6																																				
7																																				
8																																				
9																																				
10																																				

IOL SITE LOCATION: Norman Wells, NT

IOL PROJECT # (if applicable): NA

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☒ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: email: canada.chemistry@worley.com carol.lordatatrack@worley.com
2 day rush

JARS USED & NOT SUBMITTED (Enter N/A for Water): NA

TURNAROUND TIME
Standard (5 days) ☒
Rush (3 days) ☐
(2 days) ☒
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID #				YES	NO	COOLER ID #				YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	5 (1)	5 (2)	5 (3)	SEAL PRESENT		TEMP °C	13.3 (1)	5.4 (2)	7.3 (3)	SEAL PRESENT		TEMP °C	(1)	(2)	(3)
SEAL INTACT	✓						SEAL INTACT						SEAL INTACT					
COOLING MEDIA PRESENT	✓						COOLING MEDIA PRESENT						COOLING MEDIA PRESENT					

LAB USE ONLY
MAXXAM JOB # C259965

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	STACY GIBB	2022/08/10	16:30	1. Deji Wu		2022/08/13	09:52
2.	DEJI WU	2022/08/13	10:40	2.	Sarah Dolan	2022/08/13	15:03
3.				3.			

SAMPLES
LABELED BY: DW2
VERIFIED BY: MBY

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299525

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/07
Report #: R3245251
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275325
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

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Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299525

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/07
Report #: R3245251
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275325
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299525

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/07
Report #: R3245251
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275325

Received: 2022/09/28, 15:00

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Mary (Xiaohong) Xu
Customer Solutions Representative
07 Oct 2022 16:02:38

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA200			BDA200			BDA201		
Sampling Date		2022/09/24 14:24			2022/09/24 14:24			2022/09/25 16:30		
COC Number		299525			299525			299525		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon										
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A735612				<0.10	0.10	A735612
Volatiles										
Benzene	mg/L	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195
Toluene	mg/L	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195
Ethylbenzene	mg/L	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195
m & p-Xylene	mg/L	<0.00080	0.00080	A736195	<0.00080	0.00080	A736195	<0.00080	0.00080	A736195
o-Xylene	mg/L	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195	<0.00040	0.00040	A736195
Xylenes (Total)	mg/L	<0.00089	0.00089	A735565				<0.00089	0.00089	A735565
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A735565				<0.10	0.10	A735565
F1 (C6-C10)	mg/L	<0.10	0.10	A736195	<0.10	0.10	A736195	<0.10	0.10	A736195
Extraction Surrogate Recovery (%)										
O-TERPHENYL (sur.)	%	95		A735612				92		A735612
Instrument Surrogate Recovery (%)										
1,4-Difluorobenzene (sur.)	%	103		A736195	103		A736195	103		A736195
4-Bromofluorobenzene (sur.)	%	97		A736195	97		A736195	97		A736195
D4-1,2-Dichloroethane (sur.)	%	103		A736195	104		A736195	105		A736195

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA202		
Sampling Date		2022/09/24 15:40		
COC Number		299525		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A735612
Volatiles				
Benzene	mg/L	<0.00040	0.00040	A736195
Toluene	mg/L	<0.00040	0.00040	A736195
Ethylbenzene	mg/L	<0.00040	0.00040	A736195
m & p-Xylene	mg/L	<0.00080	0.00080	A736195
o-Xylene	mg/L	<0.00040	0.00040	A736195
Xylenes (Total)	mg/L	<0.00089	0.00089	A735565
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A735565
F1 (C6-C10)	mg/L	<0.10	0.10	A736195
Extraction Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	98		A735612
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	105		A736195
4-Bromofluorobenzene (sur.)	%	96		A736195
D4-1,2-Dichloroethane (sur.)	%	102		A736195
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		BDA200	BDA201	BDA202		
Sampling Date		2022/09/24 14:24	2022/09/25 16:30	2022/09/24 15:40		
COC Number		299525	299525	299525		
	UNITS	**AEMP-04**	**AEMP-08**	**AEMP-06**	**RDL**	**QC Batch**
Calculated Parameters						
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.16	0.19	0.24	0.020	A734969
Nutrients						
Total Nitrogen (N)	mg/L	0.21	0.25	0.30	0.020	A739221
RDL = Reportable Detection Limit						

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA200			BDA200			BDA201		
Sampling Date		2022/09/24 14:24			2022/09/24 14:24			2022/09/25 16:30		
COC Number		299525			299525			299525		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/L	<0.000020	0.000020	A734972				0.000042	0.000020	A734972
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A736248	<0.0019	0.0019	A736248	<0.0019	0.0019	A736248
Total Aluminum (Al)	mg/L	0.0054	0.0030	A736221				0.49	0.0030	A736221
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A736221				<0.00060	0.00060	A736221
Total Arsenic (As)	mg/L	0.00020	0.00020	A736221				0.00073	0.00020	A736221
Total Barium (Ba)	mg/L	0.070	0.010	A736231				0.056	0.010	A736231
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A736221				<0.0010	0.0010	A736221
Total Boron (B)	mg/L	0.029	0.020	A736231				<0.020	0.020	A736231
Total Calcium (Ca)	mg/L	79	0.30	A736231				33	0.30	A736231
Total Chromium (Cr)	mg/L	<0.0010	0.0010	A736221				<0.0010	0.0010	A736221
Total Cobalt (Co)	mg/L	<0.00030	0.00030	A736221				<0.00030	0.00030	A736221
Total Copper (Cu)	mg/L	<0.0010	0.0010	A736221				0.0020	0.0010	A736221
Total Iron (Fe)	mg/L	0.062	0.060	A736231				1.0	0.060	A736231
Total Lead (Pb)	mg/L	<0.00020	0.00020	A736221				0.00054	0.00020	A736221
Total Lithium (Li)	mg/L	<0.020	0.020	A736231				<0.020	0.020	A736231
Total Magnesium (Mg)	mg/L	31	0.20	A736231				11	0.20	A736231
Total Manganese (Mn)	mg/L	0.0063	0.0040	A736231				0.024	0.0040	A736231
Total Molybdenum (Mo)	mg/L	0.0019	0.00020	A736221				0.00095	0.00020	A736221
Total Nickel (Ni)	mg/L	<0.00050	0.00050	A736221				0.0023	0.00050	A736221
Total Phosphorus (P)	mg/L	<0.10	0.10	A736231				<0.10	0.10	A736231
Total Potassium (K)	mg/L	1.1	0.30	A736231				1.2	0.30	A736231
Total Selenium (Se)	mg/L	<0.00020	0.00020	A736221				0.00022	0.00020	A736221
Total Silicon (Si)	mg/L	2.1	0.50	A736231				2.5	0.50	A736231
Total Silver (Ag)	mg/L	<0.00010	0.00010	A736221				<0.00010	0.00010	A736221
Total Sodium (Na)	mg/L	25	0.50	A736231				8.7	0.50	A736231
Total Strontium (Sr)	mg/L	1.4	0.020	A736231				0.22	0.020	A736231
Total Sulphur (S)	mg/L	51	0.20	A736231				11	0.20	A736231
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A736221				<0.00020	0.00020	A736221
Total Tin (Sn)	mg/L	<0.0010	0.0010	A736221				<0.0010	0.0010	A736221
Total Titanium (Ti)	mg/L	<0.0010	0.0010	A736221				0.014	0.0010	A736221

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA200			BDA200			BDA201		
Sampling Date		2022/09/24 14:24			2022/09/24 14:24			2022/09/25 16:30		
COC Number		299525			299525			299525		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0011	0.00010	A736221				0.00063	0.00010	A736221
Total Vanadium (V)	mg/L	<0.0010	0.0010	A736221				0.0021	0.0010	A736221
Total Zinc (Zn)	mg/L	<0.0030	0.0030	A736221				0.0062	0.0030	A736221

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA202		
Sampling Date		2022/09/24 15:40		
COC Number		299525		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**
Elements				
Total Cadmium (Cd)	mg/L	0.000089	0.000020	A734972
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A736248
Total Aluminum (Al)	mg/L	0.88	0.0030	A736196
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A736196
Total Arsenic (As)	mg/L	0.0013	0.00020	A736196
Total Barium (Ba)	mg/L	0.079	0.010	A736201
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A736196
Total Boron (B)	mg/L	<0.020	0.020	A736201
Total Calcium (Ca)	mg/L	34	0.30	A736201
Total Chromium (Cr)	mg/L	0.0023	0.0010	A736196
Total Cobalt (Co)	mg/L	0.00097	0.00030	A736196
Total Copper (Cu)	mg/L	0.0035	0.0010	A736196
Total Iron (Fe)	mg/L	2.4	0.060	A736201
Total Lead (Pb)	mg/L	0.0013	0.00020	A736196
Total Lithium (Li)	mg/L	<0.020	0.020	A736201
Total Magnesium (Mg)	mg/L	10	0.20	A736201
Total Manganese (Mn)	mg/L	0.053	0.0040	A736201
Total Molybdenum (Mo)	mg/L	0.0010	0.00020	A736196
Total Nickel (Ni)	mg/L	0.0044	0.00050	A736196
Total Phosphorus (P)	mg/L	<0.10	0.10	A736201
Total Potassium (K)	mg/L	1.5	0.30	A736201
Total Selenium (Se)	mg/L	0.00030	0.00020	A736196
Total Silicon (Si)	mg/L	4.8	0.50	A736201
Total Silver (Ag)	mg/L	<0.00010	0.00010	A736196
Total Sodium (Na)	mg/L	9.0	0.50	A736201
Total Strontium (Sr)	mg/L	0.19	0.020	A736201
Total Sulphur (S)	mg/L	12	0.20	A736201
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A736196
Total Tin (Sn)	mg/L	<0.0010	0.0010	A736196
Total Titanium (Ti)	mg/L	0.021	0.0010	A736196
Total Uranium (U)	mg/L	0.00071	0.00010	A736196
RDL = Reportable Detection Limit				

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA202		
Sampling Date		2022/09/24 15:40		
COC Number		299525		
	UNITS	**AEMP-06**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	0.0041	0.0010	A736196
Total Zinc (Zn)	mg/L	0.012	0.0030	A736196
RDL = Reportable Detection Limit				

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA200			BDA200			BDA201		
Sampling Date		2022/09/24 14:24			2022/09/24 14:24			2022/09/25 16:30		
COC Number		299525			299525			299525		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	330	0.50	A735553				110	0.50	A735553
Ion Balance (% Difference)	%	2.6	N/A	A735554				6.2	N/A	A735554
Nitrate (N)	mg/L	0.054	0.010	A735584				0.059	0.010	A735584
Nitrate (NO3)	mg/L	0.24	0.044	A735556				0.26	0.044	A735556
Nitrite (NO2)	mg/L	<0.033	0.033	A735556				<0.033	0.033	A735556
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A734706				<0.0020	0.0020	A734706
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A735129				<2.0	2.0	A736131
Chemical Oxygen Demand	mg/L	20	10	A736249				19	10	A736249
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A735347				<0.000020	0.000020	A735347
Misc. Inorganics										
Conductivity	uS/cm	710	2.0	A736192				260	2.0	A736192
Dissolved Organic Carbon (C)	mg/L	3.3	0.50	A738972				3.6	0.50	A738972
pH	pH	7.95	N/A	A736189				6.90	N/A	A736189
Total Organic Carbon (C)	mg/L	2.6	0.50	A738977				3.5	0.50	A738977
Total Dissolved Solids	mg/L	460	10	A736215				170	10	A736224
Total Suspended Solids	mg/L	<1.0	1.0	A736207				34	0.98	A736863
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A736188				<1.0	1.0	A736188
Alkalinity (Total as CaCO3)	mg/L	200	1.0	A736188				96	1.0	A736188
Bicarbonate (HCO3)	mg/L	240	1.0	A736188				120	1.0	A736188
Carbonate (CO3)	mg/L	<1.0	1.0	A736188				<1.0	1.0	A736188
Dissolved Fluoride (F)	mg/L	0.22	0.050	A736197				0.10	0.050	A736197
Hydroxide (OH)	mg/L	<1.0	1.0	A736188				<1.0	1.0	A736188
Total Sulphide	mg/L	<0.0018	0.0018	A736271	<0.0018	0.0018	A736271	<0.0018	0.0018	A736271
Chloride (Cl)	mg/L	31	1.0	A736424				10	1.0	A736424
Sulphate (SO4)	mg/L	150	5.0	A736424				36	1.0	A736424

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA200			BDA200			BDA201		
Sampling Date		2022/09/24 14:24			2022/09/24 14:24			2022/09/25 16:30		
COC Number		299525			299525			299525		
	UNITS	**AEMP-04**	**RDL**	**QC Batch**	**AEMP-04 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-08**	**RDL**	**QC Batch**
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A739248				<0.015	0.015	A739250
Nitrite (N)	mg/L	<0.010	0.010	A738456				<0.010	0.010	A738456
Nitrate plus Nitrite (N)	mg/L	0.054	0.010	A738456				0.059	0.010	A738456
Misc. Organics										
Total Oil and grease	mg/L	<2.0	2.0	A736302				<2.0	2.0	A736302
Physical Properties										
True Colour	PtCo units	5.6	2.0	A735717				6.0	2.0	A735717
Physical Properties										
Turbidity	NTU	0.56	0.10	A735970				15	0.10	A735970

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA201			BDA202			BDA202		
Sampling Date		2022/09/25 16:30			2022/09/24 15:40			2022/09/24 15:40		
COC Number		299525			299525			299525		
	UNITS	**AEMP-08 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L				110	0.50	A735553			
Ion Balance (% Difference)	%				4.0	N/A	A735554			
Nitrate (N)	mg/L				0.060	0.010	A735584			
Nitrate (NO3)	mg/L				0.27	0.044	A735556			
Nitrite (NO2)	mg/L				<0.033	0.033	A735556			
Sulphide (as H2S)	mg/L				<0.0020	0.0020	A734706			
Demand Parameters										
Biochemical Oxygen Demand	mg/L				<2.0 (1)	2.0	A735129			
Chemical Oxygen Demand	mg/L				22	10	A736249			
Elements										
Dissolved Cadmium (Cd)	mg/L				<0.000020	0.000020	A735347			
Misc. Inorganics										
Conductivity	uS/cm				260	2.0	A736087	260	2.0	A736087
Dissolved Organic Carbon (C)	mg/L				4.2	0.50	A738972			
pH	pH				6.79	N/A	A736086	6.87	N/A	A736086
Total Organic Carbon (C)	mg/L				3.3	0.50	A738977			
Total Dissolved Solids	mg/L	170	10	A736224	160	10	A736215			
Total Suspended Solids	mg/L				95	0.97	A736207			
Anions										
Alkalinity (PP as CaCO3)	mg/L				<1.0	1.0	A736085	<1.0	1.0	A736085
Alkalinity (Total as CaCO3)	mg/L				89	1.0	A736085	90	1.0	A736085
Bicarbonate (HCO3)	mg/L				110	1.0	A736085	110	1.0	A736085
Carbonate (CO3)	mg/L				<1.0	1.0	A736085	<1.0	1.0	A736085
Dissolved Fluoride (F)	mg/L				0.096	0.050	A736088	0.096	0.050	A736088
Hydroxide (OH)	mg/L				<1.0	1.0	A736085	<1.0	1.0	A736085
Total Sulphide	mg/L				<0.0018	0.0018	A736271			
Chloride (Cl)	mg/L				9.5	1.0	A736424	9.6	1.0	A736424
Sulphate (SO4)	mg/L				38	1.0	A736424	34	1.0	A736424

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA201			BDA202			BDA202		
Sampling Date		2022/09/25 16:30			2022/09/24 15:40			2022/09/24 15:40		
COC Number		299525			299525			299525		
	UNITS	**AEMP-08 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-06**	**RDL**	**QC Batch**	**AEMP-06 Lab-Dup**	**RDL**	**QC Batch**
Nutrients										
Total Ammonia (N)	mg/L				0.067	0.015	A739250			
Nitrite (N)	mg/L				<0.010	0.010	A738456			
Nitrate plus Nitrite (N)	mg/L				0.060	0.010	A738456			
Misc. Organics										
Total Oil and grease	mg/L				4.0	2.0	A736302			
Physical Properties										
True Colour	PtCo units				6.4	2.0	A735717			
Physical Properties										
Turbidity	NTU				38	0.10	A735970			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		BDA200	BDA201	BDA202		
Sampling Date		2022/09/24 14:24	2022/09/25 16:30	2022/09/24 15:40		
COC Number		299525	299525	299525		
	UNITS	**AEMP-04**	**AEMP-08**	**AEMP-06**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A734968
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735610
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735610
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A735610
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735610
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735610
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735610
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735610
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735610
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735610
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735610
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735610
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735610
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735610
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735610
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735610
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735610
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A735610
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A735610
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	111	95	97		A735610
D8-ACENAPHTHYLENE (sur.)	%	107	91	94		A735610
D8-NAPHTHALENE (sur.)	%	98	86	88		A735610
TERPHENYL-D14 (sur.)	%	123	103	108		A735610
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		BDA200	BDA201	BDA202		
Sampling Date		2022/09/24 14:24	2022/09/25 16:30	2022/09/24 15:40		
COC Number		299525	299525	299525		
	UNITS	**AEMP-04**	**AEMP-08**	**AEMP-06**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A736253
RDL = Reportable Detection Limit						

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Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		BDA200		BDA201		BDA202		
Sampling Date		2022/09/24 14:24		2022/09/25 16:30		2022/09/24 15:40		
COC Number		299525		299525		299525		
	UNITS	**AEMP-04**	**QC Batch**	**AEMP-08**	**QC Batch**	**AEMP-06**	**RDL**	**QC Batch**
Elements								
Dissolved Aluminum (Al)	mg/L	<0.0030	A740275	0.011	A739712	0.0089	0.0030	A740275
Dissolved Antimony (Sb)	mg/L	<0.00060	A740275	<0.00060	A739712	<0.00060	0.00060	A740275
Dissolved Arsenic (As)	mg/L	<0.00020	A740275	0.00029	A739712	0.00033	0.00020	A740275
Dissolved Barium (Ba)	mg/L	0.073	A739349	0.049	A739349	0.047	0.010	A739349
Dissolved Beryllium (Be)	mg/L	<0.0010	A740275	<0.0010	A739712	<0.0010	0.0010	A740275
Dissolved Boron (B)	mg/L	<0.020	A739349	<0.020	A739349	<0.020	0.020	A739349
Dissolved Calcium (Ca)	mg/L	79	A739349	30	A739349	30	0.30	A739349
Dissolved Chromium (Cr)	mg/L	<0.0010	A740275	<0.0010	A739712	<0.0010	0.0010	A740275
Dissolved Cobalt (Co)	mg/L	<0.00030	A740275	<0.00030	A739712	<0.00030	0.00030	A740275
Dissolved Copper (Cu)	mg/L	<0.0010	A740275	0.0031	A739712	0.0016	0.0010	A740275
Dissolved Iron (Fe)	mg/L	<0.060	A739349	<0.060	A739349	<0.060	0.060	A739349
Dissolved Lead (Pb)	mg/L	<0.00020	A740275	<0.00020	A739712	<0.00020	0.00020	A740275
Dissolved Lithium (Li)	mg/L	<0.020	A739349	<0.020	A739349	<0.020	0.020	A739349
Dissolved Magnesium (Mg)	mg/L	31	A739349	9.3	A739349	9.1	0.20	A739349
Dissolved Manganese (Mn)	mg/L	0.0046	A739349	<0.0040	A739349	0.010	0.0040	A739349
Dissolved Molybdenum (Mo)	mg/L	0.0016	A740275	0.0018	A747438	0.0017	0.00020	A739712
Dissolved Nickel (Ni)	mg/L	0.00059	A740275	0.0013	A739712	0.0010	0.00050	A740275
Dissolved Phosphorus (P)	mg/L	<0.10	A739349	<0.10	A739349	<0.10	0.10	A739349
Dissolved Potassium (K)	mg/L	1.1	A739349	0.88	A739349	0.93	0.30	A739349
Dissolved Selenium (Se)	mg/L	<0.00020	A740275	0.00022	A739712	0.00023	0.00020	A740275
Dissolved Silicon (Si)	mg/L	1.9	A739349	1.4	A739349	1.3	0.50	A739349
Dissolved Silver (Ag)	mg/L	<0.00010	A740275	<0.00010	A739712	<0.00010	0.00010	A740275
Dissolved Sodium (Na)	mg/L	23	A739349	7.9	A739349	7.9	0.50	A739349
Dissolved Strontium (Sr)	mg/L	1.5	A739349	0.22	A739349	0.21	0.020	A739349
Dissolved Sulphur (S)	mg/L	49	A739349	11	A739349	10	0.20	A739349
Dissolved Thallium (Tl)	mg/L	<0.00020	A740275	<0.00020	A739712	<0.00020	0.00020	A740275
Dissolved Tin (Sn)	mg/L	<0.0010	A740275	<0.0010	A739712	<0.0010	0.0010	A740275
Dissolved Titanium (Ti)	mg/L	<0.0010	A740275	<0.0010	A739712	<0.0010	0.0010	A740275
Dissolved Uranium (U)	mg/L	0.0011	A740275	0.00057	A739712	0.00057	0.00010	A740275
Dissolved Vanadium (V)	mg/L	<0.0010	A740275	<0.0010	A739712	<0.0010	0.0010	A740275
Dissolved Zinc (Zn)	mg/L	<0.0030	A740275	0.0031	A739712	0.0041	0.0030	A740275
RDL = Reportable Detection Limit								

Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA200
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A735565	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A735347	N/A	2022/10/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736424	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735612	2022/09/30	2022/10/01	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A735553	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A736253	2022/09/30	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A736248	2022/09/30	2022/09/30	Kiran Kumari
Elements by ICP - Dissolved	ICPA	A739349	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736231	2022/09/30	2022/09/30	Jason Bao
Elements by ICPMS - Dissolved	ICPM	A740275	N/A	2022/10/06	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A736221	2022/09/30	2022/10/02	Karen Graham
Ion Balance	CALC	A735554	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A735556	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A738456	N/A	2022/10/01	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735584	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A736302	2022/10/03	2022/10/03	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/01	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735610	2022/09/30	2022/10/01	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736215	2022/09/30	2022/09/30	Silkiben Patel
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739221	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736207	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735970	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA200 Dup
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong

Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA200 Dup
Sample ID: AEMP-04
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Total) by CV	CV	A736248	2022/09/30	2022/09/30	Kiran Kumari
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo

Bureau Veritas ID: BDA201
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A736131	2022/09/30	2022/10/05	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A735565	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A735347	N/A	2022/10/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736424	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735612	2022/09/30	2022/10/01	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A735553	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A736253	2022/09/30	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A736248	2022/09/30	2022/09/30	Kiran Kumari
Elements by ICP - Dissolved	ICPA	A739349	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736231	2022/09/30	2022/09/30	Jason Bao
Elements by ICPMS - Dissolved	ICPM	A739712	N/A	2022/10/05	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A736221	2022/09/30	2022/10/02	Karen Graham
Ion Balance	CALC	A735554	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739250	N/A	2022/10/04	Adam Fishleigh
Nitrate and Nitrite	CALC	A735556	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A738456	N/A	2022/10/01	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735584	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A736302	2022/10/03	2022/10/03	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/01	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735610	2022/09/30	2022/10/01	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739221	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736863	2022/09/30	2022/09/30	Silkiben Patel

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA201
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	TURB	A735970	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA201 Dup
Sample ID: AEMP-08
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA202
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A735565	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A735347	N/A	2022/10/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736424	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735612	2022/09/30	2022/10/01	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A735553	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A736253	2022/09/30	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A736248	2022/09/30	2022/09/30	Kiran Kumari
Elements by ICP - Dissolved	ICPA	A739349	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740275	N/A	2022/10/06	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A735554	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739250	N/A	2022/10/04	Adam Fishleigh
Nitrate and Nitrite	CALC	A735556	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A738456	N/A	2022/10/01	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735584	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A736302	2022/10/03	2022/10/03	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/01	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735610	2022/09/30	2022/10/01	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C275325
Report Date: 2022/10/07

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA202
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736215	2022/09/30	2022/09/30	Silkiben Patel
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739221	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736207	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735970	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA202 Dup
Sample ID: AEMP-06
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Chloride/Sulphate by Auto Colourimetry	KONE	A736424	N/A	2022/09/30	Carlo Truong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 2.3 degrees C
package 2: 3.7 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample BDA200 [AEMP-04] : Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA201 [AEMP-08] : Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA202 [AEMP-06] : Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA201, Elements by ICPMS - Dissolved: Test repeated.
Sample BDA202, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
BDA201	AEMP-08	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA201	AEMP-08	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA201	AEMP-08	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A735129	MB5	Method Blank	Biochemical Oxygen Demand	2022/10/04	<2.0		mg/L	
A735610	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/10/01		97	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/01		103	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/01		93	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/01		78	%	50 - 130
			Acenaphthene	2022/10/01	<0.00010		mg/L	
			Acenaphthylene	2022/10/01	<0.00010		mg/L	
			Acridine	2022/10/01	<0.000040		mg/L	
			Anthracene	2022/10/01	<0.000010		mg/L	
			Benzo(a)anthracene	2022/10/01	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/10/01	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/10/01	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/10/01	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/10/01	<0.000050		mg/L	
			Benzo(a)pyrene	2022/10/01	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/10/01	<0.000050		mg/L	
			Chrysene	2022/10/01	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/10/01	<0.0000075		mg/L	
			Fluoranthene	2022/10/01	<0.000010		mg/L	
			Fluorene	2022/10/01	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/10/01	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/10/01	<0.00010		mg/L	
			2-Methylnaphthalene	2022/10/01	<0.00010		mg/L	
			Naphthalene	2022/10/01	<0.00010		mg/L	
			Phenanthrene	2022/10/01	<0.000050		mg/L	
			Perylene	2022/10/01	<0.000050		mg/L	
			Pyrene	2022/10/01	<0.000020		mg/L	
			Quinoline	2022/10/01	<0.00020		mg/L	
A735612	GG3	Method Blank	O-TERPHENYL (sur.)	2022/10/01		95	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/10/01	<0.10		mg/L	
A735717	GPJ	Method Blank	True Colour	2022/09/29	<2.0		PtCo units	
A735970	KK9	Method Blank	Turbidity	2022/09/29	<0.10		NTU	
A736085	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736087	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736088	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736131	MB5	Method Blank	Biochemical Oxygen Demand	2022/10/05	<2.0		mg/L	
A736188	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736192	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736195	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/10/01		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/10/01		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/10/01		104	%	50 - 140
			Benzene	2022/10/01	<0.00040		mg/L	
			Toluene	2022/10/01	<0.00040		mg/L	
			Ethylbenzene	2022/10/01	<0.00040		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			m & p-Xylene	2022/10/01	<0.00080		mg/L	
			o-Xylene	2022/10/01	<0.00040		mg/L	
			F1 (C6-C10)	2022/10/01	<0.10		mg/L	
A736196	KH2	Method Blank	Total Aluminum (Al)	2022/10/03	<0.0030		mg/L	
			Total Chromium (Cr)	2022/10/03	<0.0010		mg/L	
			Total Cobalt (Co)	2022/10/03	<0.00030		mg/L	
			Total Copper (Cu)	2022/10/03	<0.0010		mg/L	
			Total Lead (Pb)	2022/10/03	<0.00020		mg/L	
			Total Antimony (Sb)	2022/10/03	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/10/03	<0.00020		mg/L	
			Total Nickel (Ni)	2022/10/03	<0.00050		mg/L	
			Total Selenium (Se)	2022/10/03	<0.00020		mg/L	
			Total Silver (Ag)	2022/10/03	<0.00010		mg/L	
			Total Arsenic (As)	2022/10/03	<0.00020		mg/L	
			Total Thallium (Tl)	2022/10/03	<0.00020		mg/L	
			Total Tin (Sn)	2022/10/03	<0.0010		mg/L	
			Total Titanium (Ti)	2022/10/03	<0.0010		mg/L	
			Total Uranium (U)	2022/10/03	<0.00010		mg/L	
			Total Vanadium (V)	2022/10/03	<0.0010		mg/L	
			Total Zinc (Zn)	2022/10/03	<0.0030		mg/L	
			Total Beryllium (Be)	2022/10/03	<0.0010		mg/L	
A736197	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736201	MPU	Method Blank	Total Iron (Fe)	2022/10/03	<0.060		mg/L	
			Total Lithium (Li)	2022/10/03	<0.020		mg/L	
			Total Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Total Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Total Potassium (K)	2022/10/03	<0.30		mg/L	
			Total Sodium (Na)	2022/10/03	<0.50		mg/L	
			Total Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Total Sulphur (S)	2022/10/03	<0.20		mg/L	
			Total Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Total Barium (Ba)	2022/10/03	<0.010		mg/L	
			Total Silicon (Si)	2022/10/03	<0.50		mg/L	
			Total Boron (B)	2022/10/03	<0.020		mg/L	
			Total Calcium (Ca)	2022/10/03	<0.30		mg/L	
A736207	SKP	Method Blank	Total Suspended Solids	2022/09/30	<1.0		mg/L	
A736215	SKP	Method Blank	Total Dissolved Solids	2022/09/30	<10		mg/L	
A736221	KGR	Method Blank	Total Aluminum (Al)	2022/10/03	<0.0030		mg/L	
			Total Chromium (Cr)	2022/10/03	<0.0010		mg/L	
			Total Cobalt (Co)	2022/10/03	<0.00030		mg/L	
			Total Copper (Cu)	2022/10/03	<0.0010		mg/L	
			Total Lead (Pb)	2022/10/03	<0.00020		mg/L	
			Total Antimony (Sb)	2022/10/03	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/10/03	<0.00020		mg/L	
			Total Nickel (Ni)	2022/10/03	<0.00050		mg/L	
			Total Selenium (Se)	2022/10/03	<0.00020		mg/L	
			Total Silver (Ag)	2022/10/03	<0.00010		mg/L	
			Total Arsenic (As)	2022/10/03	<0.00020		mg/L	
			Total Thallium (Tl)	2022/10/03	<0.00020		mg/L	
			Total Tin (Sn)	2022/10/03	<0.0010		mg/L	
			Total Titanium (Ti)	2022/10/03	<0.0010		mg/L	
			Total Uranium (U)	2022/10/03	<0.00010		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Vanadium (V)	2022/10/03	<0.0010		mg/L	
			Total Zinc (Zn)	2022/10/03	<0.0030		mg/L	
			Total Beryllium (Be)	2022/10/03	<0.0010		mg/L	
A736224	KK9	Method Blank	Total Dissolved Solids	2022/09/30	<10		mg/L	
A736231	JAB	Method Blank	Total Iron (Fe)	2022/09/30	<0.060		mg/L	
			Total Lithium (Li)	2022/09/30	<0.020		mg/L	
			Total Magnesium (Mg)	2022/09/30	<0.20		mg/L	
			Total Manganese (Mn)	2022/09/30	<0.0040		mg/L	
			Total Potassium (K)	2022/09/30	<0.30		mg/L	
			Total Sodium (Na)	2022/09/30	<0.50		mg/L	
			Total Strontium (Sr)	2022/09/30	<0.020		mg/L	
			Total Sulphur (S)	2022/09/30	<0.20		mg/L	
			Total Phosphorus (P)	2022/09/30	<0.10		mg/L	
			Total Barium (Ba)	2022/09/30	<0.010		mg/L	
			Total Silicon (Si)	2022/09/30	<0.50		mg/L	
			Total Boron (B)	2022/09/30	<0.020		mg/L	
			Total Calcium (Ca)	2022/09/30	<0.30		mg/L	
A736248	KKM	Method Blank	Total Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A736249	AP1	Method Blank	Chemical Oxygen Demand	2022/09/30	<10		mg/L	
A736253	JAB	Method Blank	Dissolved Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A736271	DSX	Method Blank	Total Sulphide	2022/09/30	<0.0018		mg/L	
A736302	JB9	Method Blank	Total Oil and grease	2022/10/03	<2.0		mg/L	
A736424	CTU	Method Blank	Chloride (Cl)	2022/09/30	<1.0		mg/L	
			Sulphate (SO4)	2022/09/30	<1.0		mg/L	
A736863	SKP	Method Blank	Total Suspended Solids	2022/09/30	<1.0		mg/L	
A738456	ACR	Method Blank	Nitrite (N)	2022/10/01	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/10/01	<0.010		mg/L	
A738972	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738977	MDO	Method Blank	Total Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A739221	MAP	Method Blank	Total Nitrogen (N)	2022/10/03	<0.020		mg/L	
A739248	AFI	Method Blank	Total Ammonia (N)	2022/10/03	<0.015		mg/L	
A739250	AFI	Method Blank	Total Ammonia (N)	2022/10/04	<0.015		mg/L	
A739349	PC5	Method Blank	Dissolved Iron (Fe)	2022/10/03	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/10/03	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/10/03	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/10/03	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/10/03	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/10/03	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/10/03	<0.50		mg/L	
			Dissolved Boron (B)	2022/10/03	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/10/03	<0.30		mg/L	
A739712	RY3	Method Blank	Dissolved Aluminum (Al)	2022/10/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/05	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/05	<0.00020		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Nickel (Ni)	2022/10/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/05	<0.0010		mg/L	
A740275	RY3	Method Blank	Dissolved Aluminum (Al)	2022/10/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/05	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/05	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/05	<0.0010		mg/L	
A747438	MKJ	Method Blank	Dissolved Molybdenum (Mo)	2022/10/07	<0.00020		mg/L	
A736195	DO1	RPD [BDA200-12]	Benzene	2022/10/01	NC		%	30
			Toluene	2022/10/01	NC		%	30
			Ethylbenzene	2022/10/01	NC		%	30
			m & p-Xylene	2022/10/01	NC		%	30
			o-Xylene	2022/10/01	NC		%	30
			F1 (C6-C10)	2022/10/01	NC		%	30
A736248	KKM	RPD [BDA200-13]	Total Mercury (Hg)	2022/09/30	NC		%	20
A736271	DSX	RPD [BDA200-09]	Total Sulphide	2022/09/30	NC		%	20
A736224	KK9	RPD [BDA201-03]	Total Dissolved Solids	2022/09/30	0		%	20
A736085	JLD	RPD [BDA202-02]	Alkalinity (Total as CaCO3)	2022/09/30	1.1		%	20
			Alkalinity (PP as CaCO3)	2022/09/30	NC		%	20
			Bicarbonate (HCO3)	2022/09/30	1.1		%	20
			Carbonate (CO3)	2022/09/30	NC		%	20
			Hydroxide (OH)	2022/09/30	NC		%	20
A736086	JLD	RPD [BDA202-02]	pH	2022/09/30	1.2		%	N/A
A736087	JLD	RPD [BDA202-02]	Conductivity	2022/09/30	0		%	10
A736088	JLD	RPD [BDA202-02]	Dissolved Fluoride (F)	2022/09/30	0.52		%	20
A736424	CTU	RPD [BDA202-02]	Chloride (Cl)	2022/09/30	0.86		%	20
			Sulphate (SO4)	2022/09/30	11		%	20
A736088	JLD	Matrix Spike [BDA202-02]	Dissolved Fluoride (F)	2022/09/30		96	%	80 - 120
A736195	DO1	Matrix Spike [BDA201-12]	1,4-Difluorobenzene (sur.)	2022/10/01		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/10/01		97	%	50 - 140

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D4-1,2-Dichloroethane (sur.)	2022/10/01		104	%	50 - 140
			Benzene	2022/10/01		93	%	50 - 140
			Toluene	2022/10/01		89	%	50 - 140
			Ethylbenzene	2022/10/01		92	%	50 - 140
			m & p-Xylene	2022/10/01		90	%	50 - 140
			o-Xylene	2022/10/01		91	%	50 - 140
			F1 (C6-C10)	2022/10/01		108	%	60 - 140
A736271	DSX	Matrix Spike [BDA201-09]	Total Sulphide	2022/09/30		88	%	80 - 120
A736424	CTU	Matrix Spike [BDA202-02]	Chloride (Cl)	2022/09/30		104	%	80 - 120
			Sulphate (SO4)	2022/09/30		89	%	80 - 120
A735129	MB5	LCS	Biochemical Oxygen Demand	2022/10/04		92	%	85 - 115
A735610	JU2	LCS	D10-ANTHRACENE (sur.)	2022/10/01		93	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/01		100	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/01		97	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/01		84	%	50 - 130
			Acenaphthene	2022/10/01		74	%	50 - 130
			Acenaphthylene	2022/10/01		77	%	50 - 130
			Acridine	2022/10/01		73	%	50 - 130
			Anthracene	2022/10/01		66	%	50 - 130
			Benzo(a)anthracene	2022/10/01		90	%	50 - 130
			Benzo(b&j)fluoranthene	2022/10/01		85	%	50 - 130
			Benzo(k)fluoranthene	2022/10/01		104	%	50 - 130
			Benzo(g,h,i)perylene	2022/10/01		83	%	50 - 130
			Benzo(c)phenanthrene	2022/10/01		97	%	50 - 130
			Benzo(a)pyrene	2022/10/01		83	%	50 - 130
			Benzo(e)pyrene	2022/10/01		83	%	50 - 130
			Chrysene	2022/10/01		92	%	50 - 130
			Dibenz(a,h)anthracene	2022/10/01		84	%	50 - 130
			Fluoranthene	2022/10/01		92	%	50 - 130
			Fluorene	2022/10/01		78	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/10/01		80	%	50 - 130
			1-Methylnaphthalene	2022/10/01		60	%	50 - 130
			2-Methylnaphthalene	2022/10/01		73	%	50 - 130
			Naphthalene	2022/10/01		76	%	50 - 130
			Phenanthrene	2022/10/01		79	%	50 - 130
			Perylene	2022/10/01		83	%	50 - 130
			Pyrene	2022/10/01		90	%	50 - 130
			Quinoline	2022/10/01		79	%	50 - 130
A735612	GG3	LCS	O-TERPHENYL (sur.)	2022/10/01		84	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/10/01		86	%	60 - 140
A735717	GPJ	LCS	True Colour	2022/09/29		100	%	80 - 120
A735970	KK9	LCS	Turbidity	2022/09/29		104	%	80 - 120
A736085	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		98	%	80 - 120
A736086	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736087	JLD	LCS	Conductivity	2022/09/30		100	%	90 - 110
A736088	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		98	%	80 - 120
A736131	MB5	LCS	Biochemical Oxygen Demand	2022/10/05		92	%	85 - 115
A736188	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		97	%	80 - 120
A736189	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736192	JLD	LCS	Conductivity	2022/09/30		99	%	90 - 110
A736195	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/10/01		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/10/01		98	%	50 - 140

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			D4-1,2-Dichloroethane (sur.)	2022/10/01		102	%	50 - 140
			Benzene	2022/10/01		96	%	60 - 130
			Toluene	2022/10/01		91	%	60 - 130
			Ethylbenzene	2022/10/01		96	%	60 - 130
			m & p-Xylene	2022/10/01		93	%	60 - 130
			o-Xylene	2022/10/01		93	%	60 - 130
			F1 (C6-C10)	2022/10/01		110	%	60 - 140
A736196	KH2	LCS	Total Aluminum (Al)	2022/10/03		103	%	80 - 120
			Total Chromium (Cr)	2022/10/03		101	%	80 - 120
			Total Cobalt (Co)	2022/10/03		100	%	80 - 120
			Total Copper (Cu)	2022/10/03		102	%	80 - 120
			Total Lead (Pb)	2022/10/03		95	%	80 - 120
			Total Antimony (Sb)	2022/10/03		99	%	80 - 120
			Total Molybdenum (Mo)	2022/10/03		101	%	80 - 120
			Total Nickel (Ni)	2022/10/03		101	%	80 - 120
			Total Selenium (Se)	2022/10/03		99	%	80 - 120
			Total Silver (Ag)	2022/10/03		96	%	80 - 120
			Total Arsenic (As)	2022/10/03		97	%	80 - 120
			Total Thallium (Tl)	2022/10/03		98	%	80 - 120
			Total Tin (Sn)	2022/10/03		102	%	80 - 120
			Total Titanium (Ti)	2022/10/03		102	%	80 - 120
			Total Uranium (U)	2022/10/03		102	%	80 - 120
			Total Vanadium (V)	2022/10/03		101	%	80 - 120
			Total Zinc (Zn)	2022/10/03		98	%	80 - 120
			Total Beryllium (Be)	2022/10/03		98	%	80 - 120
A736197	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		95	%	80 - 120
A736201	MPU	LCS	Total Iron (Fe)	2022/10/03		93	%	80 - 120
			Total Lithium (Li)	2022/10/03		94	%	80 - 120
			Total Magnesium (Mg)	2022/10/03		95	%	80 - 120
			Total Manganese (Mn)	2022/10/03		90	%	80 - 120
			Total Potassium (K)	2022/10/03		98	%	80 - 120
			Total Sodium (Na)	2022/10/03		97	%	80 - 120
			Total Strontium (Sr)	2022/10/03		90	%	80 - 120
			Total Sulphur (S)	2022/10/03		87	%	80 - 120
			Total Phosphorus (P)	2022/10/03		90	%	80 - 120
			Total Barium (Ba)	2022/10/03		93	%	80 - 120
			Total Silicon (Si)	2022/10/03		93	%	80 - 120
			Total Boron (B)	2022/10/03		88	%	80 - 120
			Total Calcium (Ca)	2022/10/03		97	%	80 - 120
A736207	SKP	LCS	Total Suspended Solids	2022/09/30		92	%	80 - 120
A736215	SKP	LCS	Total Dissolved Solids	2022/09/30		102	%	80 - 120
A736221	KGR	LCS	Total Aluminum (Al)	2022/10/02		104	%	80 - 120
			Total Chromium (Cr)	2022/10/02		95	%	80 - 120
			Total Cobalt (Co)	2022/10/02		91	%	80 - 120
			Total Copper (Cu)	2022/10/02		96	%	80 - 120
			Total Lead (Pb)	2022/10/02		98	%	80 - 120
			Total Antimony (Sb)	2022/10/02		107	%	80 - 120
			Total Molybdenum (Mo)	2022/10/02		103	%	80 - 120
			Total Nickel (Ni)	2022/10/02		94	%	80 - 120
			Total Selenium (Se)	2022/10/02		100	%	80 - 120
			Total Silver (Ag)	2022/10/02		103	%	80 - 120
			Total Arsenic (As)	2022/10/02		97	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Thallium (Tl)	2022/10/02		103	%	80 - 120
			Total Tin (Sn)	2022/10/02		108	%	80 - 120
			Total Titanium (Ti)	2022/10/02		98	%	80 - 120
			Total Uranium (U)	2022/10/02		102	%	80 - 120
			Total Vanadium (V)	2022/10/02		96	%	80 - 120
			Total Zinc (Zn)	2022/10/02		98	%	80 - 120
			Total Beryllium (Be)	2022/10/02		96	%	80 - 120
A736224	KK9	LCS	Total Dissolved Solids	2022/09/30		104	%	80 - 120
A736231	JAB	LCS	Total Iron (Fe)	2022/09/30		97	%	80 - 120
			Total Lithium (Li)	2022/09/30		101	%	80 - 120
			Total Magnesium (Mg)	2022/09/30		106	%	80 - 120
			Total Manganese (Mn)	2022/09/30		94	%	80 - 120
			Total Potassium (K)	2022/09/30		107	%	80 - 120
			Total Sodium (Na)	2022/09/30		102	%	80 - 120
			Total Strontium (Sr)	2022/09/30		96	%	80 - 120
			Total Sulphur (S)	2022/09/30		95	%	80 - 120
			Total Phosphorus (P)	2022/09/30		99	%	80 - 120
			Total Barium (Ba)	2022/09/30		98	%	80 - 120
			Total Silicon (Si)	2022/09/30		99	%	80 - 120
			Total Boron (B)	2022/09/30		97	%	80 - 120
			Total Calcium (Ca)	2022/09/30		101	%	80 - 120
A736248	KKM	LCS	Total Mercury (Hg)	2022/09/30		95	%	80 - 120
A736249	AP1	LCS	Chemical Oxygen Demand	2022/09/30		101	%	80 - 120
A736253	JAB	LCS	Dissolved Mercury (Hg)	2022/09/30		92	%	80 - 120
A736271	DSX	LCS	Total Sulphide	2022/09/30		95	%	80 - 120
A736302	JB9	LCS	Total Oil and grease	2022/10/03		105	%	70 - 130
A736424	CTU	LCS	Chloride (Cl)	2022/09/30		106	%	80 - 120
			Sulphate (SO4)	2022/09/30		105	%	80 - 120
A736863	SKP	LCS	Total Suspended Solids	2022/09/30		94	%	80 - 120
A738456	ACR	LCS	Nitrite (N)	2022/10/01		99	%	80 - 120
			Nitrate plus Nitrite (N)	2022/10/01		105	%	80 - 120
A738972	MDO	LCS	Dissolved Organic Carbon (C)	2022/10/03		98	%	80 - 120
A738977	MDO	LCS	Total Organic Carbon (C)	2022/10/03		108	%	80 - 120
A739221	MAP	LCS	Total Nitrogen (N)	2022/10/03		106	%	80 - 120
A739248	AFI	LCS	Total Ammonia (N)	2022/10/03		105	%	80 - 120
A739250	AFI	LCS	Total Ammonia (N)	2022/10/04		102	%	80 - 120
A739349	PC5	LCS	Dissolved Iron (Fe)	2022/10/03		105	%	80 - 120
			Dissolved Lithium (Li)	2022/10/03		97	%	80 - 120
			Dissolved Magnesium (Mg)	2022/10/03		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/10/03		100	%	80 - 120
			Dissolved Potassium (K)	2022/10/03		100	%	80 - 120
			Dissolved Sodium (Na)	2022/10/03		96	%	80 - 120
			Dissolved Strontium (Sr)	2022/10/03		101	%	80 - 120
			Dissolved Sulphur (S)	2022/10/03		95	%	80 - 120
			Dissolved Phosphorus (P)	2022/10/03		98	%	80 - 120
			Dissolved Barium (Ba)	2022/10/03		104	%	80 - 120
			Dissolved Silicon (Si)	2022/10/03		92	%	80 - 120
			Dissolved Boron (B)	2022/10/03		102	%	80 - 120
			Dissolved Calcium (Ca)	2022/10/03		100	%	80 - 120
A739712	RY3	LCS	Dissolved Aluminum (Al)	2022/10/05		106	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/05		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/05		98	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Copper (Cu)	2022/10/05		99	%	80 - 120
			Dissolved Lead (Pb)	2022/10/05		100	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/05		103	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/05		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/05		98	%	80 - 120
			Dissolved Selenium (Se)	2022/10/05		108	%	80 - 120
			Dissolved Silver (Ag)	2022/10/05		98	%	80 - 120
			Dissolved Arsenic (As)	2022/10/05		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/05		100	%	80 - 120
			Dissolved Tin (Sn)	2022/10/05		105	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/05		100	%	80 - 120
			Dissolved Uranium (U)	2022/10/05		98	%	80 - 120
			Dissolved Vanadium (V)	2022/10/05		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/05		101	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/05		107	%	80 - 120
A740275	RY3	LCS	Dissolved Aluminum (Al)	2022/10/05		114	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/05		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/05		100	%	80 - 120
			Dissolved Copper (Cu)	2022/10/05		100	%	80 - 120
			Dissolved Lead (Pb)	2022/10/05		100	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/05		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/05		98	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/05		100	%	80 - 120
			Dissolved Selenium (Se)	2022/10/05		108	%	80 - 120
			Dissolved Silver (Ag)	2022/10/05		96	%	80 - 120
			Dissolved Arsenic (As)	2022/10/05		102	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/05		101	%	80 - 120
			Dissolved Tin (Sn)	2022/10/05		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/05		103	%	80 - 120
			Dissolved Uranium (U)	2022/10/05		98	%	80 - 120
			Dissolved Vanadium (V)	2022/10/05		103	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/05		106	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/05		115	%	80 - 120
A747438	MKJ	LCS	Dissolved Molybdenum (Mo)	2022/10/07		97	%	80 - 120
A739221	MAP	SRM	Total Nitrogen (N)	2022/10/03		106	%	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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Bureau Veritas Job #: C275325
Report Date: 2022/10/07

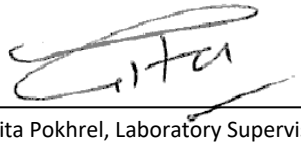
Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

VALIDATION SIGNATURE PAGE

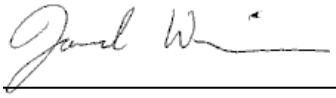
The analytical data and all QC contained in this report were reviewed and validated by:



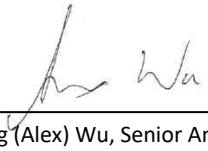
Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



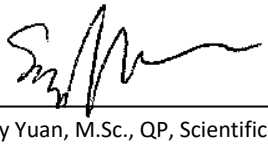
Gita Pokhrel, Laboratory Supervisor



Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Qiliang (Alex) Wu, Senior Analyst



Sandy Yuan, M.Sc., QP, Scientific Specialist



Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics

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VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by:



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

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Toll Free: (800) 386-7247

8-76 MPN

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

Page 1 of 1

C of C # 299525

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7	Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7
Email: ALEX.HAIGH@ADVISIAN.COM	Email: ALEX.HAIGH@ADVISIAN.COM
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): MATTHEW EVBANK, JEFFERSON ENCOMIENDA	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	Was O;1 2 Grease	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	[illegible]	Total Sulphur	[illegible]	Dissolved Sulphur	REGULATED METALS TOT ☒ DIS ☒	MERCURY TOTAL ☒ DISSOLVED ☒	[illegible] TDS	[illegible] TSS	[illegible] Turbidity	Total Organic Carbon	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	[illegible] Dissolved Organic Carbon	COD	BOD (total) - samples frozen as per lab/PM approval	Fluoride	True Color	Nitrates - Nitrate, Nitrite, TKN, Ammonia	Sulphide	[illegible]	Note: Project reference on bottles: "AEMP"
1	AEMP-04		X			17	2022/09/24	14:24	X		X	X	X					X	X			X	X	X	X	X	X		X	X	X	X	X	X	X	X
2	AEMP-08		X			17	2022/09/25	16:30	X		X	X	X					X	X			X	X	X	X	X	X		X	X	X	X	X	X	X	X
3	[illegible]		[illegible]			[illegible]																														
4	AEMP-06		X			17	2022/09/24	15:40	X		X	X	X					X	X			X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
5																																				
6																																				
7																																				
8																																				
9																																				
10																																				

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: SEND DATA TO: CANADA.CHEMISTRY@WORLEY.COM CACALGDATATRACK@WORLEY.COM IES A2600 1436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐ (2 days) ☐ (1 day) ☐ (same day) ☐
Date Required

	YES	NO	COOLER ID #			YES	NO	COOLER ID #			YES	NO	COOLER ID #		
SEAL PRESENT	✓		TEMP °C	2	3	SEAL PRESENT	✓	TEMP °C	3	4	SEAL PRESENT		TEMP °C		
SEAL INTACT	✓			1	2	SEAL INTACT	✓		1	2	SEAL INTACT			1	2
COOLING MEDIA PRESENT	✓			2	3	COOLING MEDIA PRESENT	✓		3	4	COOLING MEDIA PRESENT			3	

LAB USE ONLY
MAXXAM JOB # C275325

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	Matthew Evbank	2022/09/26	12:30	1.	Alana Morrison	2022/09/28	1500
2.	Iuliia Syrenova	2022/09/28	17:47	2.	Nick Batty	2022/09/29	07:00
3.				3.			

SAMPLES
LABELED BY: ISY
VERIFIED BY: MPN

COC-1010 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 637652-07-01

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244749
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275327
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	4	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Send Part to Archive	1		
Biochemical Oxygen Demand (1)	4	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	6	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	6		Auto Calc
Cadmium - low level CCME - Dissolved (1)	4		Auto Calc
Cadmium - low level CCME (Total) (1)	4		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	4	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	4	AB SOP-00016	SM 23 5220D m
True Colour (1)	4	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	4	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	4	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	4	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	6	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	4		Auto Calc
Hardness (1)	4		Auto Calc
Mercury (Dissolved) by CV (1, 4)	4	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	4	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	4	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	4	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	4	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	4	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	4		Auto Calc
Ammonia-N (Total) (1)	4	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	4		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	4	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	4		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	4	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	4		Auto Calc
PAH in Water by GC/MS (1)	4	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m

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Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 637652-07-01

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244749
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275327
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 6

Analyses	Quantity	Laboratory Method	Analytical Method
pH @25°C (1, 6)	4	AB SOP-00005	SM 23 4500-H+B m
Total Sulphide (1)	4	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	4	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	4	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	4	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	4	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	4	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	4	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 637652-07-01

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244749
Version: 2 - Final

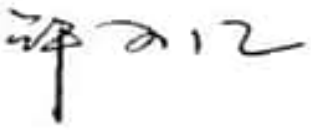
CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275327

Received: 2022/09/28, 15:00

(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key



Mary (Xiaohong) Xu
Customer Solutions Representative
06 Oct 2022 16:47:09

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA204	BDA205	BDA206	BDA207		BDA208		
Sampling Date		2022/09/26 10:30	2022/09/26 09:36	2022/09/26 08:45	2022/09/26 08:50		2022/09/26 12:00		
COC Number		637652-07-01	637652-07-01	637652-07-01	637652-07-01		637652-07-01		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-12**	**2022-DUP2**	**QC Batch**	**2022-DUP3**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon									
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	<0.10	A735044	<0.10	0.10	A735577
Volatiles									
Benzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	A735539	<0.00040	0.00040	A735539
Toluene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	A735539	<0.00040	0.00040	A735539
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	A735539	<0.00040	0.00040	A735539
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	<0.00080	A735539	<0.00080	0.00080	A735539
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	<0.00040	A735539	<0.00040	0.00040	A735539
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	<0.00089	A735202	<0.00089	0.00089	A735202
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	<0.10	A735202	<0.10	0.10	A735202
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	<0.10	A735539	<0.10	0.10	A735539
Extraction Surrogate Recovery (%)									
O-TERPHENYL (sur.)	%	97	97	99	96	A735044	93		A735577
Instrument Surrogate Recovery (%)									
1,4-Difluorobenzene (sur.)	%	104	104	104	102	A735539	104		A735539
4-Bromofluorobenzene (sur.)	%	102	102	103	100	A735539	102		A735539
D4-1,2-Dichloroethane (sur.)	%	98	97	98	95	A735539	99		A735539

RDL = Reportable Detection Limit

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA209		
Sampling Date		2022/09/26 12:30		
COC Number		637652-07-01		
	UNITS	**2022-DUP4**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon				
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	0.10	A735577
Volatiles				
Benzene	mg/L	<0.00040	0.00040	A735539
Toluene	mg/L	<0.00040	0.00040	A735539
Ethylbenzene	mg/L	<0.00040	0.00040	A735539
m & p-Xylene	mg/L	<0.00080	0.00080	A735539
o-Xylene	mg/L	<0.00040	0.00040	A735539
Xylenes (Total)	mg/L	<0.00089	0.00089	A735202
F1 (C6-C10) - BTEX	mg/L	<0.10	0.10	A735202
F1 (C6-C10)	mg/L	<0.10	0.10	A735539
Extraction Surrogate Recovery (%)				
O-TERPHENYL (sur.)	%	95		A735577
Instrument Surrogate Recovery (%)				
1,4-Difluorobenzene (sur.)	%	104		A735539
4-Bromofluorobenzene (sur.)	%	102		A735539
D4-1,2-Dichloroethane (sur.)	%	99		A735539
RDL = Reportable Detection Limit				

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Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		BDA204		BDA205	BDA206		BDA207		
Sampling Date		2022/09/26 10:30		2022/09/26 09:36	2022/09/26 08:45		2022/09/26 08:50		
COC Number		637652-07-01		637652-07-01	637652-07-01		637652-07-01		
	UNITS	**AEMP-02**	**QC Batch**	**AEMP-03**	**AEMP-12**	**QC Batch**	**2022-DUP2**	**RDL**	**QC Batch**
Calculated Parameters									
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.16	A734969	0.17	0.22	A734969	0.20	0.020	A734969
Nutrients									
Total Nitrogen (N)	mg/L	0.21	A739225	0.24	0.29	A740297	0.27	0.020	A739225
RDL = Reportable Detection Limit									

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA204	BDA205			BDA205		
Sampling Date		2022/09/26 10:30	2022/09/26 09:36			2022/09/26 09:36		
COC Number		637652-07-01	637652-07-01			637652-07-01		
	UNITS	**AEMP-02**	**AEMP-03**	**RDL**	**QC Batch**	**AEMP-03 Lab-Dup**	**RDL**	**QC Batch**
Elements								
Total Cadmium (Cd)	mg/L	<0.000020	<0.000020	0.000020	A734972			
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A735521	<0.0019	0.0019	A735521
Total Aluminum (Al)	mg/L	0.018	0.0061	0.0030	A736196			
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A736196			
Total Arsenic (As)	mg/L	<0.00020	0.00020	0.00020	A736196			
Total Barium (Ba)	mg/L	0.068	0.066	0.010	A736201			
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A736196			
Total Boron (B)	mg/L	0.032	0.027	0.020	A736201			
Total Calcium (Ca)	mg/L	80	76	0.30	A736201			
Total Chromium (Cr)	mg/L	<0.0010	<0.0010	0.0010	A736196			
Total Cobalt (Co)	mg/L	<0.00030	<0.00030	0.00030	A736196			
Total Copper (Cu)	mg/L	<0.0010	<0.0010	0.0010	A736196			
Total Iron (Fe)	mg/L	0.066	<0.060	0.060	A736201			
Total Lead (Pb)	mg/L	<0.00020	<0.00020	0.00020	A736196			
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A736201			
Total Magnesium (Mg)	mg/L	28	27	0.20	A736201			
Total Manganese (Mn)	mg/L	0.0067	0.0046	0.0040	A736201			
Total Molybdenum (Mo)	mg/L	0.0018	0.0018	0.00020	A736196			
Total Nickel (Ni)	mg/L	0.00066	0.00058	0.00050	A736196			
Total Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A736201			
Total Potassium (K)	mg/L	1.1	1.0	0.30	A736201			
Total Selenium (Se)	mg/L	0.00024	<0.00020	0.00020	A736196			
Total Silicon (Si)	mg/L	2.1	2.0	0.50	A736201			
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A736196			
Total Sodium (Na)	mg/L	26	24	0.50	A736201			
Total Strontium (Sr)	mg/L	1.3	1.3	0.020	A736201			
Total Sulphur (S)	mg/L	48	46	0.20	A736201			
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A736196			
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A736196			
Total Titanium (Ti)	mg/L	<0.0010	<0.0010	0.0010	A736196			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA204	BDA205			BDA205		
Sampling Date		2022/09/26 10:30	2022/09/26 09:36			2022/09/26 09:36		
COC Number		637652-07-01	637652-07-01			637652-07-01		
	UNITS	**AEMP-02**	**AEMP-03**	**RDL**	**QC Batch**	**AEMP-03 Lab-Dup**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.0011	0.0011	0.00010	A736196			
Total Vanadium (V)	mg/L	<0.0010	<0.0010	0.0010	A736196			
Total Zinc (Zn)	mg/L	<0.0030	<0.0030	0.0030	A736196			

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA206	BDA207		
Sampling Date		2022/09/26 08:45	2022/09/26 08:50		
COC Number		637652-07-01	637652-07-01		
	UNITS	**AEMP-12**	**2022-DUP2**	**RDL**	**QC Batch**
Elements					
Total Cadmium (Cd)	mg/L	0.000049	0.000057	0.000020	A734972
Total Mercury (Hg)	ug/L	<0.0019	0.0025	0.0019	A735521
Total Aluminum (Al)	mg/L	0.59	0.60	0.0030	A736196
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	0.00060	A736196
Total Arsenic (As)	mg/L	0.00081	0.00087	0.00020	A736196
Total Barium (Ba)	mg/L	0.060	0.061	0.010	A736201
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	0.0010	A736196
Total Boron (B)	mg/L	<0.020	<0.020	0.020	A736201
Total Calcium (Ca)	mg/L	34	34	0.30	A736201
Total Chromium (Cr)	mg/L	0.0013	0.0014	0.0010	A736196
Total Cobalt (Co)	mg/L	0.00052	0.00044	0.00030	A736196
Total Copper (Cu)	mg/L	0.0026	0.0029	0.0010	A736196
Total Iron (Fe)	mg/L	1.2	1.2	0.060	A736201
Total Lead (Pb)	mg/L	0.00074	0.00072	0.00020	A736196
Total Lithium (Li)	mg/L	<0.020	<0.020	0.020	A736201
Total Magnesium (Mg)	mg/L	10	10	0.20	A736201
Total Manganese (Mn)	mg/L	0.035	0.034	0.0040	A736201
Total Molybdenum (Mo)	mg/L	0.00098	0.00093	0.00020	A736196
Total Nickel (Ni)	mg/L	0.0027	0.0028	0.00050	A736196
Total Phosphorus (P)	mg/L	<0.10	<0.10	0.10	A736201
Total Potassium (K)	mg/L	1.1	1.2	0.30	A736201
Total Selenium (Se)	mg/L	0.00025	0.00026	0.00020	A736196
Total Silicon (Si)	mg/L	2.8	2.8	0.50	A736201
Total Silver (Ag)	mg/L	<0.00010	<0.00010	0.00010	A736196
Total Sodium (Na)	mg/L	9.3	9.2	0.50	A736201
Total Strontium (Sr)	mg/L	0.28	0.28	0.020	A736201
Total Sulphur (S)	mg/L	12	12	0.20	A736201
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	0.00020	A736196
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	A736196
Total Titanium (Ti)	mg/L	0.012	0.013	0.0010	A736196
Total Uranium (U)	mg/L	0.00064	0.00065	0.00010	A736196
RDL = Reportable Detection Limit					

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA206	BDA207		
Sampling Date		2022/09/26 08:45	2022/09/26 08:50		
COC Number		637652-07-01	637652-07-01		
	UNITS	**AEMP-12**	**2022-DUP2**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	0.0019	0.0020	0.0010	A736196
Total Zinc (Zn)	mg/L	0.0071	0.0074	0.0030	A736196
RDL = Reportable Detection Limit					

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA204			BDA204			BDA205		
Sampling Date		2022/09/26 10:30			2022/09/26 10:30			2022/09/26 09:36		
COC Number		637652-07-01			637652-07-01			637652-07-01		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Calculated Parameters										
Hardness (CaCO3)	mg/L	320	0.50	A734625				320	0.50	A734625
Ion Balance (% Difference)	%	1.7	N/A	A735232				2.5	N/A	A735232
Nitrate (N)	mg/L	0.053	0.010	A735235				0.074	0.010	A735235
Nitrate (NO3)	mg/L	0.23	0.044	A735234				0.33	0.044	A735234
Nitrite (NO2)	mg/L	<0.033	0.033	A735234				<0.033	0.033	A735234
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A734706				<0.0020	0.0020	A734706
Demand Parameters										
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A735129				<2.0 (1)	2.0	A735129
Chemical Oxygen Demand	mg/L	16	10	A736249				25	10	A736249
Elements										
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A734971				<0.000020	0.000020	A734971
Misc. Inorganics										
Conductivity	uS/cm	720	2.0	A736087				710	2.0	A736087
Dissolved Organic Carbon (C)	mg/L	3.0	0.50	A738972				3.5	0.50	A738972
pH	pH	7.91	N/A	A736086				7.97	N/A	A736086
Total Organic Carbon (C)	mg/L	2.6	0.50	A738977				2.4	0.50	A738977
Total Dissolved Solids	mg/L	460	10	A736224				450	10	A736224
Total Suspended Solids	mg/L	1.2	0.97	A736863				<0.99	0.99	A736863
Anions										
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A736085				<1.0	1.0	A736085
Alkalinity (Total as CaCO3)	mg/L	190	1.0	A736085				190	1.0	A736085
Bicarbonate (HCO3)	mg/L	230	1.0	A736085				230	1.0	A736085
Carbonate (CO3)	mg/L	<1.0	1.0	A736085				<1.0	1.0	A736085
Dissolved Fluoride (F)	mg/L	0.22	0.050	A736088				0.22	0.050	A736088
Hydroxide (OH)	mg/L	<1.0	1.0	A736085				<1.0	1.0	A736085
Total Sulphide	mg/L	<0.0018	0.0018	A736271				<0.0018	0.0018	A736271
Chloride (Cl)	mg/L	30	1.0	A736340	30	1.0	A736340	30	1.0	A736340
Sulphate (SO4)	mg/L	150	5.0	A736340	150	5.0	A736340	150	5.0	A736340

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA204			BDA204			BDA205		
Sampling Date		2022/09/26 10:30			2022/09/26 10:30			2022/09/26 09:36		
COC Number		637652-07-01			637652-07-01			637652-07-01		
	UNITS	**AEMP-02**	**RDL**	**QC Batch**	**AEMP-02 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-03**	**RDL**	**QC Batch**
Nutrients										
Total Ammonia (N)	mg/L	<0.015	0.015	A739248				<0.015	0.015	A739248
Nitrite (N)	mg/L	<0.010	0.010	A735951	<0.010	0.010	A735951	<0.010	0.010	A735951
Nitrate plus Nitrite (N)	mg/L	0.053	0.010	A735951	0.064	0.010	A735951	0.074	0.010	A735951
Misc. Organics										
Total Oil and grease	mg/L	7.0	2.0	A731114				5.0	2.0	A731114
Physical Properties										
True Colour	PtCo units	5.5	2.0	A735717	5.9	2.0	A735717	5.1	2.0	A735717
Physical Properties										
Turbidity	NTU	1.1	0.10	A735313				0.50	0.10	A735313

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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Bureau Veritas Job #: C275327
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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA206			BDA207		
Sampling Date		2022/09/26 08:45			2022/09/26 08:50		
COC Number		637652-07-01			637652-07-01		
	UNITS	**AEMP-12**	**RDL**	**QC Batch**	**2022-DUP2**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	130	0.50	A734625	130	0.50	A734625
Ion Balance (% Difference)	%	4.7	N/A	A735232	6.2	N/A	A735232
Nitrate (N)	mg/L	0.070	0.010	A735235	0.070	0.010	A734833
Nitrate (NO3)	mg/L	0.31	0.044	A735234	0.31	0.044	A735234
Nitrite (NO2)	mg/L	<0.033	0.033	A735234	<0.033	0.033	A735234
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A734706	<0.0020	0.0020	A734706
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A735129	<2.0 (1)	2.0	A735129
Chemical Oxygen Demand	mg/L	15	10	A736249	16	10	A736249
Elements							
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A734971	<0.000020	0.000020	A734971
Misc. Inorganics							
Conductivity	uS/cm	300	2.0	A736087	300	2.0	A736192
Dissolved Organic Carbon (C)	mg/L	4.8	0.50	A738972	3.4	0.50	A738972
pH	pH	7.04	N/A	A736086	7.06	N/A	A736189
Total Organic Carbon (C)	mg/L	4.0	0.50	A738977	3.6	0.50	A738977
Total Dissolved Solids	mg/L	180	10	A736224	180	10	A736224
Total Suspended Solids	mg/L	55	0.99	A736863	33	0.96	A736863
Anions							
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736188
Alkalinity (Total as CaCO3)	mg/L	95	1.0	A736085	100	1.0	A736188
Bicarbonate (HCO3)	mg/L	120	1.0	A736085	130	1.0	A736188
Carbonate (CO3)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736188
Dissolved Fluoride (F)	mg/L	0.11	0.050	A736088	0.11	0.050	A736197
Hydroxide (OH)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736188
Total Sulphide	mg/L	<0.0018	0.0018	A736271	<0.0018	0.0018	A736271
Chloride (Cl)	mg/L	12	1.0	A736340	11	1.0	A736340
Sulphate (SO4)	mg/L	48	1.0	A736340	46	1.0	A736340

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA206			BDA207		
Sampling Date		2022/09/26 08:45			2022/09/26 08:50		
COC Number		637652-07-01			637652-07-01		
	UNITS	**AEMP-12**	**RDL**	**QC Batch**	**2022-DUP2**	**RDL**	**QC Batch**
Nutrients							
Total Ammonia (N)	mg/L	<0.015	0.015	A739248	<0.015	0.015	A739248
Nitrite (N)	mg/L	<0.010	0.010	A735951	<0.010	0.010	A735951
Nitrate plus Nitrite (N)	mg/L	0.070	0.010	A735951	0.070	0.010	A735951
Misc. Organics							
Total Oil and grease	mg/L	5.0	2.0	A731114	6.0	2.0	A731114
Physical Properties							
True Colour	PtCo units	6.6	2.0	A735717	5.9	2.0	A735717
Physical Properties							
Turbidity	NTU	24	0.10	A735313	19	0.10	A735313
RDL = Reportable Detection Limit							

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		BDA204	BDA205	BDA206	BDA207		
Sampling Date		2022/09/26 10:30	2022/09/26 09:36	2022/09/26 08:45	2022/09/26 08:50		
COC Number		637652-07-01	637652-07-01	637652-07-01	637652-07-01		
	UNITS	**AEMP-02**	**AEMP-03**	**AEMP-12**	**2022-DUP2**	**RDL**	**QC Batch**
Polycyclic Aromatics							
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	A734968
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acridine	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.000040	A735041
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	A735041
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	A735041
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	A735041
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	A735041
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	A735041
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	A735041
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	A735041
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	A735041
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	A735041
Perylene	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000050	A735041
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	A735041
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	A735041
Extraction Surrogate Recovery (%)							
D10-ANTHRACENE (sur.)	%	90	82	117	79		A735041
D8-ACENAPHTHYLENE (sur.)	%	87	79	112	76		A735041
D8-NAPHTHALENE (sur.)	%	74	66	97	64		A735041
TERPHENYL-D14 (sur.)	%	90	83	116	79		A735041
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

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Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		BDA204	BDA205		BDA206		BDA207		
Sampling Date		2022/09/26 10:30	2022/09/26 09:36		2022/09/26 08:45		2022/09/26 08:50		
COC Number		637652-07-01	637652-07-01		637652-07-01		637652-07-01		
	UNITS	**AEMP-02**	**AEMP-03**	**QC Batch**	**AEMP-12**	**QC Batch**	**2022-DUP2**	**RDL**	**QC Batch**
Elements									
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	A735519	<0.0019	A735524	<0.0019	0.0019	A735519
RDL = Reportable Detection Limit									

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Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		BDA204		BDA205		BDA206	BDA207		
Sampling Date		2022/09/26 10:30		2022/09/26 09:36		2022/09/26 08:45	2022/09/26 08:50		
COC Number		637652-07-01		637652-07-01		637652-07-01	637652-07-01		
	UNITS	**AEMP-02**	**QC Batch**	**AEMP-03**	**QC Batch**	**AEMP-12**	**2022-DUP2**	**RDL**	**QC Batch**
Elements									
Dissolved Aluminum (Al)	mg/L	<0.0030	A740786	<0.0030	A740786	0.0057	0.0077	0.0030	A740888
Dissolved Antimony (Sb)	mg/L	<0.00060	A740786	<0.00060	A740786	<0.00060	<0.00060	0.00060	A740888
Dissolved Arsenic (As)	mg/L	<0.00020	A740786	<0.00020	A740786	0.00033	0.00031	0.00020	A740888
Dissolved Barium (Ba)	mg/L	0.073	A739348	0.073	A739348	0.046	0.047	0.010	A739350
Dissolved Beryllium (Be)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Boron (B)	mg/L	<0.020	A739348	<0.020	A739348	<0.020	<0.020	0.020	A739350
Dissolved Calcium (Ca)	mg/L	78	A739348	77	A739348	33	33	0.30	A739350
Dissolved Chromium (Cr)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Cobalt (Co)	mg/L	<0.00030	A740786	<0.00030	A740786	<0.00030	<0.00030	0.00030	A740888
Dissolved Copper (Cu)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Iron (Fe)	mg/L	<0.060	A739348	<0.060	A739348	<0.060	<0.060	0.060	A739350
Dissolved Lead (Pb)	mg/L	<0.00020	A740786	<0.00020	A740786	<0.00020	<0.00020	0.00020	A740888
Dissolved Lithium (Li)	mg/L	<0.020	A739348	<0.020	A739348	<0.020	<0.020	0.020	A739350
Dissolved Magnesium (Mg)	mg/L	30	A739348	30	A739348	11	11	0.20	A739350
Dissolved Manganese (Mn)	mg/L	0.0055	A739348	0.0042	A739348	0.0096	0.0079	0.0040	A739350
Dissolved Molybdenum (Mo)	mg/L	0.0035	A739712	0.0021	A740786	0.00091	0.00085	0.00020	A740888
Dissolved Nickel (Ni)	mg/L	0.00052	A740786	<0.00050	A740786	0.00074	0.00076	0.00050	A740888
Dissolved Phosphorus (P)	mg/L	<0.10	A739348	<0.10	A739348	<0.10	<0.10	0.10	A739350
Dissolved Potassium (K)	mg/L	1.0	A739348	1.0	A739348	0.90	0.90	0.30	A739350
Dissolved Selenium (Se)	mg/L	<0.00020	A740786	<0.00020	A740786	0.00021	0.00021	0.00020	A740888
Dissolved Silicon (Si)	mg/L	1.8	A739348	1.9	A739348	1.3	1.3	0.50	A739350
Dissolved Silver (Ag)	mg/L	<0.00010	A740786	<0.00010	A740786	<0.00010	<0.00010	0.00010	A740888
Dissolved Sodium (Na)	mg/L	24	A739348	23	A739348	9.2	9.4	0.50	A739350
Dissolved Strontium (Sr)	mg/L	1.5	A739348	1.5	A739348	0.30	0.31	0.020	A739350
Dissolved Sulphur (S)	mg/L	47	A739348	48	A739348	13	13	0.20	A739350
Dissolved Thallium (Tl)	mg/L	<0.00020	A740786	<0.00020	A740786	<0.00020	<0.00020	0.00020	A740888
Dissolved Tin (Sn)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Titanium (Ti)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Uranium (U)	mg/L	0.0010	A740786	0.0011	A740786	0.00055	0.00056	0.00010	A740888
Dissolved Vanadium (V)	mg/L	<0.0010	A740786	<0.0010	A740786	<0.0010	<0.0010	0.0010	A740888
Dissolved Zinc (Zn)	mg/L	<0.0030	A740786	<0.0030	A740786	<0.0030	<0.0030	0.0030	A740888

RDL = Reportable Detection Limit

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA204
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735519	2022/09/29	2022/09/30	Kiran Kumari
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739348	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740786	N/A	2022/10/04	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A735232	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A735234	N/A	2022/09/30	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A735951	N/A	2022/09/29	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735235	2022/09/30	2022/09/30	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736863	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA204 Dup
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong

Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA204 Dup
Sample ID: AEMP-02
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A735951	N/A	2022/09/29	Ana Katrina Cariaga

Bureau Veritas ID: BDA205
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735519	2022/09/29	2022/09/30	Kiran Kumari
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739348	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740786	N/A	2022/10/04	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A735232	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A735234	N/A	2022/09/30	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A735951	N/A	2022/09/29	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735235	2022/09/30	2022/09/30	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A740297	2022/10/03	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736863	2022/09/30	2022/09/30	Silkiben Patel

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA205
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA205 Dup
Sample ID: AEMP-03
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao

Bureau Veritas ID: BDA206
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/05	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A735232	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A735234	N/A	2022/09/30	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A735951	N/A	2022/09/29	Ana Katrina Cariaga
Nitrate (as N)	CALC	A735235	2022/09/30	2022/09/30	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling

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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA206
Sample ID: AEMP-12
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A740297	2022/10/03	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736863	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA207
Sample ID: 2022-DUP2
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735519	2022/09/29	2022/09/30	Kiran Kumari
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/05	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A735232	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A735234	N/A	2022/09/30	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A735951	N/A	2022/09/29	Ana Katrina Cariaga
Nitrate (as N)	CALC	A734833	2022/09/30	2022/09/30	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo

Bureau Veritas Job #: C275327
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA207
Sample ID: 2022-DUP2
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736863	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA208
Sample ID: 2022-DUP3
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735577	2022/09/30	2022/10/01	Luba Shymushovska

Bureau Veritas ID: BDA209
Sample ID: 2022-DUP4
Matrix: Water

Collected: 2022/09/26
Relinquished: 2022/09/27
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A735202	N/A	2022/10/01	Automated Statchk
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735577	2022/09/30	2022/10/01	Luba Shymushovska

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C

Sample BDA204, Elements by ICPMS - Dissolved: Test repeated.

Results relate only to the items tested.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A731114	JB9	Method Blank	Total Oil and grease	2022/09/30	<2.0		mg/L	
A735041	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/10/02		128	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		130	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		122	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		94	%	50 - 130
			Acenaphthene	2022/10/02	<0.00010		mg/L	
			Acenaphthylene	2022/10/02	<0.00010		mg/L	
			Acridine	2022/10/02	<0.000040		mg/L	
			Anthracene	2022/10/02	<0.000010		mg/L	
			Benzo(a)anthracene	2022/10/02	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/10/02	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/10/02	<0.000050		mg/L	
			Benzo(a)pyrene	2022/10/02	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/10/02	<0.000050		mg/L	
			Chrysene	2022/10/02	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/10/02	<0.0000075		mg/L	
			Fluoranthene	2022/10/02	<0.000010		mg/L	
			Fluorene	2022/10/02	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/10/02	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			2-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			Naphthalene	2022/10/02	<0.00010		mg/L	
			Phenanthrene	2022/10/02	<0.000050		mg/L	
			Perylene	2022/10/02	<0.000050		mg/L	
			Pyrene	2022/10/02	<0.000020		mg/L	
			Quinoline	2022/10/02	<0.00020		mg/L	
A735044	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/30		107	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30	<0.10		mg/L	
A735129	MB5	Method Blank	Biochemical Oxygen Demand	2022/10/04	<2.0		mg/L	
A735313	KK9	Method Blank	Turbidity	2022/09/29	<0.10		NTU	
A735519	KKM	Method Blank	Dissolved Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735521	JAB	Method Blank	Total Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735524	JAB	Method Blank	Dissolved Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735539	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/30		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/30		99	%	50 - 140
			Benzene	2022/09/30	<0.00040		mg/L	
			Toluene	2022/09/30	<0.00040		mg/L	
			Ethylbenzene	2022/09/30	<0.00040		mg/L	
			m & p-Xylene	2022/09/30	<0.00080		mg/L	
			o-Xylene	2022/09/30	<0.00040		mg/L	
			F1 (C6-C10)	2022/09/30	<0.10		mg/L	
A735577	LSH	Method Blank	O-TERPHENYL (sur.)	2022/10/01		92	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/10/01	<0.10		mg/L	
A735717	GPJ	Method Blank	True Colour	2022/09/29	<2.0		PtCo units	
A735951	ACR	Method Blank	Nitrite (N)	2022/09/29	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/09/29	<0.010		mg/L	
A736085	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736087	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736088	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736188	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736192	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736196	KH2	Method Blank	Total Aluminum (Al)	2022/10/03	<0.0030		mg/L	
			Total Chromium (Cr)	2022/10/03	<0.0010		mg/L	
			Total Cobalt (Co)	2022/10/03	<0.00030		mg/L	
			Total Copper (Cu)	2022/10/03	<0.0010		mg/L	
			Total Lead (Pb)	2022/10/03	<0.00020		mg/L	
			Total Antimony (Sb)	2022/10/03	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/10/03	<0.00020		mg/L	
			Total Nickel (Ni)	2022/10/03	<0.00050		mg/L	
			Total Selenium (Se)	2022/10/03	<0.00020		mg/L	
			Total Silver (Ag)	2022/10/03	<0.00010		mg/L	
			Total Arsenic (As)	2022/10/03	<0.00020		mg/L	
			Total Thallium (Tl)	2022/10/03	<0.00020		mg/L	
			Total Tin (Sn)	2022/10/03	<0.0010		mg/L	
			Total Titanium (Ti)	2022/10/03	<0.0010		mg/L	
			Total Uranium (U)	2022/10/03	<0.00010		mg/L	
			Total Vanadium (V)	2022/10/03	<0.0010		mg/L	
			Total Zinc (Zn)	2022/10/03	<0.0030		mg/L	
			Total Beryllium (Be)	2022/10/03	<0.0010		mg/L	
A736197	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736201	MPU	Method Blank	Total Iron (Fe)	2022/10/03	<0.060		mg/L	
			Total Lithium (Li)	2022/10/03	<0.020		mg/L	
			Total Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Total Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Total Potassium (K)	2022/10/03	<0.30		mg/L	
			Total Sodium (Na)	2022/10/03	<0.50		mg/L	
			Total Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Total Sulphur (S)	2022/10/03	<0.20		mg/L	
			Total Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Total Barium (Ba)	2022/10/03	<0.010		mg/L	
			Total Silicon (Si)	2022/10/03	<0.50		mg/L	
			Total Boron (B)	2022/10/03	<0.020		mg/L	
			Total Calcium (Ca)	2022/10/03	<0.30		mg/L	
A736224	KK9	Method Blank	Total Dissolved Solids	2022/09/30	<10		mg/L	
A736249	AP1	Method Blank	Chemical Oxygen Demand	2022/09/30	<10		mg/L	
A736271	DSX	Method Blank	Total Sulphide	2022/09/30	<0.0018		mg/L	
A736340	CTU	Method Blank	Chloride (Cl)	2022/09/30	<1.0		mg/L	
			Sulphate (SO4)	2022/09/30	<1.0		mg/L	
A736863	SKP	Method Blank	Total Suspended Solids	2022/09/30	<1.0		mg/L	
A738972	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738977	MDO	Method Blank	Total Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A739225	MAP	Method Blank	Total Nitrogen (N)	2022/10/03	<0.020		mg/L	
A739248	AFI	Method Blank	Total Ammonia (N)	2022/10/03	<0.015		mg/L	

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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A739348	PC5	Method Blank	Dissolved Iron (Fe)	2022/10/03	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/10/03	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/10/03	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/10/03	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/10/03	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/10/03	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/10/03	<0.50		mg/L	
			Dissolved Boron (B)	2022/10/03	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/10/03	<0.30		mg/L	
A739350	PC5	Method Blank	Dissolved Iron (Fe)	2022/10/03	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/10/03	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/10/03	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/10/03	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/10/03	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/10/03	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/10/03	<0.50		mg/L	
			Dissolved Boron (B)	2022/10/03	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/10/03	<0.30		mg/L	
A739712	RY3	Method Blank	Dissolved Molybdenum (Mo)	2022/10/05	<0.00020		mg/L	
A740297	MAP	Method Blank	Total Nitrogen (N)	2022/10/04	<0.020		mg/L	
A740786	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/10/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/05	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/05	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/05	<0.0010		mg/L	
A740888	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/10/04	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/04	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/04	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/04	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/04	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/04	<0.00060		mg/L	

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			Dissolved Molybdenum (Mo)	2022/10/04	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/04	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/04	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/04	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/04	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/04	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/04	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/04	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/04	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/04	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/04	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/04	<0.0010		mg/L	
A735717	GPJ	RPD [BDA204-02]	True Colour	2022/09/29	6.2		%	20
A735951	ACR	RPD [BDA204-02]	Nitrite (N)	2022/09/29	NC		%	20
			Nitrate plus Nitrite (N)	2022/09/29	19		%	20
A736340	CTU	RPD [BDA204-02]	Chloride (Cl)	2022/09/30	0.23		%	20
			Sulphate (SO4)	2022/09/30	1.5		%	20
A735521	JAB	RPD [BDA205-12]	Total Mercury (Hg)	2022/09/30	NC		%	20
A735521	JAB	Matrix Spike [BDA204-12]	Total Mercury (Hg)	2022/09/30		102	%	80 - 120
A735539	QW1	Matrix Spike [BDA204-14]	1,4-Difluorobenzene (sur.)	2022/09/30		102	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/30		105	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/30		98	%	50 - 140
			Benzene	2022/09/30		106	%	50 - 140
			Toluene	2022/09/30		102	%	50 - 140
			Ethylbenzene	2022/09/30		84	%	50 - 140
			m & p-Xylene	2022/09/30		100	%	50 - 140
			o-Xylene	2022/09/30		101	%	50 - 140
			F1 (C6-C10)	2022/09/30		100	%	60 - 140
A735717	GPJ	Matrix Spike [BDA204-02]	True Colour	2022/09/29		98	%	80 - 120
A735951	ACR	Matrix Spike [BDA204-02]	Nitrite (N)	2022/09/29		87	%	80 - 120
			Nitrate plus Nitrite (N)	2022/09/29		110	%	80 - 120
A736340	CTU	Matrix Spike [BDA204-02]	Chloride (Cl)	2022/09/30		94	%	80 - 120
			Sulphate (SO4)	2022/09/30		NC	%	80 - 120
A731114	JB9	LCS	Total Oil and grease	2022/09/30		124	%	70 - 130
A735041	JU2	LCS	D10-ANTHRACENE (sur.)	2022/10/02		103	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		111	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		86	%	50 - 130
			Acenaphthene	2022/10/02		99	%	50 - 130
			Acenaphthylene	2022/10/02		107	%	50 - 130
			Acridine	2022/10/02		93	%	50 - 130
			Anthracene	2022/10/02		83	%	50 - 130
			Benzo(a)anthracene	2022/10/02		115	%	50 - 130
			Benzo(b&j)fluoranthene	2022/10/02		56	%	50 - 130
			Benzo(k)fluoranthene	2022/10/02		111	%	50 - 130
			Benzo(g,h,i)perylene	2022/10/02		94	%	50 - 130
			Benzo(c)phenanthrene	2022/10/02		118	%	50 - 130
			Benzo(a)pyrene	2022/10/02		101	%	50 - 130
			Benzo(e)pyrene	2022/10/02		105	%	50 - 130
			Chrysene	2022/10/02		110	%	50 - 130
			Dibenz(a,h)anthracene	2022/10/02		101	%	50 - 130
			Fluoranthene	2022/10/02		107	%	50 - 130

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			Fluorene	2022/10/02		113	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/10/02		104	%	50 - 130
			1-Methylnaphthalene	2022/10/02		75	%	50 - 130
			2-Methylnaphthalene	2022/10/02		92	%	50 - 130
			Naphthalene	2022/10/02		90	%	50 - 130
			Phenanthrene	2022/10/02		99	%	50 - 130
			Perylene	2022/10/02		102	%	50 - 130
			Pyrene	2022/10/02		105	%	50 - 130
			Quinoline	2022/10/02		89	%	50 - 130
A735044	GG3	LCS	O-TERPHENYL (sur.)	2022/09/30		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30		98	%	60 - 140
A735129	MB5	LCS	Biochemical Oxygen Demand	2022/10/04		92	%	85 - 115
A735313	KK9	LCS	Turbidity	2022/09/29		104	%	80 - 120
A735519	KKM	LCS	Dissolved Mercury (Hg)	2022/09/30		92	%	80 - 120
A735521	JAB	LCS	Total Mercury (Hg)	2022/09/30		98	%	80 - 120
A735524	JAB	LCS	Dissolved Mercury (Hg)	2022/09/30		94	%	80 - 120
A735539	QW1	LCS	1,4-Difluorobenzene (sur.)	2022/09/30		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/30		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/30		79	%	50 - 140
			Benzene	2022/09/30		87	%	60 - 130
			Toluene	2022/09/30		96	%	60 - 130
			Ethylbenzene	2022/09/30		97	%	60 - 130
			m & p-Xylene	2022/09/30		98	%	60 - 130
			o-Xylene	2022/09/30		98	%	60 - 130
			F1 (C6-C10)	2022/09/30		108	%	60 - 140
A735577	LSH	LCS	O-TERPHENYL (sur.)	2022/10/01		96	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/10/01		112	%	60 - 140
A735717	GPJ	LCS	True Colour	2022/09/29		100	%	80 - 120
A735951	ACR	LCS	Nitrite (N)	2022/09/29		101	%	80 - 120
			Nitrate plus Nitrite (N)	2022/09/29		101	%	80 - 120
A736085	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		98	%	80 - 120
A736086	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736087	JLD	LCS	Conductivity	2022/09/30		100	%	90 - 110
A736088	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		98	%	80 - 120
A736188	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		97	%	80 - 120
A736189	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736192	JLD	LCS	Conductivity	2022/09/30		99	%	90 - 110
A736196	KH2	LCS	Total Aluminum (Al)	2022/10/03		103	%	80 - 120
			Total Chromium (Cr)	2022/10/03		101	%	80 - 120
			Total Cobalt (Co)	2022/10/03		100	%	80 - 120
			Total Copper (Cu)	2022/10/03		102	%	80 - 120
			Total Lead (Pb)	2022/10/03		95	%	80 - 120
			Total Antimony (Sb)	2022/10/03		99	%	80 - 120
			Total Molybdenum (Mo)	2022/10/03		101	%	80 - 120
			Total Nickel (Ni)	2022/10/03		101	%	80 - 120
			Total Selenium (Se)	2022/10/03		99	%	80 - 120
			Total Silver (Ag)	2022/10/03		96	%	80 - 120
			Total Arsenic (As)	2022/10/03		97	%	80 - 120
			Total Thallium (Tl)	2022/10/03		98	%	80 - 120
			Total Tin (Sn)	2022/10/03		102	%	80 - 120
			Total Titanium (Ti)	2022/10/03		102	%	80 - 120
			Total Uranium (U)	2022/10/03		102	%	80 - 120

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			Total Vanadium (V)	2022/10/03		101	%	80 - 120
			Total Zinc (Zn)	2022/10/03		98	%	80 - 120
			Total Beryllium (Be)	2022/10/03		98	%	80 - 120
A736197	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		95	%	80 - 120
A736201	MPU	LCS	Total Iron (Fe)	2022/10/03		93	%	80 - 120
			Total Lithium (Li)	2022/10/03		94	%	80 - 120
			Total Magnesium (Mg)	2022/10/03		95	%	80 - 120
			Total Manganese (Mn)	2022/10/03		90	%	80 - 120
			Total Potassium (K)	2022/10/03		98	%	80 - 120
			Total Sodium (Na)	2022/10/03		97	%	80 - 120
			Total Strontium (Sr)	2022/10/03		90	%	80 - 120
			Total Sulphur (S)	2022/10/03		87	%	80 - 120
			Total Phosphorus (P)	2022/10/03		90	%	80 - 120
			Total Barium (Ba)	2022/10/03		93	%	80 - 120
			Total Silicon (Si)	2022/10/03		93	%	80 - 120
			Total Boron (B)	2022/10/03		88	%	80 - 120
			Total Calcium (Ca)	2022/10/03		97	%	80 - 120
A736224	KK9	LCS	Total Dissolved Solids	2022/09/30		104	%	80 - 120
A736249	AP1	LCS	Chemical Oxygen Demand	2022/09/30		101	%	80 - 120
A736271	DSX	LCS	Total Sulphide	2022/09/30		95	%	80 - 120
A736340	CTU	LCS	Chloride (Cl)	2022/09/30		105	%	80 - 120
			Sulphate (SO4)	2022/09/30		104	%	80 - 120
A736863	SKP	LCS	Total Suspended Solids	2022/09/30		94	%	80 - 120
A738972	MDO	LCS	Dissolved Organic Carbon (C)	2022/10/03		98	%	80 - 120
A738977	MDO	LCS	Total Organic Carbon (C)	2022/10/03		108	%	80 - 120
A739225	MAP	LCS	Total Nitrogen (N)	2022/10/03		103	%	80 - 120
A739248	AFI	LCS	Total Ammonia (N)	2022/10/03		105	%	80 - 120
A739348	PC5	LCS	Dissolved Iron (Fe)	2022/10/03		108	%	80 - 120
			Dissolved Lithium (Li)	2022/10/03		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/10/03		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/10/03		103	%	80 - 120
			Dissolved Potassium (K)	2022/10/03		102	%	80 - 120
			Dissolved Sodium (Na)	2022/10/03		98	%	80 - 120
			Dissolved Strontium (Sr)	2022/10/03		101	%	80 - 120
			Dissolved Sulphur (S)	2022/10/03		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/10/03		99	%	80 - 120
			Dissolved Barium (Ba)	2022/10/03		103	%	80 - 120
			Dissolved Silicon (Si)	2022/10/03		94	%	80 - 120
			Dissolved Boron (B)	2022/10/03		102	%	80 - 120
			Dissolved Calcium (Ca)	2022/10/03		102	%	80 - 120
A739350	PC5	LCS	Dissolved Iron (Fe)	2022/10/03		101	%	80 - 120
			Dissolved Lithium (Li)	2022/10/03		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/10/03		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/10/03		97	%	80 - 120
			Dissolved Potassium (K)	2022/10/03		102	%	80 - 120
			Dissolved Sodium (Na)	2022/10/03		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/10/03		101	%	80 - 120
			Dissolved Sulphur (S)	2022/10/03		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/10/03		100	%	80 - 120
			Dissolved Barium (Ba)	2022/10/03		103	%	80 - 120
			Dissolved Silicon (Si)	2022/10/03		94	%	80 - 120
			Dissolved Boron (B)	2022/10/03		102	%	80 - 120

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			Dissolved Calcium (Ca)	2022/10/03		102	%	80 - 120
A739712	RY3	LCS	Dissolved Molybdenum (Mo)	2022/10/05		99	%	80 - 120
A740297	MAP	LCS	Total Nitrogen (N)	2022/10/04		112	%	80 - 120
A740786	MKJ	LCS	Dissolved Aluminum (Al)	2022/10/04		102	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/04		94	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/04		92	%	80 - 120
			Dissolved Copper (Cu)	2022/10/04		92	%	80 - 120
			Dissolved Lead (Pb)	2022/10/04		93	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/04		104	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/04		92	%	80 - 120
			Dissolved Selenium (Se)	2022/10/04		99	%	80 - 120
			Dissolved Silver (Ag)	2022/10/04		94	%	80 - 120
			Dissolved Arsenic (As)	2022/10/04		95	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/04		91	%	80 - 120
			Dissolved Tin (Sn)	2022/10/04		104	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/04		97	%	80 - 120
			Dissolved Uranium (U)	2022/10/04		92	%	80 - 120
			Dissolved Vanadium (V)	2022/10/04		96	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/04		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/04		96	%	80 - 120
A740888	MKJ	LCS	Dissolved Aluminum (Al)	2022/10/04		102	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/04		94	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/04		91	%	80 - 120
			Dissolved Copper (Cu)	2022/10/04		93	%	80 - 120
			Dissolved Lead (Pb)	2022/10/04		92	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/04		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/04		91	%	80 - 120
			Dissolved Selenium (Se)	2022/10/04		101	%	80 - 120
			Dissolved Silver (Ag)	2022/10/04		93	%	80 - 120
			Dissolved Arsenic (As)	2022/10/04		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/04		89	%	80 - 120
			Dissolved Tin (Sn)	2022/10/04		105	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/04		96	%	80 - 120
			Dissolved Uranium (U)	2022/10/04		92	%	80 - 120
			Dissolved Vanadium (V)	2022/10/04		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/04		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/04		97	%	80 - 120
A739225	MAP	SRM	Total Nitrogen (N)	2022/10/03		104	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A740297	MAP	SRM	Total Nitrogen (N)	2022/10/04		110	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

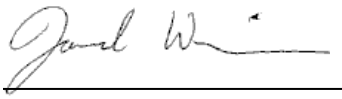
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Bureau Veritas Job #: C275327
Report Date: 2022/10/06

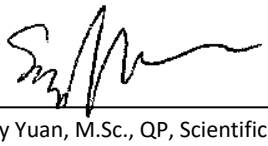
Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

VALIDATION SIGNATURE PAGE

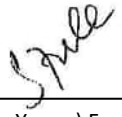
The analytical data and all QC contained in this report were reviewed and validated by:



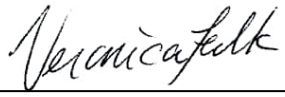
Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Sandy Yuan, M.Sc., QP, Scientific Specialist



Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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BUREAU VERITAS
4000 19st N.E
Calgary, Alberta T2E 6P8
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Phone: (403) 291-3077
Fax: (403) 291-9468
Toll Free: 800-563-6266

874
MPN

EXXONMOBIL/IMPERIAL OIL - BV LABS
CHAIN-OF-CUSTODY RECORD
ANALYSIS REQUESTED

C of C # 637652-07-01
637652

INVOICE INFORMATION	REPORT INFORMATION
Company Name: Imperial Oil Ltd ~~Worley Parsons~~	Company Name: Advisian
Contact Name: Alex Haigh	Contact Name: Alex Haigh
Address: 150 205 Quarry Park Blvd SE Calgary, AB T2C 3E7	Address: 150 205 Quarry Park Blvd, SE Calgary, AB T2C 3E7
Email: alex.haigh@advisian.com	Email: alex.haigh@advisian.com
Phone: 587 897 6249	Phone: 587 897 6249
Sampler Name (Print): Matthew Eubank / Jefferson Encomienda	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	IOL Routine Water plus Dissolved Metals and Hg-sulphur	Regulated Metals including Mercury-sulphur-Total	COD; TOC; TKN	Biochemical Oxygen Demand - total	True Colour; Nitrate; Nitrite	TSS; TDS; TURB	Ammonia-N (Total)	Carbon (DOC)	Total Sulphide	ATI BTEX and F1-F2 in Water	PAH - Water	Oil and Grease	Fluoride	Nutrients - Nitrate, Nitrite, Ammonia		BOD samples frozen as per lab instructions	Project reference on sample bottles: "AEMP"			
1	AEMP-02		X			17	2022/09/26	10:30	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
2	AEMP-03		X			17	2022/09/26	9:36	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
3	AEMP-12		X			17	2022/09/26	8:45	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
4	2022-Dup2		X			~~17~~ 4	2022/09/26	8:50	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			
5	2022-Dup3		X			4	2022/09/26	12:00	~~X~~											X							X			
6	2022-Dup4		X			4	2022/09/26	12:30	~~X~~											X							X			
7																														
8																														
9																														
10																														

IOL SITE LOCATION: Norman Wells, NT
IOL PROJECT # (if applicable): N/A
BV LABS TASK ORDER # OR SERVICE ORDER # + LINE ITEM: ~~417085215724~~ 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier I ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME FAL ☐ Other

SPECIAL INSTRUCTIONS: Send data to: CANADA.CHEMISTRY@WORLEY.COM CACAL.IOR DATATRACK@WORLEY.COM

JARS USED AND NOT SUBMITTED Enter N/A for Water: N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐
(2 days) ☐
(1 day) ☐
(same day) ☐
Date Required

	YES	NO	COOLER ID:				YES	NO	COOLER ID:				YES	NO	COOLER ID:			
SEAL PRESENT	✓		mcal				✓											
SEAL INTACT	✓						✓											
COOLING MEDIA PRESENT	✓						✓											
TEMP °C			5 (1)	6 (2)	3 (3)				3 (1)	5 (2)	4 (3)							

LAB USE ONLY
BV LABS JOB #: C275327
SAMPLES
LABELED BY: MPN VERIFIED BY: ISY

* RELINQUISHED BY:	DATE:	TIME (24 HR)	RECEIVED BY:	DATE:	TIME (24 HR)
1. M Eubank Matthew Eubank	2022/09/27	10:00	1. Olivia Ho	2022/09/28	1500
2. Mandher Manjinder Pandher	2022/09/28	17:18	2. Nick Batty	2022/09/29	07:00
3.			3.		

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

COC – 1010 (2016) IOL – AB White: BV Labs Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299526

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244742
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275346
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

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Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299526

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244742
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275346
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299526

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244742
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275346

Received: 2022/09/28, 15:00

(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Mary (Xiaohong) Xu
Customer Solutions Representative
06 Oct 2022 16:39:03

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

==========

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A735044
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A735539
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A735539
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A735539
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A735539
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A735539
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A734878
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A734878
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A735539
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	98	98	97		A735044
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	88	108	104		A735539
4-Bromofluorobenzene (sur.)	%	102	100	97		A735539
D4-1,2-Dichloroethane (sur.)	%	81	103	98		A735539

RDL = Reportable Detection Limit

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		BDA338	BDA339			BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45			2022/09/24 16:40		
COC Number		299526	299526			299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**RDL**	**QC Batch**	**AEMP-07**	**RDL**	**QC Batch**
Calculated Parameters								
Total Total Kjeldahl Nitrogen (Calc)	mg/L	<0.40	<0.40	0.40	A734969	0.49	0.10	A734969
Nutrients								
Total Nitrogen (N)	mg/L	0.40 (1)	0.44 (1)	0.40	A739225	0.54 (1)	0.10	A740297

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Elements						
Total Cadmium (Cd)	mg/L	0.00038	0.00035	0.00033	0.000020	A734972
Total Mercury (Hg)	ug/L	0.035	0.029	0.020	0.019	A735521
Total Aluminum (Al)	mg/L	3.9	3.8	3.8	0.0030	A736196
Total Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A736196
Total Arsenic (As)	mg/L	0.0046	0.0046	0.0045	0.00020	A736196
Total Barium (Ba)	mg/L	0.17	0.17	0.16	0.010	A736201
Total Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A736196
Total Boron (B)	mg/L	0.024	0.021	<0.020	0.020	A736201
Total Calcium (Ca)	mg/L	47	47	45	0.30	A736201
Total Chromium (Cr)	mg/L	0.0072	0.0071	0.0070	0.0010	A736196
Total Cobalt (Co)	mg/L	0.0044	0.0047	0.0044	0.00030	A736196
Total Copper (Cu)	mg/L	0.015	0.014	0.013	0.0010	A736196
Total Iron (Fe)	mg/L	9.2	8.9	8.6	0.060	A736201
Total Lead (Pb)	mg/L	0.0053	0.0052	0.0050	0.00020	A736196
Total Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A736201
Total Magnesium (Mg)	mg/L	14	14	13	0.20	A736201
Total Manganese (Mn)	mg/L	0.21	0.23	0.22	0.0040	A736201
Total Molybdenum (Mo)	mg/L	0.0018	0.0017	0.0016	0.00020	A736196
Total Nickel (Ni)	mg/L	0.015	0.019	0.014	0.00050	A736196
Total Phosphorus (P)	mg/L	0.23	0.21	0.19	0.10	A736201
Total Potassium (K)	mg/L	2.0	2.0	2.0	0.30	A736201
Total Selenium (Se)	mg/L	0.00060	0.00058	0.00057	0.00020	A736196
Total Silicon (Si)	mg/L	6.1	6.1	5.9	0.50	A736201
Total Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A736196
Total Sodium (Na)	mg/L	10	8.4	8.2	0.50	A736201
Total Strontium (Sr)	mg/L	0.23	0.22	0.21	0.020	A736201
Total Sulphur (S)	mg/L	11	11	10	0.20	A736201
Total Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A736196
Total Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A736196
Total Titanium (Ti)	mg/L	0.050	0.053	0.054	0.0010	A736196
Total Uranium (U)	mg/L	0.0011	0.0011	0.0011	0.00010	A736196
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	0.012	0.012	0.012	0.0010	A736196
Total Zinc (Zn)	mg/L	0.090	0.081	0.086	0.0030	A736196
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA338			BDA339		
Sampling Date		2022/09/24 15:08			2022/09/24 16:45		
COC Number		299526			299526		
	UNITS	**AEMP-09**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Calculated Parameters							
Hardness (CaCO3)	mg/L	120	0.50	A734625	120	0.50	A734625
Ion Balance (% Difference)	%	0.25	N/A	A734626	1.6	N/A	A734626
Nitrate (N)	mg/L	0.051	0.010	A734833	0.055	0.010	A734833
Nitrate (NO3)	mg/L	0.23	0.044	A734832	0.24	0.044	A734832
Nitrite (NO2)	mg/L	<0.033	0.033	A734832	<0.033	0.033	A734832
Sulphide (as H2S)	mg/L	<0.0020	0.0020	A734706	0.0030	0.0020	A734706
Demand Parameters							
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A735129	<2.0 (1)	2.0	A735129
Chemical Oxygen Demand	mg/L	17	10	A736249	45	10	A736249
Elements							
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A734971	<0.000020	0.000020	A734971
Misc. Inorganics							
Conductivity	uS/cm	280	2.0	A736087	260	2.0	A736087
Dissolved Organic Carbon (C)	mg/L	4.2	0.50	A738972	4.7	0.50	A738972
pH	pH	7.09	N/A	A736086	6.90	N/A	A736086
Total Organic Carbon (C)	mg/L	3.7	0.50	A738977	3.8	0.50	A738978
Total Dissolved Solids	mg/L	170	10	A736215	160	10	A736215
Total Suspended Solids	mg/L	470	0.99	A736207	440	0.97	A736207
Anions							
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736085
Alkalinity (Total as CaCO3)	mg/L	91	1.0	A736085	88	1.0	A736085
Bicarbonate (HCO3)	mg/L	110	1.0	A736085	110	1.0	A736085
Carbonate (CO3)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736085
Dissolved Fluoride (F)	mg/L	0.10	0.050	A736088	0.10	0.050	A736088
Hydroxide (OH)	mg/L	<1.0	1.0	A736085	<1.0	1.0	A736085
Total Sulphide	mg/L	<0.0018	0.0018	A736271	0.0028	0.0018	A736271
Chloride (Cl)	mg/L	10	1.0	A736313	9.4	1.0	A736340
Sulphate (SO4)	mg/L	36	1.0	A736313	36	1.0	A736340

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA338			BDA339		
Sampling Date		2022/09/24 15:08			2022/09/24 16:45		
COC Number		299526			299526		
	UNITS	**AEMP-09**	**RDL**	**QC Batch**	**2022-DUP1**	**RDL**	**QC Batch**
Nutrients							
Total Ammonia (N)	mg/L	0.038	0.015	A739250	0.045	0.015	A739248
Nitrite (N)	mg/L	<0.010	0.010	A736865	<0.010	0.010	A736865
Nitrate plus Nitrite (N)	mg/L	0.051	0.010	A736865	0.055	0.010	A736865
Misc. Organics							
Total Oil and grease	mg/L	4.0	2.0	A731114	7.0	2.0	A731114
Physical Properties							
True Colour	PtCo units	6.9	2.0	A735717	8.5	2.0	A735717
Physical Properties							
Turbidity	NTU	140	0.10	A735313	160	0.10	A735313
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA340		
Sampling Date		2022/09/24 16:40		
COC Number		299526		
	UNITS	**AEMP-07**	**RDL**	**QC Batch**
Calculated Parameters				
Hardness (CaCO3)	mg/L	110	0.50	A734625
Ion Balance (% Difference)	%	4.5	N/A	A734626
Nitrate (N)	mg/L	0.057	0.010	A734833
Nitrate (NO3)	mg/L	0.25	0.044	A734832
Nitrite (NO2)	mg/L	<0.033	0.033	A734832
Sulphide (as H2S)	mg/L	0.0040	0.0020	A734706
Demand Parameters				
Biochemical Oxygen Demand	mg/L	<2.0 (1)	2.0	A735129
Chemical Oxygen Demand	mg/L	41	10	A736249
Elements				
Dissolved Cadmium (Cd)	mg/L	<0.000020	0.000020	A734971
Misc. Inorganics				
Conductivity	uS/cm	260	2.0	A736192
Dissolved Organic Carbon (C)	mg/L	4.1	0.50	A738972
pH	pH	7.07	N/A	A736189
Total Organic Carbon (C)	mg/L	4.1	0.50	A738977
Total Dissolved Solids	mg/L	160	10	A736215
Total Suspended Solids	mg/L	430	1.0	A736207
Anions				
Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A736188
Alkalinity (Total as CaCO3)	mg/L	93	1.0	A736188
Bicarbonate (HCO3)	mg/L	110	1.0	A736188
Carbonate (CO3)	mg/L	<1.0	1.0	A736188
Dissolved Fluoride (F)	mg/L	0.10	0.050	A736197
Hydroxide (OH)	mg/L	<1.0	1.0	A736188
Total Sulphide	mg/L	0.0038	0.0018	A736271
Chloride (Cl)	mg/L	9.4	1.0	A736340
Sulphate (SO4)	mg/L	37	1.0	A736340

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Sample analyzed past hold time. Sample analysis is recommended within 48 hours of sampling.

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA340		
Sampling Date		2022/09/24 16:40		
COC Number		299526		
	UNITS	**AEMP-07**	**RDL**	**QC Batch**
Nutrients				
Total Ammonia (N)	mg/L	0.042	0.015	A739248
Nitrite (N)	mg/L	<0.010	0.010	A736865
Nitrate plus Nitrite (N)	mg/L	0.057	0.010	A736865
Misc. Organics				
Total Oil and grease	mg/L	5.0	2.0	A731114
Physical Properties				
True Colour	PtCo units	7.1	2.0	A735717
Physical Properties				
Turbidity	NTU	180	0.10	A735313
RDL = Reportable Detection Limit				

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A734968
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A735041
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735041
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735041
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	0.00011	0.00010	A735041
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Phenanthrene	mg/L	<0.000050	0.000065	0.000068	0.000050	A735041
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A735041
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A735041
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	100	87	88		A735041
D8-ACENAPHTHYLENE (sur.)	%	95	82	82		A735041
D8-NAPHTHALENE (sur.)	%	83	68	73		A735041
TERPHENYL-D14 (sur.)	%	103	88	88		A735041

RDL = Reportable Detection Limit

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Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A735524
RDL = Reportable Detection Limit						

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Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		BDA338	BDA339	BDA340		
Sampling Date		2022/09/24 15:08	2022/09/24 16:45	2022/09/24 16:40		
COC Number		299526	299526	299526		
	UNITS	**AEMP-09**	**2022-DUP1**	**AEMP-07**	**RDL**	**QC Batch**
Elements						
Dissolved Aluminum (Al)	mg/L	0.014	0.0071	0.0060	0.0030	A740888
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.00060	0.00060	A740888
Dissolved Arsenic (As)	mg/L	0.00051	0.00058	0.00055	0.00020	A740888
Dissolved Barium (Ba)	mg/L	0.060	0.065	0.065	0.010	A739350
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A740888
Dissolved Boron (B)	mg/L	<0.020	<0.020	<0.020	0.020	A739350
Dissolved Calcium (Ca)	mg/L	32	31	31	0.30	A739350
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A740888
Dissolved Cobalt (Co)	mg/L	<0.00030	<0.00030	<0.00030	0.00030	A740888
Dissolved Copper (Cu)	mg/L	0.0013	<0.0010	<0.0010	0.0010	A740888
Dissolved Iron (Fe)	mg/L	<0.060	<0.060	<0.060	0.060	A739350
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A740888
Dissolved Lithium (Li)	mg/L	<0.020	<0.020	<0.020	0.020	A739350
Dissolved Magnesium (Mg)	mg/L	9.9	9.4	9.1	0.20	A739350
Dissolved Manganese (Mn)	mg/L	0.041	0.073	0.068	0.0040	A739350
Dissolved Molybdenum (Mo)	mg/L	0.0010	0.00089	0.00089	0.00020	A740888
Dissolved Nickel (Ni)	mg/L	0.00085	0.00092	0.0011	0.00050	A740888
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	0.10	A739350
Dissolved Potassium (K)	mg/L	0.97	0.96	0.95	0.30	A739350
Dissolved Selenium (Se)	mg/L	0.00026	0.00026	0.00026	0.00020	A740888
Dissolved Silicon (Si)	mg/L	1.4	1.4	1.4	0.50	A739350
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A740888
Dissolved Sodium (Na)	mg/L	9.9	8.3	8.1	0.50	A739350
Dissolved Strontium (Sr)	mg/L	0.23	0.21	0.21	0.020	A739350
Dissolved Sulphur (S)	mg/L	11	11	10	0.20	A739350
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A740888
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A740888
Dissolved Titanium (Ti)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A740888
Dissolved Uranium (U)	mg/L	0.00063	0.00061	0.00062	0.00010	A740888
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0010	0.0010	A740888
Dissolved Zinc (Zn)	mg/L	<0.0030	<0.0030	<0.0030	0.0030	A740888
RDL = Reportable Detection Limit						

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA338
Sample ID: AEMP-09
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736313	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/05	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739250	N/A	2022/10/04	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/05	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736865	N/A	2022/09/30	Ana Katrina Cariaga
Nitrate (as N)	CALC	A734833	2022/10/05	2022/10/05	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736215	2022/09/30	2022/09/30	Silkiben Patel
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/05	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736207	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA339
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736085	N/A	2022/09/30	Tracy (Jing) Ling

Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA339
Sample ID: 2022-DUP1
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736087	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736088	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/05	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/05	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736865	N/A	2022/09/30	Ana Katrina Cariaga
Nitrate (as N)	CALC	A734833	2022/10/05	2022/10/05	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736086	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736215	2022/09/30	2022/09/30	Silkiben Patel
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/05	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738978	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736207	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA340
Sample ID: AEMP-07
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A735129	2022/09/29	2022/10/04	Marjolen Busslinger

Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA340
Sample ID: AEMP-07
Matrix: Water

Collected: 2022/09/24
Relinquished: 2022/09/26
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A735539	N/A	2022/09/30	Qiliang (Alex) Wu
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A736340	N/A	2022/09/30	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/30	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/05	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739248	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/05	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736865	N/A	2022/09/30	Ana Katrina Cariaga
Nitrate (as N)	CALC	A734833	2022/10/05	2022/10/05	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A736271	N/A	2022/09/30	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736215	2022/09/30	2022/09/30	Silkiben Patel
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/05	Automated Statchk
Nitrogen (Total)	AC/COL	A740297	2022/10/03	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738977	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A736207	2022/09/30	2022/09/30	Silkiben Patel
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 8.0 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample BDA338 [AEMP-09] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA339 [2022-DUP1] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA340 [AEMP-07] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Sample was analyzed past method specified hold time for Turbidity. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

REGULATED METALS INCLUDING MERCURY-TOTAL (WATER) Comments

Sample BDA338 [AEMP-09] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample BDA339 [2022-DUP1] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.
Sample BDA340 [AEMP-07] Mercury (Total) by CV: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A731114	JB9	Method Blank	Total Oil and grease	2022/09/30	<2.0		mg/L	
A735041	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/10/02		128	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		130	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		122	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		94	%	50 - 130
			Acenaphthene	2022/10/02	<0.00010		mg/L	
			Acenaphthylene	2022/10/02	<0.00010		mg/L	
			Acridine	2022/10/02	<0.000040		mg/L	
			Anthracene	2022/10/02	<0.000010		mg/L	
			Benzo(a)anthracene	2022/10/02	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/10/02	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/10/02	<0.000050		mg/L	
			Benzo(a)pyrene	2022/10/02	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/10/02	<0.000050		mg/L	
			Chrysene	2022/10/02	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/10/02	<0.0000075		mg/L	
			Fluoranthene	2022/10/02	<0.000010		mg/L	
			Fluorene	2022/10/02	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/10/02	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			2-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			Naphthalene	2022/10/02	<0.00010		mg/L	
			Phenanthrene	2022/10/02	<0.000050		mg/L	
			Perylene	2022/10/02	<0.000050		mg/L	
			Pyrene	2022/10/02	<0.000020		mg/L	
			Quinoline	2022/10/02	<0.00020		mg/L	
A735044	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/30		107	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30	<0.10		mg/L	
A735129	MB5	Method Blank	Biochemical Oxygen Demand	2022/10/04	<2.0		mg/L	
A735313	KK9	Method Blank	Turbidity	2022/09/29	<0.10		NTU	
A735521	JAB	Method Blank	Total Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735524	JAB	Method Blank	Dissolved Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735539	QW1	Method Blank	1,4-Difluorobenzene (sur.)	2022/09/30		104	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/30		101	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/30		99	%	50 - 140
			Benzene	2022/09/30	<0.00040		mg/L	
			Toluene	2022/09/30	<0.00040		mg/L	
			Ethylbenzene	2022/09/30	<0.00040		mg/L	
			m & p-Xylene	2022/09/30	<0.00080		mg/L	
			o-Xylene	2022/09/30	<0.00040		mg/L	
			F1 (C6-C10)	2022/09/30	<0.10		mg/L	
A735717	GPJ	Method Blank	True Colour	2022/09/29	<2.0		PtCo units	
A736085	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736087	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736088	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736188	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736192	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736196	KH2	Method Blank	Total Aluminum (Al)	2022/10/03	<0.0030		mg/L	
			Total Chromium (Cr)	2022/10/03	<0.0010		mg/L	
			Total Cobalt (Co)	2022/10/03	<0.00030		mg/L	
			Total Copper (Cu)	2022/10/03	<0.0010		mg/L	
			Total Lead (Pb)	2022/10/03	<0.00020		mg/L	
			Total Antimony (Sb)	2022/10/03	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/10/03	<0.00020		mg/L	
			Total Nickel (Ni)	2022/10/03	<0.00050		mg/L	
			Total Selenium (Se)	2022/10/03	<0.00020		mg/L	
			Total Silver (Ag)	2022/10/03	<0.00010		mg/L	
			Total Arsenic (As)	2022/10/03	<0.00020		mg/L	
			Total Thallium (Tl)	2022/10/03	<0.00020		mg/L	
			Total Tin (Sn)	2022/10/03	<0.0010		mg/L	
			Total Titanium (Ti)	2022/10/03	<0.0010		mg/L	
			Total Uranium (U)	2022/10/03	<0.00010		mg/L	
			Total Vanadium (V)	2022/10/03	<0.0010		mg/L	
			Total Zinc (Zn)	2022/10/03	<0.0030		mg/L	
			Total Beryllium (Be)	2022/10/03	<0.0010		mg/L	
A736197	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736201	MPU	Method Blank	Total Iron (Fe)	2022/10/03	<0.060		mg/L	
			Total Lithium (Li)	2022/10/03	<0.020		mg/L	
			Total Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Total Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Total Potassium (K)	2022/10/03	<0.30		mg/L	
			Total Sodium (Na)	2022/10/03	<0.50		mg/L	
			Total Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Total Sulphur (S)	2022/10/03	<0.20		mg/L	
			Total Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Total Barium (Ba)	2022/10/03	<0.010		mg/L	
			Total Silicon (Si)	2022/10/03	<0.50		mg/L	
			Total Boron (B)	2022/10/03	<0.020		mg/L	
			Total Calcium (Ca)	2022/10/03	<0.30		mg/L	
A736207	SKP	Method Blank	Total Suspended Solids	2022/09/30	<1.0		mg/L	
A736215	SKP	Method Blank	Total Dissolved Solids	2022/09/30	<10		mg/L	
A736249	AP1	Method Blank	Chemical Oxygen Demand	2022/09/30	<10		mg/L	
A736271	DSX	Method Blank	Total Sulphide	2022/09/30	<0.0018		mg/L	
A736313	CTU	Method Blank	Chloride (Cl)	2022/09/30	<1.0		mg/L	
			Sulphate (SO4)	2022/09/30	<1.0		mg/L	
A736340	CTU	Method Blank	Chloride (Cl)	2022/09/30	<1.0		mg/L	
			Sulphate (SO4)	2022/09/30	<1.0		mg/L	
A736865	ACR	Method Blank	Nitrite (N)	2022/10/05	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/10/05	<0.010		mg/L	
A738972	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738977	MDO	Method Blank	Total Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738978	MDO	Method Blank	Total Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A739225	MAP	Method Blank	Total Nitrogen (N)	2022/10/03	<0.020		mg/L	
A739248	AFI	Method Blank	Total Ammonia (N)	2022/10/03	<0.015		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A739250	AFI	Method Blank	Total Ammonia (N)	2022/10/04	<0.015		mg/L	
A739350	PC5	Method Blank	Dissolved Iron (Fe)	2022/10/03	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/10/03	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/10/03	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/10/03	<0.50		mg/L	
			Dissolved Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/10/03	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/10/03	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/10/03	<0.50		mg/L	
			Dissolved Boron (B)	2022/10/03	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/10/03	<0.30		mg/L	
A740297	MAP	Method Blank	Total Nitrogen (N)	2022/10/04	<0.020		mg/L	
A740888	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/10/04	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/04	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/04	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/04	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/04	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/04	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/04	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/04	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/04	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/04	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/04	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/04	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/04	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/04	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/04	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/04	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/04	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/04	<0.0010		mg/L	
A731114	JB9	LCS	Total Oil and grease	2022/09/30		124	%	70 - 130
A735041	JU2	LCS	D10-ANTHRACENE (sur.)	2022/10/02		103	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		111	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		86	%	50 - 130
			Acenaphthene	2022/10/02		99	%	50 - 130
			Acenaphthylene	2022/10/02		107	%	50 - 130
			Acridine	2022/10/02		93	%	50 - 130
			Anthracene	2022/10/02		83	%	50 - 130
			Benzo(a)anthracene	2022/10/02		115	%	50 - 130
			Benzo(b&j)fluoranthene	2022/10/02		56	%	50 - 130
			Benzo(k)fluoranthene	2022/10/02		111	%	50 - 130
			Benzo(g,h,i)perylene	2022/10/02		94	%	50 - 130
			Benzo(c)phenanthrene	2022/10/02		118	%	50 - 130
			Benzo(a)pyrene	2022/10/02		101	%	50 - 130
			Benzo(e)pyrene	2022/10/02		105	%	50 - 130
			Chrysene	2022/10/02		110	%	50 - 130
			Dibenz(a,h)anthracene	2022/10/02		101	%	50 - 130
			Fluoranthene	2022/10/02		107	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Fluorene	2022/10/02		113	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/10/02		104	%	50 - 130
			1-Methylnaphthalene	2022/10/02		75	%	50 - 130
			2-Methylnaphthalene	2022/10/02		92	%	50 - 130
			Naphthalene	2022/10/02		90	%	50 - 130
			Phenanthrene	2022/10/02		99	%	50 - 130
			Perylene	2022/10/02		102	%	50 - 130
			Pyrene	2022/10/02		105	%	50 - 130
			Quinoline	2022/10/02		89	%	50 - 130
A735044	GG3	LCS	O-TERPHENYL (sur.)	2022/09/30		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30		98	%	60 - 140
A735129	MB5	LCS	Biochemical Oxygen Demand	2022/10/04		92	%	85 - 115
A735313	KK9	LCS	Turbidity	2022/09/29		104	%	80 - 120
A735521	JAB	LCS	Total Mercury (Hg)	2022/09/30		98	%	80 - 120
A735524	JAB	LCS	Dissolved Mercury (Hg)	2022/09/30		94	%	80 - 120
A735539	QW1	LCS	1,4-Difluorobenzene (sur.)	2022/09/30		93	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/09/30		103	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/09/30		79	%	50 - 140
			Benzene	2022/09/30		87	%	60 - 130
			Toluene	2022/09/30		96	%	60 - 130
			Ethylbenzene	2022/09/30		97	%	60 - 130
			m & p-Xylene	2022/09/30		98	%	60 - 130
			o-Xylene	2022/09/30		98	%	60 - 130
			F1 (C6-C10)	2022/09/30		108	%	60 - 140
A735717	GPJ	LCS	True Colour	2022/09/29		100	%	80 - 120
A736085	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		98	%	80 - 120
A736086	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736087	JLD	LCS	Conductivity	2022/09/30		100	%	90 - 110
A736088	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		98	%	80 - 120
A736188	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		97	%	80 - 120
A736189	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736192	JLD	LCS	Conductivity	2022/09/30		99	%	90 - 110
A736196	KH2	LCS	Total Aluminum (Al)	2022/10/03		103	%	80 - 120
			Total Chromium (Cr)	2022/10/03		101	%	80 - 120
			Total Cobalt (Co)	2022/10/03		100	%	80 - 120
			Total Copper (Cu)	2022/10/03		102	%	80 - 120
			Total Lead (Pb)	2022/10/03		95	%	80 - 120
			Total Antimony (Sb)	2022/10/03		99	%	80 - 120
			Total Molybdenum (Mo)	2022/10/03		101	%	80 - 120
			Total Nickel (Ni)	2022/10/03		101	%	80 - 120
			Total Selenium (Se)	2022/10/03		99	%	80 - 120
			Total Silver (Ag)	2022/10/03		96	%	80 - 120
			Total Arsenic (As)	2022/10/03		97	%	80 - 120
			Total Thallium (Tl)	2022/10/03		98	%	80 - 120
			Total Tin (Sn)	2022/10/03		102	%	80 - 120
			Total Titanium (Ti)	2022/10/03		102	%	80 - 120
			Total Uranium (U)	2022/10/03		102	%	80 - 120
			Total Vanadium (V)	2022/10/03		101	%	80 - 120
			Total Zinc (Zn)	2022/10/03		98	%	80 - 120
			Total Beryllium (Be)	2022/10/03		98	%	80 - 120
A736197	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		95	%	80 - 120
A736201	MPU	LCS	Total Iron (Fe)	2022/10/03		93	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Lithium (Li)	2022/10/03		94	%	80 - 120
			Total Magnesium (Mg)	2022/10/03		95	%	80 - 120
			Total Manganese (Mn)	2022/10/03		90	%	80 - 120
			Total Potassium (K)	2022/10/03		98	%	80 - 120
			Total Sodium (Na)	2022/10/03		97	%	80 - 120
			Total Strontium (Sr)	2022/10/03		90	%	80 - 120
			Total Sulphur (S)	2022/10/03		87	%	80 - 120
			Total Phosphorus (P)	2022/10/03		90	%	80 - 120
			Total Barium (Ba)	2022/10/03		93	%	80 - 120
			Total Silicon (Si)	2022/10/03		93	%	80 - 120
			Total Boron (B)	2022/10/03		88	%	80 - 120
			Total Calcium (Ca)	2022/10/03		97	%	80 - 120
A736207	SKP	LCS	Total Suspended Solids	2022/09/30		92	%	80 - 120
A736215	SKP	LCS	Total Dissolved Solids	2022/09/30		102	%	80 - 120
A736249	AP1	LCS	Chemical Oxygen Demand	2022/09/30		101	%	80 - 120
A736271	DSX	LCS	Total Sulphide	2022/09/30		95	%	80 - 120
A736313	CTU	LCS	Chloride (Cl)	2022/09/30		106	%	80 - 120
			Sulphate (SO4)	2022/09/30		105	%	80 - 120
A736340	CTU	LCS	Chloride (Cl)	2022/09/30		105	%	80 - 120
			Sulphate (SO4)	2022/09/30		104	%	80 - 120
A736865	ACR	LCS	Nitrite (N)	2022/09/30		102	%	80 - 120
			Nitrate plus Nitrite (N)	2022/09/30		99	%	80 - 120
A738972	MDO	LCS	Dissolved Organic Carbon (C)	2022/10/03		98	%	80 - 120
A738977	MDO	LCS	Total Organic Carbon (C)	2022/10/03		108	%	80 - 120
A738978	MDO	LCS	Total Organic Carbon (C)	2022/10/03		106	%	80 - 120
A739225	MAP	LCS	Total Nitrogen (N)	2022/10/03		103	%	80 - 120
A739248	AFI	LCS	Total Ammonia (N)	2022/10/03		105	%	80 - 120
A739250	AFI	LCS	Total Ammonia (N)	2022/10/04		102	%	80 - 120
A739350	PC5	LCS	Dissolved Iron (Fe)	2022/10/03		101	%	80 - 120
			Dissolved Lithium (Li)	2022/10/03		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/10/03		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/10/03		97	%	80 - 120
			Dissolved Potassium (K)	2022/10/03		102	%	80 - 120
			Dissolved Sodium (Na)	2022/10/03		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/10/03		101	%	80 - 120
			Dissolved Sulphur (S)	2022/10/03		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/10/03		100	%	80 - 120
			Dissolved Barium (Ba)	2022/10/03		103	%	80 - 120
			Dissolved Silicon (Si)	2022/10/03		94	%	80 - 120
			Dissolved Boron (B)	2022/10/03		102	%	80 - 120
			Dissolved Calcium (Ca)	2022/10/03		102	%	80 - 120
A740297	MAP	LCS	Total Nitrogen (N)	2022/10/04		112	%	80 - 120
A740888	MKJ	LCS	Dissolved Aluminum (Al)	2022/10/04		102	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/04		94	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/04		91	%	80 - 120
			Dissolved Copper (Cu)	2022/10/04		93	%	80 - 120
			Dissolved Lead (Pb)	2022/10/04		92	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/04		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/04		91	%	80 - 120
			Dissolved Selenium (Se)	2022/10/04		101	%	80 - 120
			Dissolved Silver (Ag)	2022/10/04		93	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Arsenic (As)	2022/10/04		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/04		89	%	80 - 120
			Dissolved Tin (Sn)	2022/10/04		105	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/04		96	%	80 - 120
			Dissolved Uranium (U)	2022/10/04		92	%	80 - 120
			Dissolved Vanadium (V)	2022/10/04		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/04		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/04		97	%	80 - 120
A739225	MAP	SRM	Total Nitrogen (N)	2022/10/03		104	%	80 - 120
A740297	MAP	SRM	Total Nitrogen (N)	2022/10/04		110	%	80 - 120

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

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Bureau Veritas Job #: C275346
Report Date: 2022/10/06

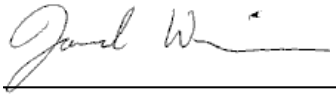
Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

VALIDATION SIGNATURE PAGE

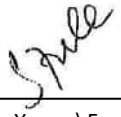
The analytical data and all QC contained in this report were reviewed and validated by:



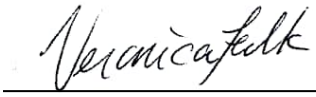
Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics



Jared Wiseman, B.Sc., P.Chem., QP, Senior Analyst, Organics



Suwan (Sze Yeung) Fock, B.Sc., Scientific Specialist



Veronica Falk, B.Sc., P.Chem., QP, Scientific Specialist, Organics



Automated Statchk

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

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Phone: (780) 577-7100
Fax: (780) 450-4187
Toll Free: (800) 386-7247

875 ISY

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 299526

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7	Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7
Email: ALEX.HAIGH@ADVISIAN.COM	Email: ALEX.HAIGH@ADVISIAN.COM
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): MATTHEW EUBANK / JEFFERSON ENCOMIENDA	Consultant Project #: 417085-42051-22200

FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	ANALYSIS REQUESTED: Volatile Oil & Grease	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	Grain Size - Total Sulphur	Total Extractable Hydrocarbons - Dissolved Sulphur	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☒ DIS ☒	MERCURY TOTAL ☒ DISSOLVED ☒	Solids - TDS	Fertilizer Suite - TSS	Fertilizer Suite - Turbidity	Volatile Organics - Total Organic Carbon	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	Dissolved Organic Carbon	COD	BOD (total) - samples from 295 lab instructions	Fluoride	True Color	Nutrients - Nitrate, Nitrite, TKN, Ammonia	Sulphide	Notes: "AEMP" Project reference on bottles	
1 AEMP-09		X			17	2022/09/24	15:08	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X		X
2 2022-Dup 1		X			17	2022/09/24	16:45	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X		X
3 AEMP-07		X			17	2022/09/24	16:40	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X		X
4																																			
5																																			
6																																			
7																																			
8																																			
9																																			
10																																			

IOL SITE LOCATION: NORMAN WELLS, NT

IOL PROJECT # (if applicable): N/A

MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: SEND DATA TO: CANADA.CHEMISTRY@WORLEY.COM CACAL.IORDATATRACE@WORLEY.COM IES A260 1436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐ (2 days) ☐ (1 day) ☐ (same day) ☐
Date Required

	YES	NO	COOLER ID #	TEMP °C	1	2	3
SEAL PRESENT	✓			4	2	2	
SEAL INTACT	✓						
COOLING MEDIA PRESENT	✓						

	YES	NO	COOLER ID #	TEMP °C	1	2	3
SEAL PRESENT	✓			7	9	8	
SEAL INTACT	✓						
COOLING MEDIA PRESENT	✓						

	YES	NO	COOLER ID #	TEMP °C	1	2	3
SEAL PRESENT							
SEAL INTACT							
COOLING MEDIA PRESENT							

LAB USE ONLY
MAXXAM JOB # C275346

SAMPLES
LABELED BY: ISY
VERIFIED BY: KVT

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1.	Matthew Eubank	2022/09/26	12:30	1.	Alena Morgan	2022/09/28	15:00
2.	Iuliia Syrenova	2022/09/28	17:00	2.	Snobel Patel	2022/09/29	06:45
3.				3.			

COC-1016 (06/2016) IOL-AB White: Maxxam Yellow: Client

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299527

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244562
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275351
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO3,HCO3,OH (1)	3	AB SOP-00005	SM 23 2320 B m
Send Part to Archive (1)	3		
Biochemical Oxygen Demand (1)	3	AB SOP-00017	SM 23 5210B m
BTEX/F1 in Water by HS GC/MS/FID (1)	3	AB SOP-00039	CCME CWS/EPA 8260d m
F1-BTEX (1)	3		Auto Calc
Cadmium - low level CCME - Dissolved (1)	3		Auto Calc
Cadmium - low level CCME (Total) (1)	3		Auto Calc
Chloride/Sulphate by Auto Colourimetry (1)	3	AB SOP-00020	SM23-4500-Cl/SO4-E m
COD by Colorimeter (1)	3	AB SOP-00016	SM 23 5220D m
True Colour (1)	3	CAL SOP-00049	SM 23 2120 C m
Carbon (DOC) (1, 2)	3	AB SOP-00087	MMCW 119 1996 m
Conductivity @25C (1)	3	AB SOP-00005	SM 23 2510 B m
Fluoride (1)	3	AB SOP-00005	SM 23 4500-F C m
CCME Hydrocarbons in Water (F2; C10-C16) (1, 3)	3	AB SOP-00037 AB SOP-00040	CCME PHC-CWS m
Sulphide (as H2S) (1)	3		Auto Calc
Hardness (1)	3		Auto Calc
Mercury (Dissolved) by CV (1, 4)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV (1)	3	AB SOP-00084	BCMOE BCLM Oct2013 m
Elements by ICP - Dissolved (1, 4)	3	AB SOP-00042	EPA 6010d R5 m
Elements by ICP - Total (1)	3	AB SOP-00014 / AB SOP-00042	EPA 6010d R5 m
Elements by ICPMS - Dissolved (1, 4)	3	AB SOP-00043	EPA 6020b R2 m
Elements by ICPMS - Total (1)	3	AB SOP-00014 / AB SOP-00043	EPA 6020b R2 m
Ion Balance (1)	3		Auto Calc
Ammonia-N (Total) (1)	3	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate and Nitrite (1)	3		Auto Calc
NO2 (N); NO2 (N) + NO3 (N) in Water (1)	3	AB SOP-00091	SM 23 4500 NO3m
Nitrate (as N) (1)	3		Auto Calc
Oil and Grease (Gravimetric, n-Hexane) (1)	3	AB SOP-00092	SM 23 5520B/5520F m
Benzo[a]pyrene Equivalency (1, 5)	3		Auto Calc
PAH in Water by GC/MS (1)	3	AB SOP-00037 / AB SOP-00003	EPA 3510C/8270E m
pH @25°C (1, 6)	3	AB SOP-00005	SM 23 4500-H+B m

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299527

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

Report Date: 2022/10/06
Report #: R3244562
Version: 2 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C275351
Received: 2022/09/28, 15:00

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Laboratory Method	Analytical Method
Total Sulphide (1)	3	AB SOP-00080	SM 23 4500 S2-A D Fm
Total Dissolved Solids (Filt. Residue) (1)	3	AB SOP-00065	SM 23 2540 C m
Total Kjeldahl Nitrogen (Total) (1)	3	BBY WI-00033	Auto Calc
Nitrogen (Total) (1)	3	AB SOP-00093	SM 23 4500-N C m
Carbon (Total Organic) (1, 7)	3	AB SOP-00087	MMCW 119 1996 m
Total Suspended Solids (NFR) (1)	3	AB SOP-00061	SM 23 2540 D m
Turbidity (1)	3	CAL SOP-00081	SM 23 2130 B m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard. All samples were analyzed within hold time unless otherwise flagged.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by Bureau Veritas Calgary, 4000 - 19 St. , Calgary, AB, T2E 6P8
(2) DOC present in the sample should be considered as non-purgeable DOC. Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.
(3) Silica gel clean up employed.
(4) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Task Order#: PENDING
Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200
Your C.O.C. #: 299527

Attention: Alex Haigh

Advisian
Suite 500, 151 Canada Olympic
Calgary, AB
Canada T3B 6B7

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(5) B[a]P TPE is calculated using 1/2 of the RDL for non detect results as per Alberta Environment instructions. This protocol may not apply in other jurisdictions.
(6) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas endeavours to analyze samples as soon as possible after receipt.
(7) TOC present in the sample should be considered as non-purgeable TOC.

Encryption Key

Mary (Xiaohong) Xu
Customer Solutions Representative
06 Oct 2022 14:42:03

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Namita Sahni, Customer Solutions Representative
Email: Namita.Sahni@bureauveritas.com
Phone# (604)639-2614

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

Bureau Veritas Job #: C275351
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Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

AT1 BTEX AND F1-F2 IN WATER (WATER)

Bureau Veritas ID		BDA369	BDA370	BDA371		
Sampling Date		2022/09/25 11:30	2022/09/25 12:00	2022/09/25 16:00		
COC Number		299527	299527	299527		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Ext. Pet. Hydrocarbon						
F2 (C10-C16 Hydrocarbons)	mg/L	<0.10	<0.10	<0.10	0.10	A735044
Volatiles						
Benzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A736195
Toluene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A736195
Ethylbenzene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A736195
m & p-Xylene	mg/L	<0.00080	<0.00080	<0.00080	0.00080	A736195
o-Xylene	mg/L	<0.00040	<0.00040	<0.00040	0.00040	A736195
Xylenes (Total)	mg/L	<0.00089	<0.00089	<0.00089	0.00089	A734878
F1 (C6-C10) - BTEX	mg/L	<0.10	<0.10	<0.10	0.10	A734878
F1 (C6-C10)	mg/L	<0.10	<0.10	<0.10	0.10	A736195
Extraction Surrogate Recovery (%)						
O-TERPHENYL (sur.)	%	98	97	96		A735044
Instrument Surrogate Recovery (%)						
1,4-Difluorobenzene (sur.)	%	104	103	101		A736195
4-Bromofluorobenzene (sur.)	%	98	97	98		A736195
D4-1,2-Dichloroethane (sur.)	%	100	103	103		A736195

RDL = Reportable Detection Limit

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TOTAL KJELDAHL NITROGEN (TOTAL)

Bureau Veritas ID		BDA369			BDA370			BDA371		
Sampling Date		2022/09/25 11:30			2022/09/25 12:00			2022/09/25 16:00		
COC Number		299527			299527			299527		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**	**AEMP-01**	**RDL**	**QC Batch**
Calculated Parameters										
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.55	0.020	A734969	0.54	0.20	A734969	0.21	0.020	A734969
Nutrients										
Total Nitrogen (N)	mg/L	0.55	0.020	A739225	0.54 (1)	0.20	A739220	0.24	0.020	A739225

RDL = Reportable Detection Limit
(1) Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA369			BDA369			BDA370		
Sampling Date		2022/09/25 11:30			2022/09/25 11:30			2022/09/25 12:00		
COC Number		299527			299527			299527		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Elements										
Total Cadmium (Cd)	mg/L	<0.000020	0.000020	A734972				0.000065	0.000020	A734972
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A735521				<0.0019	0.0019	A735521
Total Aluminum (Al)	mg/L	0.033	0.0030	A736196	0.034	0.0030	A736196	0.21	0.0030	A736196
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A736196	<0.00060	0.00060	A736196	<0.00060	0.00060	A736196
Total Arsenic (As)	mg/L	0.00099	0.00020	A736196	0.0010	0.00020	A736196	0.00066	0.00020	A736196
Total Barium (Ba)	mg/L	0.13	0.010	A736201	0.13	0.010	A736201	0.090	0.010	A736201
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196
Total Boron (B)	mg/L	<0.020	0.020	A736201	<0.020	0.020	A736201	<0.020	0.020	A736201
Total Calcium (Ca)	mg/L	41	0.30	A736201	41	0.30	A736201	55	0.30	A736201
Total Chromium (Cr)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196
Total Cobalt (Co)	mg/L	<0.00030	0.00030	A736196	<0.00030	0.00030	A736196	0.00075	0.00030	A736196
Total Copper (Cu)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	0.0019	0.0010	A736196
Total Iron (Fe)	mg/L	0.16	0.060	A736201	0.15	0.060	A736201	0.82	0.060	A736201
Total Lead (Pb)	mg/L	<0.00020	0.00020	A736196	<0.00020	0.00020	A736196	0.00027	0.00020	A736196
Total Lithium (Li)	mg/L	<0.020	0.020	A736201	<0.020	0.020	A736201	<0.020	0.020	A736201
Total Magnesium (Mg)	mg/L	13	0.20	A736201	13	0.20	A736201	14	0.20	A736201
Total Manganese (Mn)	mg/L	0.0046	0.0040	A736201	0.0046	0.0040	A736201	0.33	0.0040	A736201
Total Molybdenum (Mo)	mg/L	0.0021	0.00020	A736196	0.0021	0.00020	A736196	0.0012	0.00020	A736196
Total Nickel (Ni)	mg/L	0.0018	0.00050	A736196	0.0019	0.00050	A736196	0.0040	0.00050	A736196
Total Phosphorus (P)	mg/L	<0.10	0.10	A736201	<0.10	0.10	A736201	<0.10	0.10	A736201
Total Potassium (K)	mg/L	1.5	0.30	A736201	1.5	0.30	A736201	1.4	0.30	A736201
Total Selenium (Se)	mg/L	<0.00020	0.00020	A736196	<0.00020	0.00020	A736196	0.00040	0.00020	A736196
Total Silicon (Si)	mg/L	<0.50	0.50	A736201	<0.50	0.50	A736201	3.1	0.50	A736201
Total Silver (Ag)	mg/L	<0.00010	0.00010	A736196	<0.00010	0.00010	A736196	<0.00010	0.00010	A736196
Total Sodium (Na)	mg/L	4.6	0.50	A736201	4.6	0.50	A736201	8.5	0.50	A736201
Total Strontium (Sr)	mg/L	0.17	0.020	A736201	0.17	0.020	A736201	0.32	0.020	A736201
Total Sulphur (S)	mg/L	4.6	0.20	A736201	4.6	0.20	A736201	14	0.20	A736201
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A736196	<0.00020	0.00020	A736196	<0.00020	0.00020	A736196
Total Tin (Sn)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196
Total Titanium (Ti)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	0.0041	0.0010	A736196

RDL = Reportable Detection Limit
Lab-Dup = Laboratory Initiated Duplicate

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA369			BDA369			BDA370		
Sampling Date		2022/09/25 11:30			2022/09/25 11:30			2022/09/25 12:00		
COC Number		299527			299527			299527		
	UNITS	**AEMP-05**	**RDL**	**QC Batch**	**AEMP-05 Lab-Dup**	**RDL**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**
Total Uranium (U)	mg/L	0.00039	0.00010	A736196	0.00041	0.00010	A736196	0.00085	0.00010	A736196
Total Vanadium (V)	mg/L	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196	<0.0010	0.0010	A736196
Total Zinc (Zn)	mg/L	<0.0030	0.0030	A736196	<0.0030	0.0030	A736196	0.0033	0.0030	A736196

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA371		
Sampling Date		2022/09/25 16:00		
COC Number		299527		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**
Elements				
Total Cadmium (Cd)	mg/L	0.000047	0.000020	A734972
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A735521
Total Aluminum (Al)	mg/L	0.46	0.0030	A736196
Total Antimony (Sb)	mg/L	<0.00060	0.00060	A736196
Total Arsenic (As)	mg/L	0.00067	0.00020	A736196
Total Barium (Ba)	mg/L	0.057	0.010	A736201
Total Beryllium (Be)	mg/L	<0.0010	0.0010	A736196
Total Boron (B)	mg/L	<0.020	0.020	A736201
Total Calcium (Ca)	mg/L	39	0.30	A736201
Total Chromium (Cr)	mg/L	<0.0010	0.0010	A736196
Total Cobalt (Co)	mg/L	<0.00030	0.00030	A736196
Total Copper (Cu)	mg/L	0.0022	0.0010	A736196
Total Iron (Fe)	mg/L	0.71	0.060	A736201
Total Lead (Pb)	mg/L	0.00045	0.00020	A736196
Total Lithium (Li)	mg/L	<0.020	0.020	A736201
Total Magnesium (Mg)	mg/L	9.9	0.20	A736201
Total Manganese (Mn)	mg/L	0.020	0.0040	A736201
Total Molybdenum (Mo)	mg/L	0.0011	0.00020	A736196
Total Nickel (Ni)	mg/L	0.0025	0.00050	A736196
Total Phosphorus (P)	mg/L	<0.10	0.10	A736201
Total Potassium (K)	mg/L	1.2	0.30	A736201
Total Selenium (Se)	mg/L	0.00040	0.00020	A736196
Total Silicon (Si)	mg/L	3.0	0.50	A736201
Total Silver (Ag)	mg/L	<0.00010	0.00010	A736196
Total Sodium (Na)	mg/L	8.9	0.50	A736201
Total Strontium (Sr)	mg/L	0.22	0.020	A736201
Total Sulphur (S)	mg/L	13	0.20	A736201
Total Thallium (Tl)	mg/L	<0.00020	0.00020	A736196
Total Tin (Sn)	mg/L	<0.0010	0.0010	A736196
Total Titanium (Ti)	mg/L	0.011	0.0010	A736196
Total Uranium (U)	mg/L	0.00076	0.00010	A736196
RDL = Reportable Detection Limit				

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REGULATED METALS INCLUDING MERCURY-TOTAL (WATER)

Bureau Veritas ID		BDA371		
Sampling Date		2022/09/25 16:00		
COC Number		299527		
	UNITS	**AEMP-01**	**RDL**	**QC Batch**
Total Vanadium (V)	mg/L	0.0015	0.0010	A736196
Total Zinc (Zn)	mg/L	0.0050	0.0030	A736196
RDL = Reportable Detection Limit				

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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA369		BDA370			BDA371		
Sampling Date		2022/09/25 11:30		2022/09/25 12:00			2022/09/25 16:00		
COC Number		299527		299527			299527		
	UNITS	**AEMP-05**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**	**AEMP-01**	**RDL**	**QC Batch**
Calculated Parameters									
Hardness (CaCO3)	mg/L	160	A734625	210	0.50	A734625	130	0.50	A734625
Ion Balance (% Difference)	%	3.3	A734626	1.5	N/A	A734626	7.9	N/A	A734626
Nitrate (N)	mg/L	<0.010	A734833	<0.010	0.010	A734833	0.025	0.010	A734833
Nitrate (NO3)	mg/L	<0.044	A734832	<0.044	0.044	A734832	0.11	0.044	A734832
Nitrite (NO2)	mg/L	<0.033	A734832	<0.033	0.033	A734832	<0.033	0.033	A734832
Sulphide (as H2S)	mg/L	<0.0020	A734706	<0.0020	0.0020	A734706	<0.0020	0.0020	A734706
Demand Parameters									
Biochemical Oxygen Demand	mg/L	<2.0	A734601	<2.0	2.0	A734601	<2.0	2.0	A734601
Chemical Oxygen Demand	mg/L	39	A736249	25	10	A736249	24	10	A736249
Elements									
Dissolved Cadmium (Cd)	mg/L	<0.000020	A734971	0.000047	0.000020	A734971	<0.000020	0.000020	A734971
Misc. Inorganics									
Conductivity	uS/cm	310	A736192	440	2.0	A736192	300	2.0	A736192
Dissolved Organic Carbon (C)	mg/L	13	A738972	7.0	0.50	A738974	4.9	0.50	A741969
pH	pH	7.71	A736189	7.33	N/A	A736189	7.36	N/A	A736189
Total Organic Carbon (C)	mg/L	13	A738978	6.7	0.50	A738978	4.5	0.50	A743779
Total Dissolved Solids	mg/L	190	A736224	270	10	A736224	190	10	A736224
Total Suspended Solids	mg/L	1.4	A735304	12	0.99	A735304	19	0.97	A735304
Anions									
Alkalinity (PP as CaCO3)	mg/L	<1.0	A736188	<1.0	1.0	A736188	<1.0	1.0	A736188
Alkalinity (Total as CaCO3)	mg/L	160	A736188	170	1.0	A736188	120	1.0	A736188
Bicarbonate (HCO3)	mg/L	200	A736188	210	1.0	A736188	140	1.0	A736188
Carbonate (CO3)	mg/L	<1.0	A736188	<1.0	1.0	A736188	<1.0	1.0	A736188
Dissolved Fluoride (F)	mg/L	0.13	A736197	0.090	0.050	A736197	0.10	0.050	A736197
Hydroxide (OH)	mg/L	<1.0	A736188	<1.0	1.0	A736188	<1.0	1.0	A736188
Total Sulphide	mg/L	<0.0018	A734813	<0.0018	0.0018	A734813	<0.0018	0.0018	A734813
Chloride (Cl)	mg/L	3.7	A735479	9.6	1.0	A735481	9.7	1.0	A735479
Sulphate (SO4)	mg/L	17	A735479	51	1.0	A735481	46	1.0	A735479
Nutrients									
Total Ammonia (N)	mg/L	<0.015	A739249	0.34	0.015	A739249	<0.015	0.015	A739249

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Job #: C275351
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RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		BDA369		BDA370			BDA371		
Sampling Date		2022/09/25 11:30		2022/09/25 12:00			2022/09/25 16:00		
COC Number		299527		299527			299527		
	UNITS	**AEMP-05**	**QC Batch**	**AEMP-13**	**RDL**	**QC Batch**	**AEMP-01**	**RDL**	**QC Batch**
Nitrite (N)	mg/L	<0.010	A736776	<0.010	0.010	A736776	<0.010	0.010	A736776
Nitrate plus Nitrite (N)	mg/L	<0.010	A736776	<0.010	0.010	A736776	0.025	0.010	A736776
Misc. Organics									
Total Oil and grease	mg/L	3.0	A731114	7.0	2.0	A731114	7.0	2.0	A731114
Physical Properties									
True Colour	PtCo units	18	A735717	11	2.0	A735717	8.3	2.0	A735717
Physical Properties									
Turbidity	NTU	2.4	A735313	14	0.10	A735313	15	0.10	A735313
RDL = Reportable Detection Limit									

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SEMIVOLATILE ORGANICS BY GC-MS (WATER)

Bureau Veritas ID		BDA369	BDA370	BDA371		
Sampling Date		2022/09/25 11:30	2022/09/25 12:00	2022/09/25 16:00		
COC Number		299527	299527	299527		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Polycyclic Aromatics						
B[a]P TPE Total Potency Equivalents	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A734968
Acenaphthene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acenaphthylene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Acridine	mg/L	<0.000040	<0.000040	<0.000040	0.000040	A735041
Anthracene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735041
Benzo(a)anthracene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(b&j)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(k)fluoranthene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(g,h,i)perylene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Benzo(c)phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Benzo(a)pyrene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Benzo(e)pyrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Chrysene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
Dibenz(a,h)anthracene	mg/L	<0.0000075	<0.0000075	<0.0000075	0.0000075	A735041
Fluoranthene	mg/L	<0.000010	<0.000010	<0.000010	0.000010	A735041
Fluorene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Indeno(1,2,3-cd)pyrene	mg/L	<0.0000085	<0.0000085	<0.0000085	0.0000085	A735041
1-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
2-Methylnaphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Naphthalene	mg/L	<0.00010	<0.00010	<0.00010	0.00010	A735041
Phenanthrene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Perylene	mg/L	<0.000050	<0.000050	<0.000050	0.000050	A735041
Pyrene	mg/L	<0.000020	<0.000020	<0.000020	0.000020	A735041
Quinoline	mg/L	<0.00020	<0.00020	<0.00020	0.00020	A735041
Extraction Surrogate Recovery (%)						
D10-ANTHRACENE (sur.)	%	94	97	75		A735041
D8-ACENAPHTHYLENE (sur.)	%	89	86	71		A735041
D8-NAPHTHALENE (sur.)	%	67	72	61		A735041
TERPHENYL-D14 (sur.)	%	98	98	76		A735041
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

MERCURY BY COLD VAPOR (WATER)

Bureau Veritas ID		BDA369	BDA370	BDA371		
Sampling Date		2022/09/25 11:30	2022/09/25 12:00	2022/09/25 16:00		
COC Number		299527	299527	299527		
	UNITS	**AEMP-05**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Elements						
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	0.0019	A735524
RDL = Reportable Detection Limit						

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID		BDA369		BDA370	BDA371		
Sampling Date		2022/09/25 11:30		2022/09/25 12:00	2022/09/25 16:00		
COC Number		299527		299527	299527		
	UNITS	**AEMP-05**	**QC Batch**	**AEMP-13**	**AEMP-01**	**RDL**	**QC Batch**
Elements							
Dissolved Aluminum (Al)	mg/L	<0.0030	A740888	0.011	0.029	0.0030	A740275
Dissolved Antimony (Sb)	mg/L	<0.00060	A740888	<0.00060	<0.00060	0.00060	A740275
Dissolved Arsenic (As)	mg/L	0.00091	A740888	0.00035	0.00032	0.00020	A740275
Dissolved Barium (Ba)	mg/L	0.15	A739350	0.093	0.051	0.010	A739350
Dissolved Beryllium (Be)	mg/L	<0.0010	A740888	<0.0010	<0.0010	0.0010	A740275
Dissolved Boron (B)	mg/L	<0.020	A739350	<0.020	<0.020	0.020	A739350
Dissolved Calcium (Ca)	mg/L	42	A739350	57	37	0.30	A739350
Dissolved Chromium (Cr)	mg/L	<0.0010	A740888	0.0010	<0.0010	0.0010	A740275
Dissolved Cobalt (Co)	mg/L	<0.00030	A740888	0.00066	<0.00030	0.00030	A740275
Dissolved Copper (Cu)	mg/L	<0.0010	A740888	0.0012	0.0031	0.0010	A740275
Dissolved Iron (Fe)	mg/L	<0.060	A739350	<0.060	<0.060	0.060	A739350
Dissolved Lead (Pb)	mg/L	<0.00020	A740888	<0.00020	<0.00020	0.00020	A740275
Dissolved Lithium (Li)	mg/L	<0.020	A739350	<0.020	<0.020	0.020	A739350
Dissolved Magnesium (Mg)	mg/L	14	A739350	16	10	0.20	A739350
Dissolved Manganese (Mn)	mg/L	<0.0040	A739350	0.33	<0.0040	0.0040	A739350
Dissolved Molybdenum (Mo)	mg/L	0.0026	A740888	0.0011	0.0011	0.00020	A740275
Dissolved Nickel (Ni)	mg/L	0.0014	A740888	0.0034	0.0016	0.00050	A740275
Dissolved Phosphorus (P)	mg/L	<0.10	A739350	<0.10	<0.10	0.10	A739350
Dissolved Potassium (K)	mg/L	1.5	A739350	1.2	0.99	0.30	A739350
Dissolved Selenium (Se)	mg/L	<0.00020	A740888	0.00029	0.00035	0.00020	A740275
Dissolved Silicon (Si)	mg/L	<0.50	A739350	2.1	1.6	0.50	A739350
Dissolved Silver (Ag)	mg/L	<0.00010	A740888	<0.00010	<0.00010	0.00010	A740275
Dissolved Sodium (Na)	mg/L	4.7	A739350	8.4	8.4	0.50	A739350
Dissolved Strontium (Sr)	mg/L	0.20	A739350	0.37	0.23	0.020	A739350
Dissolved Sulphur (S)	mg/L	4.9	A739350	15	13	0.20	A739350
Dissolved Thallium (Tl)	mg/L	<0.00020	A740888	<0.00020	<0.00020	0.00020	A740275
Dissolved Tin (Sn)	mg/L	<0.0010	A740888	<0.0010	<0.0010	0.0010	A740275
Dissolved Titanium (Ti)	mg/L	<0.0010	A740888	<0.0010	<0.0010	0.0010	A740275
Dissolved Uranium (U)	mg/L	0.00035	A740888	0.00084	0.00071	0.00010	A740275
Dissolved Vanadium (V)	mg/L	<0.0010	A740888	<0.0010	<0.0010	0.0010	A740275
Dissolved Zinc (Zn)	mg/L	<0.0030	A740888	<0.0030	0.0068	0.0030	A740275
RDL = Reportable Detection Limit							

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Bureau Veritas Job #: C275351
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA369
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/29
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A734601	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/05	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A735479	N/A	2022/09/29	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738972	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/29	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740888	N/A	2022/10/04	Mandeep Kaur
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739249	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736776	N/A	2022/09/30	Adam Fishleigh
Nitrate (as N)	CALC	A734833	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A734813	N/A	2022/09/29	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/04	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738978	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A735304	2022/09/29	2022/09/29	Haydee Estilong
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas ID: BDA369 Dup
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/29
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti

Bureau Veritas Job #: C275351
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA369 Dup
Sample ID: AEMP-05
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/29
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang

Bureau Veritas ID: BDA370
Sample ID: AEMP-13
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/29
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A734601	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A735481	N/A	2022/09/29	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A738974	N/A	2022/10/03	Ming Dong
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/29	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740275	N/A	2022/10/05	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739249	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736776	N/A	2022/09/30	Adam Fishleigh
Nitrate (as N)	CALC	A734833	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A734813	N/A	2022/09/29	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739220	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A738978	N/A	2022/10/03	Ming Dong
Total Suspended Solids (NFR)	BAL	A735304	2022/09/29	2022/09/29	Haydee Estilong
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas Job #: C275351
Report Date: 2022/10/06

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

TEST SUMMARY

Bureau Veritas ID: BDA371
Sample ID: AEMP-01
Matrix: Water

Collected: 2022/09/25
Relinquished: 2022/09/29
Received: 2022/09/28

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity @25C (pp, total), CO3,HCO3,OH	AT/ALK	A736188	N/A	2022/09/30	Tracy (Jing) Ling
Biochemical Oxygen Demand	DO/PROB	A734601	2022/09/29	2022/10/04	Marjolen Busslinger
BTEX/F1 in Water by HS GC/MS/FID	HSGC/MS	A736195	N/A	2022/10/01	Darrus Ong
F1-BTEX	CALC/MS	A734878	N/A	2022/10/01	Automated Statchk
Cadmium - low level CCME - Dissolved	CALC/MS	A734971	N/A	2022/10/06	Automated Statchk
Cadmium - low level CCME (Total)	CALC/MS	A734972	N/A	2022/10/03	Automated Statchk
Chloride/Sulphate by Auto Colourimetry	KONE	A735479	N/A	2022/09/29	Carlo Truong
COD by Colorimeter	M/PROB	A736249	N/A	2022/09/30	Amy Phan
True Colour	SPEC/COL	A735717	N/A	2022/09/29	Paolo Jose Geronimo
Carbon (DOC)	TECH	A741969	N/A	2022/10/05	Ye Hyun KIM
Conductivity @25C	COND	A736192	N/A	2022/09/30	Tracy (Jing) Ling
Fluoride	AT	A736197	N/A	2022/09/30	Tracy (Jing) Ling
CCME Hydrocarbons in Water (F2; C10-C16)	GC/FID	A735044	2022/09/30	2022/09/30	Grace (Quan) Guo
Sulphide (as H2S)	CALC	A734706	N/A	2022/09/29	Automated Statchk
Hardness	CALC	A734625	N/A	2022/10/03	Automated Statchk
Mercury (Dissolved) by CV	CV	A735524	2022/09/29	2022/09/30	Jason Bao
Mercury (Total) by CV	CV	A735521	2022/09/29	2022/09/30	Jason Bao
Elements by ICP - Dissolved	ICPA	A739350	N/A	2022/10/03	Paula Calzada
Elements by ICP - Total	ICPA	A736201	2022/09/30	2022/10/03	Mohammad Pousti
Elements by ICPMS - Dissolved	ICPM	A740275	N/A	2022/10/05	Rikuto Yamazaki
Elements by ICPMS - Total	ICPM	A736196	2022/09/30	2022/10/03	Kevin Huang
Ion Balance	CALC	A734626	N/A	2022/10/03	Automated Statchk
Ammonia-N (Total)	KONE	A739249	N/A	2022/10/03	Adam Fishleigh
Nitrate and Nitrite	CALC	A734832	N/A	2022/10/04	Automated Statchk
NO2 (N); NO2 (N) + NO3 (N) in Water	AC/COL	A736776	N/A	2022/09/30	Adam Fishleigh
Nitrate (as N)	CALC	A734833	2022/10/04	2022/10/04	Automated Statchk
Oil and Grease (Gravimetric, n-Hexane)	CALC	A731114	2022/09/30	2022/09/30	Junyan Ban
Benzo[a]pyrene Equivalency	GC/MSD	A734968	N/A	2022/10/02	Automated Statchk
PAH in Water by GC/MS	GC/MS	A735041	2022/09/30	2022/10/02	Jiby Uthup
pH @25°C	AT/ALK	A736189	N/A	2022/09/30	Tracy (Jing) Ling
Total Sulphide	SPEC	A734813	N/A	2022/09/29	Dafne Strozake Maximo
Total Dissolved Solids (Filt. Residue)	BAL	A736224	2022/09/30	2022/09/30	Kamalpreet Kaur (Calgary)
Total Kjeldahl Nitrogen (Total)	CALC	A734969	N/A	2022/10/04	Automated Statchk
Nitrogen (Total)	AC/COL	A739225	2022/10/02	2022/10/03	Mary Anne Dela Cruz
Carbon (Total Organic)	TECH	A743779	N/A	2022/10/05	Ming Dong
Total Suspended Solids (NFR)	BAL	A735304	2022/09/29	2022/09/29	Haydee Estilong
Turbidity	TURB	A735313	N/A	2022/09/29	Kamalpreet Kaur (Calgary)

Bureau Veritas Edmonton: 9331 - 48th Street T6B 2R4 Telephone (780)577-7100 Fax (780)450-4187

Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.3°C

Temperatures upon receipt at Bureau Veritas Labs Calgary
Package 1: 3.3 degrees C
Package 2: 4.3 degrees C
Each temperature is the average of up to three cooler temperatures taken at receipt.

Sample BDA369 [AEMP-05] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA370 [AEMP-13] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Sample BDA371 [AEMP-01] : Sample was analyzed past method specified hold time for Biochemical Oxygen Demand. Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised. Sample was analyzed past method specified hold time for Turbidity. Sample was analyzed past method specified hold time for True Colour. Sample was analyzed past method specified hold time for NO2 (N); NO2 (N) + NO3 (N) in Water.

Results relate only to the items tested.

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
BDA369	AEMP-05	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA369	AEMP-05	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA369	AEMP-05	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA370	AEMP-13	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA370	AEMP-13	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA370	AEMP-13	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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Advisian
Task Order#: PENDING, Line Item: 10
Site#: N/A
Site Location: NORMAN WELLS, NT
Project #: 417085-42051-22200

DATA QUALITY OVERVIEW

Lab ID	Client Sample ID	Matrix	Test Code	Analysis Type	Parameters	Deviation	Root Cause	Potential Impact
BDA371	AEMP-01	Water	COLOURT-W	PHYS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA371	AEMP-01	Water	NO23AC-W	NUTS	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.
BDA371	AEMP-01	Water	TURB	SPP	Sample	#11 Past Hold Time	#10 Lab Error	This may increase the uncertainty associated with these results.

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QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A731114	JB9	Method Blank	Total Oil and grease	2022/09/30	<2.0		mg/L	
A734601	MB5	Method Blank	Biochemical Oxygen Demand	2022/10/04	<2.0		mg/L	
A734813	DSX	Method Blank	Total Sulphide	2022/09/29	<0.0018		mg/L	
A735041	JU2	Method Blank	D10-ANTHRACENE (sur.)	2022/10/02		128	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		130	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		122	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		94	%	50 - 130
			Acenaphthene	2022/10/02	<0.00010		mg/L	
			Acenaphthylene	2022/10/02	<0.00010		mg/L	
			Acridine	2022/10/02	<0.000040		mg/L	
			Anthracene	2022/10/02	<0.000010		mg/L	
			Benzo(a)anthracene	2022/10/02	<0.0000085		mg/L	
			Benzo(b&j)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(k)fluoranthene	2022/10/02	<0.0000085		mg/L	
			Benzo(g,h,i)perylene	2022/10/02	<0.0000085		mg/L	
			Benzo(c)phenanthrene	2022/10/02	<0.000050		mg/L	
			Benzo(a)pyrene	2022/10/02	<0.0000075		mg/L	
			Benzo(e)pyrene	2022/10/02	<0.000050		mg/L	
			Chrysene	2022/10/02	<0.0000085		mg/L	
			Dibenz(a,h)anthracene	2022/10/02	<0.0000075		mg/L	
			Fluoranthene	2022/10/02	<0.000010		mg/L	
			Fluorene	2022/10/02	<0.000050		mg/L	
			Indeno(1,2,3-cd)pyrene	2022/10/02	<0.0000085		mg/L	
			1-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			2-Methylnaphthalene	2022/10/02	<0.00010		mg/L	
			Naphthalene	2022/10/02	<0.00010		mg/L	
			Phenanthrene	2022/10/02	<0.000050		mg/L	
			Perylene	2022/10/02	<0.000050		mg/L	
			Pyrene	2022/10/02	<0.000020		mg/L	
			Quinoline	2022/10/02	<0.00020		mg/L	
A735044	GG3	Method Blank	O-TERPHENYL (sur.)	2022/09/30		107	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30	<0.10		mg/L	
A735304	HE1	Method Blank	Total Suspended Solids	2022/09/29	<1.0		mg/L	
A735313	KK9	Method Blank	Turbidity	2022/09/29	<0.10		NTU	
A735479	CTU	Method Blank	Chloride (Cl)	2022/09/29	<1.0		mg/L	
			Sulphate (SO4)	2022/09/29	<1.0		mg/L	
A735481	CTU	Method Blank	Chloride (Cl)	2022/09/29	<1.0		mg/L	
			Sulphate (SO4)	2022/09/29	<1.0		mg/L	
A735521	JAB	Method Blank	Total Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735524	JAB	Method Blank	Dissolved Mercury (Hg)	2022/09/30	<0.0019		ug/L	
A735717	GPJ	Method Blank	True Colour	2022/09/29	<2.0		PtCo units	
A736188	JLD	Method Blank	Alkalinity (Total as CaCO3)	2022/09/30	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/09/30	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/09/30	<1.0		mg/L	
			Carbonate (CO3)	2022/09/30	<1.0		mg/L	
			Hydroxide (OH)	2022/09/30	<1.0		mg/L	
A736192	JLD	Method Blank	Conductivity	2022/09/30	<2.0		uS/cm	
A736195	DO1	Method Blank	1,4-Difluorobenzene (sur.)	2022/10/01		103	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/10/01		97	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/10/01		104	%	50 - 140
			Benzene	2022/10/01	<0.00040		mg/L	
			Toluene	2022/10/01	<0.00040		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Ethylbenzene	2022/10/01	<0.00040		mg/L	
			m & p-Xylene	2022/10/01	<0.00080		mg/L	
			o-Xylene	2022/10/01	<0.00040		mg/L	
			F1 (C6-C10)	2022/10/01	<0.10		mg/L	
A736196	KH2	Method Blank	Total Aluminum (Al)	2022/10/03	<0.0030		mg/L	
			Total Chromium (Cr)	2022/10/03	<0.0010		mg/L	
			Total Cobalt (Co)	2022/10/03	<0.00030		mg/L	
			Total Copper (Cu)	2022/10/03	<0.0010		mg/L	
			Total Lead (Pb)	2022/10/03	<0.00020		mg/L	
			Total Antimony (Sb)	2022/10/03	<0.00060		mg/L	
			Total Molybdenum (Mo)	2022/10/03	<0.00020		mg/L	
			Total Nickel (Ni)	2022/10/03	<0.00050		mg/L	
			Total Selenium (Se)	2022/10/03	<0.00020		mg/L	
			Total Silver (Ag)	2022/10/03	<0.00010		mg/L	
			Total Arsenic (As)	2022/10/03	<0.00020		mg/L	
			Total Thallium (Tl)	2022/10/03	<0.00020		mg/L	
			Total Tin (Sn)	2022/10/03	<0.0010		mg/L	
			Total Titanium (Ti)	2022/10/03	<0.0010		mg/L	
			Total Uranium (U)	2022/10/03	<0.00010		mg/L	
			Total Vanadium (V)	2022/10/03	<0.0010		mg/L	
			Total Zinc (Zn)	2022/10/03	<0.0030		mg/L	
			Total Beryllium (Be)	2022/10/03	<0.0010		mg/L	
A736197	JLD	Method Blank	Dissolved Fluoride (F)	2022/09/30	<0.050		mg/L	
A736201	MPU	Method Blank	Total Iron (Fe)	2022/10/03	<0.060		mg/L	
			Total Lithium (Li)	2022/10/03	<0.020		mg/L	
			Total Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Total Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Total Potassium (K)	2022/10/03	<0.30		mg/L	
			Total Sodium (Na)	2022/10/03	<0.50		mg/L	
			Total Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Total Sulphur (S)	2022/10/03	<0.20		mg/L	
			Total Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Total Barium (Ba)	2022/10/03	<0.010		mg/L	
			Total Silicon (Si)	2022/10/03	<0.50		mg/L	
			Total Boron (B)	2022/10/03	<0.020		mg/L	
			Total Calcium (Ca)	2022/10/03	<0.30		mg/L	
A736224	KK9	Method Blank	Total Dissolved Solids	2022/09/30	<10		mg/L	
A736249	AP1	Method Blank	Chemical Oxygen Demand	2022/09/30	<10		mg/L	
A736776	AFI	Method Blank	Nitrite (N)	2022/09/30	<0.010		mg/L	
			Nitrate plus Nitrite (N)	2022/09/30	<0.010		mg/L	
A738972	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738974	MDO	Method Blank	Dissolved Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A738978	MDO	Method Blank	Total Organic Carbon (C)	2022/10/03	<0.50		mg/L	
A739220	MAP	Method Blank	Total Nitrogen (N)	2022/10/03	<0.020		mg/L	
A739225	MAP	Method Blank	Total Nitrogen (N)	2022/10/03	<0.020		mg/L	
A739249	AFI	Method Blank	Total Ammonia (N)	2022/10/03	<0.015		mg/L	
A739350	PC5	Method Blank	Dissolved Iron (Fe)	2022/10/03	<0.060		mg/L	
			Dissolved Lithium (Li)	2022/10/03	<0.020		mg/L	
			Dissolved Magnesium (Mg)	2022/10/03	<0.20		mg/L	
			Dissolved Manganese (Mn)	2022/10/03	<0.0040		mg/L	
			Dissolved Potassium (K)	2022/10/03	<0.30		mg/L	
			Dissolved Sodium (Na)	2022/10/03	<0.50		mg/L	

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Strontium (Sr)	2022/10/03	<0.020		mg/L	
			Dissolved Sulphur (S)	2022/10/03	<0.20		mg/L	
			Dissolved Phosphorus (P)	2022/10/03	<0.10		mg/L	
			Dissolved Barium (Ba)	2022/10/03	<0.010		mg/L	
			Dissolved Silicon (Si)	2022/10/03	<0.50		mg/L	
			Dissolved Boron (B)	2022/10/03	<0.020		mg/L	
			Dissolved Calcium (Ca)	2022/10/03	<0.30		mg/L	
A740275	RY3	Method Blank	Dissolved Aluminum (Al)	2022/10/05	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/05	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/05	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/05	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/05	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/05	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/05	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/05	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/05	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/05	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/05	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/05	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/05	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/05	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/05	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/05	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/05	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/05	<0.0010		mg/L	
A740888	MKJ	Method Blank	Dissolved Aluminum (Al)	2022/10/04	<0.0030		mg/L	
			Dissolved Chromium (Cr)	2022/10/04	<0.0010		mg/L	
			Dissolved Cobalt (Co)	2022/10/04	<0.00030		mg/L	
			Dissolved Copper (Cu)	2022/10/04	<0.0010		mg/L	
			Dissolved Lead (Pb)	2022/10/04	<0.00020		mg/L	
			Dissolved Antimony (Sb)	2022/10/04	<0.00060		mg/L	
			Dissolved Molybdenum (Mo)	2022/10/04	<0.00020		mg/L	
			Dissolved Nickel (Ni)	2022/10/04	<0.00050		mg/L	
			Dissolved Selenium (Se)	2022/10/04	<0.00020		mg/L	
			Dissolved Silver (Ag)	2022/10/04	<0.00010		mg/L	
			Dissolved Arsenic (As)	2022/10/04	<0.00020		mg/L	
			Dissolved Thallium (Tl)	2022/10/04	<0.00020		mg/L	
			Dissolved Tin (Sn)	2022/10/04	<0.0010		mg/L	
			Dissolved Titanium (Ti)	2022/10/04	<0.0010		mg/L	
			Dissolved Uranium (U)	2022/10/04	<0.00010		mg/L	
			Dissolved Vanadium (V)	2022/10/04	<0.0010		mg/L	
			Dissolved Zinc (Zn)	2022/10/04	<0.0030		mg/L	
			Dissolved Beryllium (Be)	2022/10/04	<0.0010		mg/L	
A741969	YHK	Method Blank	Dissolved Organic Carbon (C)	2022/10/05	<0.50		mg/L	
A743779	MDO	Method Blank	Total Organic Carbon (C)	2022/10/05	<0.50		mg/L	
A736196	KH2	RPD [BDA369-09]	Total Aluminum (Al)	2022/10/03	3.9		%	20
			Total Chromium (Cr)	2022/10/03	NC		%	20
			Total Cobalt (Co)	2022/10/03	NC		%	20
			Total Copper (Cu)	2022/10/03	NC		%	20
			Total Lead (Pb)	2022/10/03	NC		%	20
			Total Antimony (Sb)	2022/10/03	NC		%	20
			Total Molybdenum (Mo)	2022/10/03	3.1		%	20

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Nickel (Ni)	2022/10/03	4.0		%	20
			Total Selenium (Se)	2022/10/03	NC		%	20
			Total Silver (Ag)	2022/10/03	NC		%	20
			Total Arsenic (As)	2022/10/03	1.8		%	20
			Total Thallium (Tl)	2022/10/03	NC		%	20
			Total Tin (Sn)	2022/10/03	NC		%	20
			Total Titanium (Ti)	2022/10/03	NC		%	20
			Total Uranium (U)	2022/10/03	4.6		%	20
			Total Vanadium (V)	2022/10/03	NC		%	20
			Total Zinc (Zn)	2022/10/03	NC		%	20
			Total Beryllium (Be)	2022/10/03	NC		%	20
A736201	MPU	RPD [BDA369-09]	Total Iron (Fe)	2022/10/03	3.1		%	20
			Total Lithium (Li)	2022/10/03	NC		%	20
			Total Magnesium (Mg)	2022/10/03	0.23		%	20
			Total Manganese (Mn)	2022/10/03	0		%	20
			Total Potassium (K)	2022/10/03	0.40		%	20
			Total Sodium (Na)	2022/10/03	1.1		%	20
			Total Strontium (Sr)	2022/10/03	0.16		%	20
			Total Sulphur (S)	2022/10/03	0.77		%	20
			Total Phosphorus (P)	2022/10/03	NC		%	20
			Total Barium (Ba)	2022/10/03	1.4		%	20
			Total Silicon (Si)	2022/10/03	NC		%	20
			Total Boron (B)	2022/10/03	NC		%	20
			Total Calcium (Ca)	2022/10/03	0.10		%	20
A736224	KK9	Matrix Spike [BDA369-01]	Total Dissolved Solids	2022/09/30		96	%	80 - 120
A731114	JB9	LCS	Total Oil and grease	2022/09/30		124	%	70 - 130
A734601	MB5	LCS	Biochemical Oxygen Demand	2022/10/04		94	%	85 - 115
A734813	DSX	LCS	Total Sulphide	2022/09/29		105	%	80 - 120
A735041	JU2	LCS	D10-ANTHRACENE (sur.)	2022/10/02		103	%	50 - 130
			TERPHENYL-D14 (sur.)	2022/10/02		112	%	50 - 130
			D8-ACENAPHTHYLENE (sur.)	2022/10/02		111	%	50 - 130
			D8-NAPHTHALENE (sur.)	2022/10/02		86	%	50 - 130
			Acenaphthene	2022/10/02		99	%	50 - 130
			Acenaphthylene	2022/10/02		107	%	50 - 130
			Acridine	2022/10/02		93	%	50 - 130
			Anthracene	2022/10/02		83	%	50 - 130
			Benzo(a)anthracene	2022/10/02		115	%	50 - 130
			Benzo(b&j)fluoranthene	2022/10/02		56	%	50 - 130
			Benzo(k)fluoranthene	2022/10/02		111	%	50 - 130
			Benzo(g,h,i)perylene	2022/10/02		94	%	50 - 130
			Benzo(c)phenanthrene	2022/10/02		118	%	50 - 130
			Benzo(a)pyrene	2022/10/02		101	%	50 - 130
			Benzo(e)pyrene	2022/10/02		105	%	50 - 130
			Chrysene	2022/10/02		110	%	50 - 130
			Dibenz(a,h)anthracene	2022/10/02		101	%	50 - 130
			Fluoranthene	2022/10/02		107	%	50 - 130
			Fluorene	2022/10/02		113	%	50 - 130
			Indeno(1,2,3-cd)pyrene	2022/10/02		104	%	50 - 130
			1-Methylnaphthalene	2022/10/02		75	%	50 - 130
			2-Methylnaphthalene	2022/10/02		92	%	50 - 130
			Naphthalene	2022/10/02		90	%	50 - 130
			Phenanthrene	2022/10/02		99	%	50 - 130

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Perylene	2022/10/02		102	%	50 - 130
			Pyrene	2022/10/02		105	%	50 - 130
			Quinoline	2022/10/02		89	%	50 - 130
A735044	GG3	LCS	O-TERPHENYL (sur.)	2022/09/30		102	%	60 - 140
			F2 (C10-C16 Hydrocarbons)	2022/09/30		98	%	60 - 140
A735304	HE1	LCS	Total Suspended Solids	2022/09/29		97	%	80 - 120
A735313	KK9	LCS	Turbidity	2022/09/29		104	%	80 - 120
A735479	CTU	LCS	Chloride (Cl)	2022/09/29		100	%	80 - 120
			Sulphate (SO4)	2022/09/29		103	%	80 - 120
A735481	CTU	LCS	Chloride (Cl)	2022/09/29		106	%	80 - 120
			Sulphate (SO4)	2022/09/29		104	%	80 - 120
A735521	JAB	LCS	Total Mercury (Hg)	2022/09/30		98	%	80 - 120
A735524	JAB	LCS	Dissolved Mercury (Hg)	2022/09/30		94	%	80 - 120
A735717	GPJ	LCS	True Colour	2022/09/29		100	%	80 - 120
A736188	JLD	LCS	Alkalinity (Total as CaCO3)	2022/09/30		97	%	80 - 120
A736189	JLD	LCS	pH	2022/09/30		100	%	97 - 103
A736192	JLD	LCS	Conductivity	2022/09/30		99	%	90 - 110
A736195	DO1	LCS	1,4-Difluorobenzene (sur.)	2022/10/01		101	%	50 - 140
			4-Bromofluorobenzene (sur.)	2022/10/01		98	%	50 - 140
			D4-1,2-Dichloroethane (sur.)	2022/10/01		102	%	50 - 140
			Benzene	2022/10/01		96	%	60 - 130
			Toluene	2022/10/01		91	%	60 - 130
			Ethylbenzene	2022/10/01		96	%	60 - 130
			m & p-Xylene	2022/10/01		93	%	60 - 130
			o-Xylene	2022/10/01		93	%	60 - 130
			F1 (C6-C10)	2022/10/01		110	%	60 - 140
A736196	KH2	LCS	Total Aluminum (Al)	2022/10/03		103	%	80 - 120
			Total Chromium (Cr)	2022/10/03		101	%	80 - 120
			Total Cobalt (Co)	2022/10/03		100	%	80 - 120
			Total Copper (Cu)	2022/10/03		102	%	80 - 120
			Total Lead (Pb)	2022/10/03		95	%	80 - 120
			Total Antimony (Sb)	2022/10/03		99	%	80 - 120
			Total Molybdenum (Mo)	2022/10/03		101	%	80 - 120
			Total Nickel (Ni)	2022/10/03		101	%	80 - 120
			Total Selenium (Se)	2022/10/03		99	%	80 - 120
			Total Silver (Ag)	2022/10/03		96	%	80 - 120
			Total Arsenic (As)	2022/10/03		97	%	80 - 120
			Total Thallium (Tl)	2022/10/03		98	%	80 - 120
			Total Tin (Sn)	2022/10/03		102	%	80 - 120
			Total Titanium (Ti)	2022/10/03		102	%	80 - 120
			Total Uranium (U)	2022/10/03		102	%	80 - 120
			Total Vanadium (V)	2022/10/03		101	%	80 - 120
			Total Zinc (Zn)	2022/10/03		98	%	80 - 120
			Total Beryllium (Be)	2022/10/03		98	%	80 - 120
A736197	JLD	LCS	Dissolved Fluoride (F)	2022/09/30		95	%	80 - 120
A736201	MPU	LCS	Total Iron (Fe)	2022/10/03		93	%	80 - 120
			Total Lithium (Li)	2022/10/03		94	%	80 - 120
			Total Magnesium (Mg)	2022/10/03		95	%	80 - 120
			Total Manganese (Mn)	2022/10/03		90	%	80 - 120
			Total Potassium (K)	2022/10/03		98	%	80 - 120
			Total Sodium (Na)	2022/10/03		97	%	80 - 120
			Total Strontium (Sr)	2022/10/03		90	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Total Sulphur (S)	2022/10/03		87	%	80 - 120
			Total Phosphorus (P)	2022/10/03		90	%	80 - 120
			Total Barium (Ba)	2022/10/03		93	%	80 - 120
			Total Silicon (Si)	2022/10/03		93	%	80 - 120
			Total Boron (B)	2022/10/03		88	%	80 - 120
			Total Calcium (Ca)	2022/10/03		97	%	80 - 120
A736224	KK9	LCS	Total Dissolved Solids	2022/09/30		104	%	80 - 120
A736249	AP1	LCS	Chemical Oxygen Demand	2022/09/30		101	%	80 - 120
A736776	AFI	LCS	Nitrite (N)	2022/09/30		101	%	80 - 120
			Nitrate plus Nitrite (N)	2022/09/30		102	%	80 - 120
A738972	MDO	LCS	Dissolved Organic Carbon (C)	2022/10/03		98	%	80 - 120
A738974	MDO	LCS	Dissolved Organic Carbon (C)	2022/10/03		109	%	80 - 120
A738978	MDO	LCS	Total Organic Carbon (C)	2022/10/03		106	%	80 - 120
A739220	MAP	LCS	Total Nitrogen (N)	2022/10/03		107	%	80 - 120
A739225	MAP	LCS	Total Nitrogen (N)	2022/10/03		103	%	80 - 120
A739249	AFI	LCS	Total Ammonia (N)	2022/10/03		104	%	80 - 120
A739350	PC5	LCS	Dissolved Iron (Fe)	2022/10/03		101	%	80 - 120
			Dissolved Lithium (Li)	2022/10/03		99	%	80 - 120
			Dissolved Magnesium (Mg)	2022/10/03		103	%	80 - 120
			Dissolved Manganese (Mn)	2022/10/03		97	%	80 - 120
			Dissolved Potassium (K)	2022/10/03		102	%	80 - 120
			Dissolved Sodium (Na)	2022/10/03		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/10/03		101	%	80 - 120
			Dissolved Sulphur (S)	2022/10/03		96	%	80 - 120
			Dissolved Phosphorus (P)	2022/10/03		100	%	80 - 120
			Dissolved Barium (Ba)	2022/10/03		103	%	80 - 120
			Dissolved Silicon (Si)	2022/10/03		94	%	80 - 120
			Dissolved Boron (B)	2022/10/03		102	%	80 - 120
			Dissolved Calcium (Ca)	2022/10/03		102	%	80 - 120
A740275	RY3	LCS	Dissolved Aluminum (Al)	2022/10/05		114	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/05		101	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/05		100	%	80 - 120
			Dissolved Copper (Cu)	2022/10/05		100	%	80 - 120
			Dissolved Lead (Pb)	2022/10/05		100	%	80 - 120
			Dissolved Antimony (Sb)	2022/10/05		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/05		98	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/05		100	%	80 - 120
			Dissolved Selenium (Se)	2022/10/05		108	%	80 - 120
			Dissolved Silver (Ag)	2022/10/05		96	%	80 - 120
			Dissolved Arsenic (As)	2022/10/05		102	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/05		101	%	80 - 120
			Dissolved Tin (Sn)	2022/10/05		102	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/05		103	%	80 - 120
			Dissolved Uranium (U)	2022/10/05		98	%	80 - 120
			Dissolved Vanadium (V)	2022/10/05		103	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/05		106	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/05		115	%	80 - 120
A740888	MKJ	LCS	Dissolved Aluminum (Al)	2022/10/04		102	%	80 - 120
			Dissolved Chromium (Cr)	2022/10/04		94	%	80 - 120
			Dissolved Cobalt (Co)	2022/10/04		91	%	80 - 120
			Dissolved Copper (Cu)	2022/10/04		93	%	80 - 120
			Dissolved Lead (Pb)	2022/10/04		92	%	80 - 120

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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
			Dissolved Antimony (Sb)	2022/10/04		106	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/10/04		99	%	80 - 120
			Dissolved Nickel (Ni)	2022/10/04		91	%	80 - 120
			Dissolved Selenium (Se)	2022/10/04		101	%	80 - 120
			Dissolved Silver (Ag)	2022/10/04		93	%	80 - 120
			Dissolved Arsenic (As)	2022/10/04		98	%	80 - 120
			Dissolved Thallium (Tl)	2022/10/04		89	%	80 - 120
			Dissolved Tin (Sn)	2022/10/04		105	%	80 - 120
			Dissolved Titanium (Ti)	2022/10/04		96	%	80 - 120
			Dissolved Uranium (U)	2022/10/04		92	%	80 - 120
			Dissolved Vanadium (V)	2022/10/04		97	%	80 - 120
			Dissolved Zinc (Zn)	2022/10/04		97	%	80 - 120
			Dissolved Beryllium (Be)	2022/10/04		97	%	80 - 120
A741969	YHK	LCS	Dissolved Organic Carbon (C)	2022/10/05		107	%	80 - 120
A743779	MDO	LCS	Total Organic Carbon (C)	2022/10/05		107	%	80 - 120
A739220	MAP	SRM	Total Nitrogen (N)	2022/10/03		102	%	80 - 120
A739225	MAP	SRM	Total Nitrogen (N)	2022/10/03		104	%	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

LCS: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

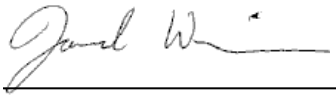
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VALIDATION SIGNATURE PAGE

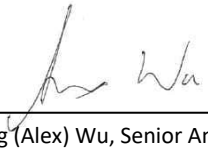
The analytical data and all QC contained in this report were reviewed and validated by:



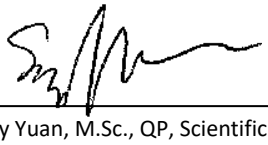
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Automated Statchk

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VALIDATION SIGNATURE PAGE(CONT'D)

The analytical data and all QC contained in this report were reviewed and validated by:

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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877 ISY

EXXON MOBIL/IMPERIAL OIL - MAXXAM CHAIN-OF-CUSTODY RECORD

C of C # 299527

INVOICE INFORMATION	REPORT INFORMATION
Company Name: ☒ Imperial Oil ☐ ExxonMobil	Company Name: WORLEY (ADVISIAN)
Contact Name: ALEX HAIGH	Contact Name: ALEX HAIGH
Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7	Address: 150, 205 QUARRY PARK BLVD SE, CALGARY AB T2C 3E7
Email: ALEX.HAIGH@ADVISIAN.COM	Email: ALEX.HAIGH@ADVISIAN.COM
Ph: 587-897-6249	Ph: 587-897-6249
Sampler Name (Print): JEFFERSON ENCINAS/MATTHEW EUBANK	Consultant Project #: 417085-42051-22200

	FIELD SAMPLE ID	MATRIX: GROUND WATER	SURFACE WATER	SOIL	OTHER	# CONTAINERS	SAMPLING: DATE (YYYY/MM/DD)	TIME (24 HR)	FIELD FILTERED & PRESERVED	LAB FILTRATION REQUIRED	ANALYSIS REQUESTED: Oil & Grease	PAH	PHCs (FRACTIONS 1-2 PLUS BTEX)	PHCs (FRACTIONS 1-4 PLUS BTEX)	PHCs (FRACTIONS 2-4)	PHCs (FRACTION 1 PLUS BTEX)	Total Sulphur	Dissolved Sulphur	PARTICLE SIZE DISTRIBUTION WITH GRAPH	REGULATED METALS TOT ☒ DIS ☐	MERCURY TOTAL ☒ DISSOLVED ☐	TDS	TSS	Turbidity	Total Organic Carbon	ROUTINE POTABILITY	pH ☐ EC ☐ ALKALINITY ☐	Dissolved Organic Carbon	COD	BOD (total) - samples frozen as per lab instructions	Fluoride	True Color	Nutrients - Nitrate-Nitrite, TKN, Ammonia	Sulphide		Project reference on bottles: "AEMP"
1	AEMP-05		X			17	2022/09/25	11:30	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X
2	AEMP-13		X			17	2022/09/25	12:00	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X
3	AEMP-01		X			17	2022/09/25	16:00	X		X	X	X				X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X
4																																				
5																																				
6																																				
7																																				
8																																				
9																																				
10																																				

IOL SITE LOCATION: NORMAN WELLS, NT
IOL PROJECT # (if applicable): N/A
MAXXAM TASK ORDER # OR SERVICE ORDER # + LINE ITEM: 417085-42051-22200

REGULATORY CRITERIA / DETECTION LIMITS:
☐ Alberta Tier 1 ☐ CDWG
☐ SEQG (SK) ☐ NoSC (SK)
☑ CCME (incl. level) FAL ☐ Other

SPECIAL INSTRUCTIONS: SEND DATA TO: CANADA.CHEMISTRY@WORLEY.COM CACAL.IORDATATRACK@WORLEY.COM IES A2601436

JARS USED & NOT SUBMITTED (Enter N/A for Water): N/A

TURNAROUND TIME
Standard (5 days) ☑
Rush (3 days) ☐ (2 days) ☐ (1 day) ☐ (same day) ☐
Date Required

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	2	4	4
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT	✓		TEMP °C	4	4	5
SEAL INTACT	✓			1	2	3
COOLING MEDIA PRESENT	✓					

	YES	NO	COOLER ID #			
SEAL PRESENT			TEMP °C	1	2	3
SEAL INTACT						
COOLING MEDIA PRESENT						

RELINQUISHED BY:		DATE:	TIME (24 HR)	RECEIVED BY:		DATE:	TIME (24 HR)
1. MEubk	Matthew Eubank	2022/09/26	12:47	1.	Alana Morrison	2022/09/28	1500
2. RA	Raghad Andrawees	2022/09/28	18:37	2.	Nick Batty	2022/09/29	07:00
3.				3.			

LAB USE ONLY
MAXXAM JOB # C275351
SAMPLES
LABELED BY: RAN
VERIFIED BY: ISY

COC-1010 (06/2016) IOL-AB

White: Maxxam Yellow: Client