



# 2022 Q1 Post-Closure Environmental Monitoring Report

**460 Stebbings Road, Shawnigan Lake, BC**  
**Ralmax Ventures Ltd.**

SLR Project No: 205.30042.00000

March 2022



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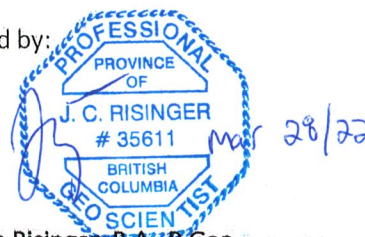
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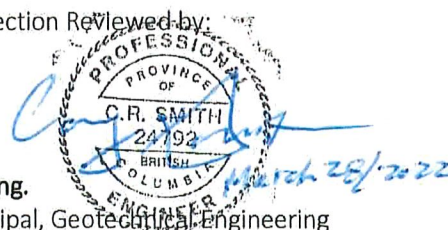
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## EXECUTIVE SUMMARY

SLR Consulting (Canada) Ltd. (SLR) was retained by Ralmax Ventures Ltd. (Ralmax) to complete post-closure environmental monitoring for the first quarter (Q1) of 2022 at the former South Island Aggregates landfill located at 460 Stebbings Road, Shawnigan Lake, BC (the “site”). The 2022 Q1 environmental monitoring program comprised surface water, groundwater, and leachate monitoring and sampling and a geotechnical assessment of the operation and maintenance of the landfill cover.

On February 16, 2022, SLR conducted surface water sampling of water within the creek located immediately west of the site, and groundwater sampling from seepage blanket wells and groundwater monitoring wells at the base of the permanent encapsulated area (PEA) and along the northwest boundary of the site.

Groundwater samples collected from the landfill seepage blanket and from groundwater wells had concentrations of metals that were less than the BC Contaminated Sites Regulation (CSR) drinking water (DW) and freshwater aquatic life (AWF) standards, which were considered applicable to the site.

The single surface water sample collected from the creek downgradient and adjacent to the PEA had a turbidity value of 2.55 nephelometric turbidity units, which was greater than the BC Source Drinking Water Quality Guideline. Concentrations of dissolved and total metals and inorganics were less than the BC Water Quality Guidelines applicable to the site.

On January 21 and February 11, 2022, a Qualified Environmental Professional from Ralmax collected leachate samples from the storage tanks contained within the leachate and leak detection storage facility before and following treatment. The leachate was run through the onsite treatment system consisting of a bag filter and the addition of potassium permanganate to reduce the manganese levels in preparation for disposal. Pre- and post-treatment leachate had concentrations of various metals that were greater than the applicable BC CSR DW and/or AWF standards. Concentrations of petroleum hydrocarbons and polycyclic aromatic hydrocarbons were less than the applicable standards. This water was removed from the tanks and disposed of at an authorized off-site facility.

Based on geochemical analysis of the leachate, surface water, and groundwater data from the site, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature and, therefore, the leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

The post-closure environmental monitoring program included monthly site visits to support on-going geotechnical assessment of the PEA. During the February 2022 site visit, SLR observed an area of soil subsidence in the northeast corner of the PEA. The area was approximately 2 m by 2 m and had subsided approximately 0.3 m vertically from existing surrounding grades. In addition to the recommendations made in the 2021 Q4 annual monitoring report (SLR, 2021), it is recommended that the area of subsidence be backfilled and compacted as soon as possible to avoid water collection and/or seepage and further erosion and subsidence. The area should be graded to ensure that there isn't a concentrated flow at this location.

This Executive Summary is intended to be read with the remainder of the report and is subject to the same limitation described in Section 7.0.

## 1.0 INTRODUCTION

SLR Consulting (Canada) Ltd. (SLR) was retained by Ralmax Ventures Ltd. (Ralmax) to complete post-closure environmental monitoring for the first quarter (Q1) of 2022 at the former South Island Aggregates landfill located at 460 Stebbings Road, Shawnigan Lake, BC (the “site”; Drawing 1). The 2022 Q1 environmental monitoring program comprised groundwater, surface water, and leachate monitoring and sampling per the Updated Environmental Monitoring Plan (EMP) (Sperling Hansen Associates (SHA), 2020) and a geotechnical assessment of the operation and maintenance of the landfill cover. The methods and findings of this event are summarized in this report.

### 1.1 Site Description

The site (formerly known as South Island Aggregates) is located approximately 5 kilometres (km) south of Shawnigan Lake and comprises Lot 23 Blocks 156, 201 and 323 Malahat District Plan VIP78459, with a total area of approximately 20 hectares. The site is bound to the east by Stebbings Road, to the north, west, and south by Crown Land. A creek is located on the west side of the site and drains north into Shawnigan Creek, which flows into the south end of Shawnigan Lake.

As per the Cobble Hill Landfill Closure Design Report (SHA, 2016) and Construction Wrap-up Report (SHA, 2020b), the base of the permanent encapsulated area (PEA) of the landfill consists of a gravel drainage blanket layer directly atop bedrock to promote groundwater drainage to collection infrastructure (i.e., settling pond) on the west portion of the site. Above the drainage blanket is an engineered basal liner system consisting of a geosynthetic clay liner and a 40-mil geomembrane liner. The cover of the PEA consists of a low-permeable soil cap atop the landfill soils, followed by layers of non-woven geotextile and geomembrane liner, a gravel layer to capture and direct surface water, subsoil and topsoil, and vegetation at surface for erosion control.

Leachate collection piping extends the length of the northern (downslope) edge of the PEA and connects to a leachate conveyance pipe, which leads to the leachate storage facility. Seepage blanket monitoring wells were installed around the north and east perimeter of the PEA and collect water from the seepage blanket beneath the encapsulated soil. Two additional groundwater monitoring wells were installed further downgradient of the PEA and seepage blanket wells (SHA, 2020b).

The locations of the PEA, seepage blanket wells, groundwater monitoring wells, surface water sampling location, and leachate storage facility are presented in Drawing 2.

### 1.2 Background

Per the Ministry of Environment & Climate Change Strategy (ENV) website, the site was authorized under the *Environmental Management Act* (EMA) as a contaminated soil remediation facility and landfill in August 2013. The permit was originally issued to Cobble Hill Holdings Ltd. (CHH), allowing CHH to treat contaminated soil, landfill soil that cannot be treated, and discharge treated effluent to the creek west of the site. Between February 2014 and January 2017, the landfill accepted approximately 97,595 tonnes of contaminated soil classified as less than hazardous waste (Sperling Hanson Associates (SHA), 2020). Since 2017, no additional contaminated soil has been accepted at the site.

On January 27, 2017, the permit was suspended, and a Spill Prevention Order (SPO) was issued specifying actions required to prevent the discharge of leachate and waste to the environment. The SPO was later amended on June 29, 2017, requiring CHH to submit a plan to permanently close the landfill in accordance with provincial standards for landfill closure.

Per the ENV website, the landfill is to follow the guidance outlined in the 2016 BC Landfill Criteria for Municipal Solid Waste (LCMSW) for preparation of the closure plan and monitoring program. On June 24, 2020, SHA completed an Updated EMP for the site that meets the standard monitoring protocols for landfills in BC and specified requirements by the ENV. Specifically, the EMP included the long-term monitoring and sampling of leachate, groundwater and surface water, and the assessment, operation and maintenance of the landfill cover including the leachate collection and storage works. SHA indicated that per Section 7.4 of the 2016 LCMSW, post-closure landfill monitoring and inspections are required for no less than 30 years. Since CHH stopped accepting soil and capped the site with a geomembrane in 2016, the monitoring program will extend to January 2046 (SHA, 2020a).

Following completion of the closure activities, SHA completed an environmental monitoring program on behalf of CHH for the period of October 2020 to December 2020 (fourth quarter (Q4) of 2020). As per the approved Updated EMP (SHA, 2020a), the Named Parties must submit quarterly implementation reports to ENV on or immediately before the last day of March, June, September, and December of each year, for the duration specified in the approved closure plan (SHA, 2016). Implementation reports must include records of inspections, operations and maintenance of the facility, records of the volumes of leachate collected, stored, and transported, including the name and location of the authorized facility(ies) receiving the leachate, and environmental monitoring program records interpreted by a Qualified Environmental Professional (QEP).

In August 2021, Ralmax purchased the mortgage for the site and entered a lease agreement with CHH allowing access to the site for continuing the post-closure monitoring of the PEA. On September 22, 2021, Ralmax informed SLR that the proposed monitoring, sampling, and geotechnical site assessment program is to be completed for five consecutive quarters as required under the Updated EMP (SHA, 2020a) and SPO issued by ENV in 2017. SLR completed an environmental monitoring program for Q4 of 2021 in December 2021 (SLR, 2021 and SLR, 2022). This program marks the second quarterly sampling event at the site since Ralmax's involvement at the site.

## 2.0 SCOPE OF WORK

The scope of work for the 2022 Q1 post-closure environmental monitoring is outlined as follows:

- Prepare a site-specific health and safety plan (HASP) covering the anticipated hazards of the work and mitigative measures including those relating to COVID-19;
- Monitor and sample groundwater from three existing groundwater monitoring wells and four existing seepage blanket monitoring wells, and submission of the samples to Bureau Veritas Laboratories (BV Labs) of Burnaby, BC, for analysis of potential contaminants of concern (PCOCs);
- Monitor and sample surface water from the creek (tributary of Shawnigan Creek) located immediately west of the site and submission of the samples to BV Labs for analysis of PCOCs;
- Prepare Piper plots for each of the groundwater and surface water results to characterize the water onsite;
- Completing monthly site visits to observe and record the conditions of the PEA of the landfill closure area (i.e., cover stability for geotechnical assessment); and
- Prepare a summary report that outlines the field methods, analytical results, and conclusions regarding the presence/absence of groundwater and/or surface water impacts, and the conditions of the landfill closure area. The summary report will also include outlining the methods and analytical results of the leachate sampling and disposal completed by Ralmax.



## 3.0 REGULATORY FRAMEWORK

The Contaminated Sites Regulation (CSR) and the EMA contain the principal regulatory requirements for contaminated sites management in British Columbia. The CSR came into effect on April 1, 1997 and was amended most recently on February 1, 2021. Under section 63.1 of EMA and protocols under section 64, the director's interim standards are legally binding. The Hazardous Waste Regulation (HWR) may also apply where contaminated media are transported, managed or disposed of off-site.

The EMA and CSR have provisions for incorporating numerical and risk-based standards approaches to managing site contamination. The legislation outlines site assessment procedures, remediation requirements, and application processes for environmental closure for a property. Numerical standards define whether a site is contaminated or has been satisfactorily remediated when using the numerical standards approach. Risk-based standards and risk-based remediation are recognized by the legislation.

Technical Guidance, Administrative Guidance, Procedure and Policy documents issued by the BC ENV clarify the interpretation of regulatory standards and requirements and provide information regarding their application. Provisions in these documents are not legally binding but indicate the expectations of the ENV.

### 3.1 Groundwater Standards

The CSR presents numerical standards for substances in water in Schedule 3.2. It references the numerical standards for four classes of water use:

Aquatic Life (AW),  
Irrigation (IW),

Drinking Water (DW)  
Livestock (LW),

Schedule 3.2 water quality standards for volatile hydrocarbons and light extractable hydrocarbons (VHW<sub>6-10</sub> and EPHW<sub>10-19</sub>, respectively) apply to all sites in BC, irrespective of water use.

ENV Protocol 21 specifies that AW, DW, IW, and LW standards generally apply for evaluating groundwater quality where receiving waters are used by aquatic life, surface water intakes are present on the site or within 500 metres (m), or where groundwater is used for irrigation or livestock watering. Essential aspects of applying water use standards are noted below, but other considerations may be relevant, and associated ENV guidance should also be consulted (e.g., for preferential groundwater flow corridors; water management plans; bedrock aquifers).

If water is used on a site or within 500 m for drinking water, DW standards are used to evaluate water quality. If the groundwater flow direction has been reliably determined using approved methods, then nearby current uses may be limited to include drinking water wells or surface water intakes 100 m upgradient and 500 m downgradient of the outer extent of the contamination source. To protect future potable water consumption, DW use also applies if there is an aquifer below the site with a hydraulic conductivity greater than or equal to  $1 \times 10^{-6}$  metres per second (m/s) and a yield greater than or equal to 1.3 litres per minute (L/min). The presence of underlying regional aquifers meeting these conditions must also be assessed unless the presence of a natural confining barrier has been confirmed following the requirements of Protocol 21.

If a surface water body with aquatic life water use is within 500 m of a site, AW standards apply to evaluate water quality. If groundwater substances are present at concentrations exceeding AW standards and may migrate to within 500 m of an aquatic life receptor, AW standards also apply to the site. Aquatic life water use standards do not apply at a site if approved methods are used to determine that groundwater at the site flows to a more distant surface water body.

Irrigation and livestock watering uses and the IW and LW standards apply at a site where groundwater or surface water within 500 m of the site is used for irrigation or livestock watering unless the groundwater flow direction has been reliably determined to be away from such purposes. Nearby current uses may then be limited to include only irrigation or livestock water wells or surface water intakes within 100 m upgradient and 500 m downgradient of the furthest extent of the contamination source. Although the site-specific soil matrix standards for irrigation and livestock watering uses in Schedule 3.1 apply only to specific land uses, the IW and LW water standards in Schedule 3.2 apply to all land uses where appropriate.

The Generic Numerical Water Standards for iron, manganese, nonylphenol and nonylphenol ethoxylates, perfluorooctane sulfonate, diisopropanolamine, and sulfolane apply only to sites with specific Schedule 2 industrial or commercial activities that could be a source of these substances, as listed in the footnotes to Schedule 3.2. For example, sites that have temporarily elevated iron and manganese levels in groundwater associated only with the presence of petroleum hydrocarbon contamination will typically not be required to meet the CSR standards for iron and manganese if not used for the specified Schedule 2 activities.

Provision exists in the CSR (section 11(3)) for considering background concentrations for groundwater. Protocol 9 specifies procedures for determining local background groundwater quality in a defined geographic area and for a defined groundwater flow system. They are to be followed if these alternative concentrations are to be used in place of numerical standards prescribed in the CSR.

For water to be classified as hazardous waste when transported from a site, it must meet criteria for one or more of TDGR Classes 2, 3, 4, 5, 6, 8 or 9 and HWR definitions for PCB waste; wastes containing dioxin; waste oil; leachable toxic waste (HWR Schedule 4, Table 1); waste containing tetrachloroethylene; and waste containing polycyclic aromatic hydrocarbon.

### 3.2 Surface Water Guidelines

The British Columbia Approved and Working Water Quality Guidelines (WQGs) are substance concentrations considered protective of aquatic life in receiving environments. The Approved WQGs have been endorsed by ENV for use in BC, whereas the Working WQGs provide references for compounds that have not yet been fully assessed in BC's environmental conditions. They include guidelines for microbiological, chemical, and physical parameters as they apply to freshwater aquatic life, marine and estuarine aquatic life, wildlife, livestock, irrigation, and recreational uses.

As outlined in Technical Guidance 15, WQGs apply to surface water or porewater below the high-water mark of an aquatic receiving environment. Concentration limits for inorganic substances apply to dissolved substance concentrations in groundwater and porewater and total substance concentrations in surface water and porewater in the ecologically active zone (i.e., within 1 m of the sediment surface).

CSR Schedule 3.2 aquatic life water standards continue to apply to surface water within a maintained watercourse. Wherever possible, WQGs should be met where a watercourse is abandoned, ceases to be maintained, or its surface water enters an aquatic receiving environment.

The BC source drinking water quality guidelines (SDWQGs) were developed as part of the ambient WQG and apply to future and current drinking water sources. The SDWQGs include Aesthetic Objectives (AO) and Maximum Acceptable Concentrations (MAC). Health-based MAC guidelines are established for substances with known or suspected adverse health effects, while AO guidelines are considered when determining whether consumers will consider the water drinkable. Parameters with AO guidelines may impair the taste, smell, or colour of water but do not cause adverse health effects.

### 3.3 Applicable Standards at the Site

The following sections outline the standards or guidelines that apply to groundwater, leachate, and surface water analytical data collected at the site.

#### 3.3.1 Groundwater and Leachate

Three aspects of the site relating to surface water and groundwater are essential for determining potentially applicable standards.

- Firstly, the site is situated in between two freshwater bodies: Shawnigan Creek and a tributary (creek) of Shawnigan Creek, located approximately 50 m to the east and immediately west, respectively. The nearest marine water body is Saanich Inlet, which is approximately 3.5 km from the site. In this case, the freshwater aquatic life (AWF) standards apply because groundwater exceeding aquatic life standards may migrate to freshwater bodies within 500 m of the site.
- Secondly, the ENV groundwater database well search indicates approximately 10 water supply wells are within 500 m of the subject site, including one registered to South Island Aggregates (i.e., on-site). Therefore, DW standards apply.
- Thirdly, irrigation water use does not occur on or near the site. Livestock watering use similarly does not occur. Since no irrigation or livestock water wells or surface water intakes are within 100 m upgradient and 500 m downgradient of the edge of a stable contaminant plume, standards based on irrigation and livestock watering uses do not apply.

Therefore, for this report, groundwater and leachate analytical results have been compared to the CSR Schedule 3.2 AWF and DW standards.

Additionally, the site does not fall within the regions specified in Protocol 9, Table 1. Protocol 9; however, provides an interim value for cobalt (20 micrograms per litre (µg/L)) that may be applied to all regions of BC not included in the Table 1 regions. The Protocol 9 values have been used to dismiss exceedances of the CSR Schedule 3.2 standards for cobalt.

#### 3.3.2 Surface Water

Based on surface water uses at the site, analytical results have been compared to the Approved and Working WQGs for AWF and the BC SDWQGs for AO and MAC.

## 4.0 METHODS

The groundwater and surface water monitoring and sampling activities were completed following SLR's standard field procedures and technical guidance documents to maintain consistency in data collection and prevent cross-contamination. The procedures were developed based on accepted environmental practices and guidelines for site characterization established by BC ENV. Details of the methods used in this assessment are discussed below.

### 4.1 Health and Safety

The project was conducted in a manner consistent with SLR's Occupational Health, Safety, and Environmental Policy. A site-specific HASP was prepared prior to commencing field activities. The HASP outlined project tasks, potential hazards, and mitigative measures including those related to COVID-19.

SLR personnel were required to review and sign the HASP at the start of each field workday during the daily tailgate meetings. During tailgate meetings, new potential hazards were identified and added to the HASP.

## 4.2 Leachate Sampling

A QEP from Ralmax collected leachate samples from the leachate tanks contained within the leachate and leak detection storage facility (Drawing 2) before and following treatment. Prior to sampling, leachate was purged from the leachate tank for approximately 10 minutes to allow for representative samples to be collected. The pre-treatment and post-treatment leachate was collected and transferred back into the leachate tanks. The pre-treatment sample was collected from the tank outlet pipe following purging, while post-treatment sample was collected from a sampling port after having been run through the onsite treatment system.

Pre- and post-treatment leachate to be analyzed for total parameters were pumped directly in laboratory-supplied bottles, while those to be analyzed for dissolved parameters were field filtered by pumping the leachate through a 0.45 micrometre ( $\mu\text{m}$ ) in-line filter prior to being pumped into laboratory-supplied bottles. Sample containers were labelled with the sample identification, project number, and date of collection.

Leachate samples were stored in an ice-filled cooler in the field and when being transported to BV Labs. A completed chain-of-custody report form accompanied the sample submission to the laboratory. The pre-treatment leachate sample was submitted for analysis of light and heavy extractable petroleum hydrocarbons (LEPH/HEPH), polycyclic aromatic hydrocarbons (PAHs), total and dissolved metals, alkalinity, inorganic parameters including chloride, fluoride, nitrate and sulfate, total dissolved solids (TDS) and turbidity. The post-treatment leachate sample was submitted to BV Labs for analysis of total metals and inorganics.

## 4.3 Surface Water Monitoring and Sampling

The creek located immediately west of the site boundary was monitored and sampled as part of the post-closure monitoring event. Surface water samples were collected using a Spectra Field Pro III peristaltic pump set to a constant pumping rate and dedicated 3/4-inch diameter high density polyethylene (HDPE) tubing. Temperature, pH, and electrical conductivity (EC) readings were taken of the surface water using a PCTestr 35 multi-parameter meter, and turbidity readings were recorded using a LaMotte turbidity meter. Observed physical characteristics of the water including clarity, sheen, and odour were also recorded.

Surface water samples to be analyzed for total parameters were pumped directly in laboratory-supplied bottles, while those to be analyzed for dissolved parameters were field filtered by pumping the water through a 0.45  $\mu\text{m}$  in-line filter prior to being pumped into laboratory-supplied bottles. Sample containers were labelled with the sample identification, project number, and date of collection.

Surface water samples were stored in an ice-filled cooler in the field and when being transported to BV Labs. A completed chain-of-custody report form accompanied the sample submission to the laboratory. The surface water sample, was submitted for analysis of analysis of total and dissolved metals, dissolved organic carbon (DOC), TDS, alkalinity, and inorganic parameters including chloride, fluoride, nitrate, and sulfate.

## 4.4 Groundwater Monitoring and Sampling

Select groundwater wells and seepage blanket monitoring wells were monitored and sampled as part of the post-closure monitoring event. During well monitoring, groundwater depths were measured using a Solinst oil-water interface meter. Between measurements, the interface meter probe was cleaned using an Alconox and water solution to avoid cross-contamination.

Prior to sampling, the monitoring wells were purged using a low-flow method to remove stagnant water from the well and encourage fresh formation water flow into the well. Low-flow purging was conducted using ¼" outside diameter HDPE tubing and a Spectra Field Pro III peristaltic pump set to a constant pumping rate. The purged water was monitored for physiochemical parameters including pH, temperature, and EC using a PCTestr multiparameter probe, and for turbidity using a LaMotte turbidity meter.

Water samples were collected from the monitoring wells when the measured parameters in the purged water stabilized indicating that representative formation water was being extracted. New tubing was used at each location to purge and collect the groundwater samples to minimize the potential for cross-contamination between monitoring wells.

Groundwater samples to be analyzed for total parameters were pumped directly in laboratory-supplied bottles, while those to be analyzed for dissolved parameters were field filtered by pumping the water through a 0.45 µm in-line filter prior to being pumped into laboratory-supplied bottles. A blind field duplicate (BFD) sample was collected in separate bottles simultaneously with the original sample from the same location. Sample containers were labelled with the sample identification, project number, and date of collection.

Groundwater samples were stored in an ice-filled cooler in the field and when being transported to BV Labs. A completed chain-of-custody report form accompanied the sample submission to the laboratory. The groundwater and seepage water samples were submitted for analysis of dissolved metals, TDS, alkalinity, and inorganic parameters including chloride, fluoride, nitrate, and sulfate.

## 4.5 Geotechnical Site Assessment

As part of the requirements set out by the EMP, the post-closure environmental monitoring program completed by SLR included monthly site visits to support on-going geotechnical assessment. The purpose of the site visits was to observe and record conditions of the capping for comparative review to the initial assessment completed in 2021 Q4 (SLR, 2021). The site visits included recorded observations and photographic documentation of site conditions, including: the PEA landfill cover, surface water management, leachate collection and conveyance, and environmental monitoring infrastructure (monitoring wells).

## 4.6 Waste Disposal

Groundwater removed from the monitoring wells during purging and sampling was collected in a 205 L steel drum for temporary storage on site prior to receiving laboratory results. SLR plans to dispose of the wastewater drums in November 2022, following the 2022 Q4 monitoring and sampling activities.

## 4.7 Quality Assurance and Quality Control

A quality assurance and quality control (QA/QC) program was followed to ensure that the sampling and analytical data were interpretable, meaningful, and reproducible. Two stages of QA/QC were completed, with one stage completed by the laboratory and the other as part of field procedures performed by SLR.

### 4.7.1 Laboratory QA/QC Program

BV Labs is accredited by the Canadian Association for Laboratory Accreditation that uses ENV recognized methods to conduct laboratory analyses. BV Labs is known for appropriate quality assurance services and participation in programs of inter-lab comparisons and on-site assessments based on international standards. As conveyed by the laboratory, method blanks, control standards, certified reference materials, method spikes, duplicates, surrogates, and blanks are routinely analyzed as part of their QA/QC programs.

### 4.7.2 Field QA/QC Program

SLR implemented a standardized QA/QC program in accordance with BC ENV guidance and general industry-established guidelines. The following QA/QC procedures were conducted during groundwater and surface water collection, handling, identification, and shipping:

- Water sampling bottles were supplied by the laboratory to minimize sample container contamination;
- Equipment and materials that came into contact with water were decontaminated by washing with Alconox soap and rinsing with distilled water between sampling locations;
- New nitrile gloves were used for each sample to minimize the potential for cross-contamination;
- The PCTestr multiparameter probe was calibrated prior to sampling;
- New HDPE tubing was used for each well during groundwater/seepage water sampling and at each surface water sampling location;
- Water samples were stored in ice-chilled coolers in the field or in a refrigerator until delivery to the laboratory;
- Completed chain-of-custody forms accompanied samples shipped to the laboratory;
- Samples were submitted to and analyzed by the laboratory within hold times specified by the laboratory to assure reliable results; and
- One BFD sample was/will be collected for every 10 samples collected over the course of the monitoring program (i.e., collectively over the five events).

BFD samples were collected to assess consistencies during the field sampling procedure and to perform an independent check on laboratory QA/QC. The relative percent difference (RPD) values between results for the parent sample and the duplicate sample are calculated to determine the precision of the results. RPD is defined as the absolute value of the difference of the duplicate results divided by the average of the duplicate results, expressed as a percentage. Analytical error increases near the reported detection limit (RDL); therefore, the RPD calculation was not performed unless the concentrations of both samples were greater than five times the RDL.

The calculated RPD values were compared to alert limits to evaluate the sample result variability. The alert limits for specific analytes are based on SLR's Technical Guidance, and industry accepted standards and are consistent with guidance provided by BC ENV.

## 5.0 RESULTS

The monitoring data and analytical results for the surface water, groundwater, and leachate samples are summarized in the following sections along with the geotechnical site investigation observations. The monitoring and analytical data is summarized in Tables 1 through 13 following the text and in Drawings 3 through 5. The findings of the geotechnical site visits are documented in photos 1 through 14 following the text.

### 5.1 Leachate Management

Between October 19, 2021, and February 22, 2022, the total volume of leachate collected and stored onsite was approximately 64,759 litres (L), equivalent to approximately 14,245 gallons. On February 22 and 23, 2022, a total volume of approximately 64,759 L (14,245 gallons) of leachate was transported by GFL Environmental Inc. to the SPL Wastewater Treatment Facility located at 995 Henry Eng Place, Langford, BC, for disposal.

### 5.2 Leachate Analytical Results

Sampling of pre- and post-treatment leachate was completed by Ralmax on January 21 and February 11, 2022, respectively. The pre-treatment sample (SHA-LE-1) was collected from the tank outlet pipe following purging, while post-treatment sample (SHA-LE1) was collected from a sampling port after having been run through the onsite treatment system consisting of bag filter and the addition of potassium permanganate to reduce the manganese levels for disposal. Analytical results are discussed in the following sections and are presented in Tables 1 through 6 following the text and on Drawing 3. Laboratory Certificate of Analysis (CoA) reports are included in Appendix A.

#### 5.2.1 Physiochemical Properties

Pre-treatment leachate sample SHA-LE-1 was analyzed for physiochemical properties including alkalinity, EC, turbidity, and TDS. There are no applicable CSR standards for these parameters. Physiochemical properties for leachate are presented in Table 1 following the text.

#### 5.2.2 Petroleum Hydrocarbons

Pre-treatment leachate sample SHA-LE-1 was analyzed for petroleum hydrocarbons including LEPH, HEPH, EPH C10-C19, and EPH C19-C32. The analytical results indicated that petroleum hydrocarbon concentrations in leachate were less than the RDLs and the applicable CSR standards. Results for petroleum hydrocarbons in leachate are presented in Table 2 following the text.

#### 5.2.3 Polycyclic Aromatic Hydrocarbons

Pre-treatment leachate sample SHA-LE-1 was analyzed for PAHs. The analytical results indicated that PAH concentrations in leachate were less than the applicable CSR standards. Results for PAHs in leachate are presented in Table 3 following the text.

#### 5.2.4 Total Metals

Pre- and post-treatment leachate samples were analyzed for total metals. Analytical results indicate that concentrations of sodium and strontium in pre-treatment sample (SHA-LE-1) were greater than the applicable CSR standards.



Concentrations of sodium and strontium in the post-treatment sample (SHA-LE1) were also greater than the applicable CSR standards. Results for total metals in leachate are presented in Table 4 following the text.

#### **5.2.5 Dissolved Metals**

Pre-treatment leachate sample SHA-LE-1 was analyzed for dissolved metals. The analytical results indicated that dissolved sodium and strontium concentrations in leachate were greater than the applicable CSR standards. Results for dissolved metals in leachate are presented in Table 5 following the text.

#### **5.2.6 Inorganics**

Pre- and post-treatment leachate samples were analyzed for inorganics. Analytical results indicate that concentrations of chloride and sulphate in pre-treatment sample (SHA-LE-1) were greater than the applicable CSR standards. Concentrations of chloride and sulphate in the post-treatment sample (SHA-LE1) were also greater than the applicable CSR standards. Results for inorganics in leachate are presented in Table 6 following the text.

### **5.3 Surface Water Field Observations**

Surface water field measurements were collected from the creek on February 16, 2022, prior to collecting samples. Turbidity of the water was 2.55 nephelometric turbidity units (NTUs), which was greater than the SDWQG of 1 NTU.

The temperature of the stream was 6 degrees Celsius (°C), which was less than the mean weekly maximum temperature WQG of 18 °C. The pH was 7.9, which was within the acceptable range according to the WQGs. EC was 388 microsiemens per centimetre (µS/cm). The stream water appeared clear and colorless. Field measurements, alkalinity, TDS, and DOC results are presented in Table 7 following the text.

### **5.4 Surface Water Analytical Results**

One surface water sample was collected from the creek directly west of the site on February 16, 2022. Analytical results are discussed in the following sections and are presented in Tables 8 through 10 following the text and summarized on Drawing 4. Laboratory CoA reports are included in Appendix A.

#### **5.4.1 Total Metals**

The surface water sample was analyzed for total metals. Analytical results indicate that concentrations were less than the applicable WQGs. Results for total metals in surface water are presented in Table 8 following the text.

#### **5.4.2 Dissolved Metals**

The surface water sample was analyzed for dissolved metals. Analytical results indicate that concentrations were less than the applicable WQGs. Results for dissolved metals in surface water are presented in Table 9 following the text.

Dissolved copper guidelines included in Table 9 were calculated using the Biotic Ligand Model (BLM) as per the WQG. Copies of the BLM results are provided in Appendix B.



### 5.4.3 Inorganics

The surface water sample was analyzed for inorganic parameters. Analytical results indicate that concentrations were less than the applicable WQGs. Results for inorganics in surface water are presented in Table 10 following the text.

## 5.5 Groundwater Field Observations

Three groundwater wells (MW19-01, MW19-02 and MW-3S) and four seepage blanket monitoring wells (SB-1, SB-2, SB-3, and SB-4) were monitored on February 16, 2022. The locations of these wells are presented in Drawing 2.

Groundwater levels at MW19-01, MW19-02, and MW-3S were 8.345 m below top of casing (TOC), 4.060 m below TOC, and 3.165 m below TOC, respectively. Seepage blanket wells SB-1, SB-2, and SB-3 had water levels at 8.900 m below TOC, 9.169 m below TOC, and 9.610 m below TOC, respectively. Seepage blanket well SB-4 was dry.

Field measurements (including temperature, pH, EC, and turbidity), alkalinity, and TDS results are presented in Table 11 following the text.

## 5.6 Groundwater Analytical Results

Three groundwater wells (MW19-01, MW19-02 and MW-3S) and three of the four seepage blanket monitoring wells (SB-1, SB-2, and SB-3) were sampled on February 16, 2022. Analytical results are discussed in the following sections and are presented in Tables 12 and 13 following the text and summarized on Drawing 5. Laboratory CoA reports are included in Appendix A.

### 5.6.1 Dissolved Metals

Six groundwater samples and one BFD were analyzed for dissolved metals. Analytical results indicate that concentrations were less than the applicable CSR standards. Results for dissolved metals in groundwater are presented in Table 12 following the text.

### 5.6.2 Inorganics

Six groundwater samples and one BFD were analyzed for inorganics. Analytical results indicate that concentrations were less than the applicable CSR standards. Results for inorganics in groundwater are presented in Table 13 following the text.

## 5.7 Geochemical Analysis

The major dissolved cations constituents (sodium, magnesium, calcium, and potassium) and anion constituents (bicarbonate, carbonate, sulphate, and chloride) of the groundwater, surface water, and leachate samples were plotted on a Piper plot. The purpose of the Piper plot is to show the composition of a water sample relative to its cation and anion constituents. This data can be used to determine the source of these constituents and effectively “fingerprint” each water type. The cation and anion data of the respective sample is expressed in milliequivalents/litre and normalized so that the concentrations are expressed as a relative percentage.

The leachate sample (SHA-LE-1) collected on January 21, 2022, and the groundwater and surface water samples (SB-1, SB-2, SB-3, MW19-01, MW19-02, MW-3S, and SW-1) collected on February 16, 2022, were drawn on a Piper plot along with the data collected in 2021 Q4.

The Piper plot indicated the following characteristics:

- The data from the 2022 Q1 sampling program is generally consistent with that collected during the 2021 Q4 sampling program.
- With regards to cation composition, the leachate samples are more sodium and potassium-rich when compared to the groundwater and surface water samples, which are more calcium-rich.
- With regards to the anion composition, the leachate sample is chloride-rich compared to the groundwater and surface water samples, are more sulphate- and/or carbonate-rich.
- The surface water and groundwater samples plot in generally the same areas of the Piper plot indicating that the groundwater is likely sourced primarily from surface water infiltration.

Based on the Piper plot, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature. The leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

## 5.8 QA/QC Results

SLR assessed the laboratory QA data along with the RPD values calculated for the duplicate pair collected during this monitoring and sampling program. The results of both are discussed below.

### 5.8.1 Laboratory Quality Assurance Results

SLR completed a review of the QA data that accompanied the laboratory CoA reports. The QA section of each report concludes that laboratory duplicate RPDs, reference material measurements, method blank spike recoveries, and matrix spike recoveries met the laboratory acceptability criteria.

The lab CoA report corresponding to BV Labs job number C203855 indicates that the sample analyzed for nitrite (SHE-LE-1) was done so past the method specified hold time of three days, which increases the uncertainty of the results but does not necessarily indicate that the results are compromised. The nitrite results for this sample were below the RDL of 0.005 milligrams per litre, which is two orders of magnitude below the lowest applicable standard. Based on this, the results from this analysis are not considered to have impacted the overall results of this assessment.

The laboratory QA data is included with the CoA reports in Appendix A.

### 5.8.2 Relative Percent Difference

One groundwater BFD was analyzed by BV Labs and compared to the parent sample by SLR. The calculated RPD values are presented alongside the surface water analytical data in Tables 11 through 13. RPD values for groundwater were below the alert limits. Based on this, the analytical data is considered reliable and representative of site conditions.

## 5.9 Geotechnical Site Assessment

As part of the ongoing geotechnical assessment, four monthly site visits were conducted on November 26 and December 15, 2021, and January 20 and February 16, 2022. Observations made during these visits were documented field notes and photographs included in the Photos 1 through 14 following the text and referenced below. The referenced photographs are a collection of select observations, and form part of a larger photograph collection that was taken during the site visits, which are kept on file for future reference. A summary of observations from the field notes collected during the site visits is discussed below. It is noted that during the December 2021 assessment, the site was covered in snow and observations of the PEA surface were limited.

### 5.9.1 Encapsulated Landfill Area

The surface of the PEA of the landfill (i.e., landfill cover) was generally consistent with the annual geotechnical assessment summarized in the 2021 Q4 report (SLR, 2021). The cover surface generally had sparse vegetation, primarily comprising a very low to low density growth of Scotch broom and sparse grass and weeds (Photos 1 through 5). Standing water was observed in November and January at localized areas of the cover in the southern (upper elevations) portion of the landfill that was graded with relatively flat slopes (Photos 6 and 7). Some shallow erosional features were observed within the surface of the cover, typically occurring over steeper graded areas (Photo 8).

In February 2022, SLR observed an area of soil subsidence in the northeast corner of the PEA. The area was approximately 2 m by 2 m and had subsided approximately 0.3 m vertically (Photo 9) from existing surrounding grades. The affected area should be backfilled and compacted to avoid water collection and seepage into the hole, and further erosion and subsidence. The area should be graded so there isn't a concentrated flow at this location. Ralmax was notified of this observation upon completion of the visit. Except for the area noted, the surface of the landfill appeared to be intact, with no signs of instability, cracking, burrowing, or exposed geosynthetics.

### 5.9.2 Surface Water Management

As noted above, some localized areas with shallow standing water were observed in the surface of the cover. Larger shallow pools of standing water were also observed near the perimeter of the landfill at the south boundary of the landfill (i.e., within the access road located at the south/southeast boundary of the landfill) during the four site visits (Photos 10 and 11).

No flowing water was observed within the perimeter drainage diversion, mid-slope drainage diversion, and toe ditches at the time of the site visits. Minor sediment accumulation was observed in a section of the northern drainage ditch (Photo 12) but does not appear to be impeding drainage.

### 5.9.3 Leachate and Leak Collection and Conveyance

The conditions of the leachate collection cleanout polyvinyl chloride (PVC) pipe stick-ups and seepage blanket monitoring well PVC pipe stick-ups with caps (SB-1 to SB-4) were consistent with the annual geotechnical assessment (SLR, 2021).

### 5.9.4 Storage Tank Facility

The storage tank facility was observed for changes in the lock-block wall structure, surrounding backfill, and inlet pipes. The structure appeared to be in the same condition as the annual geotechnical assessment (SLR, 2021) (Photos 13 and 14).

### 5.9.5 Monitoring Wells

The conditions of the monitoring wells (MW19-01 and 02, MW-1S-1D, MW-2, MW-3S/3D, MW-5S/5D, MW-6) were consistent with the annual geotechnical assessment (SLR, 2021).

## 6.0 CONCLUSION

Water collected from the leachate tanks contained within the leachate and leak detection storage facility had concentrations of various metals and inorganics that exceeded the applicable CSR standards for the site before and following treatment. The water was run through the onsite treatment system consisting of bag filter and the addition of potassium permanganate to reduce the manganese levels for disposal. This water was removed from the tanks and disposed of off-site.

Groundwater samples collected from the landfill seepage blanket and from groundwater wells at the base of the landfill had concentrations of metals that were less than the CSR standards applicable to the site.

The single surface water sample collected from the creek downgradient and adjacent to the capped landfill had turbidity values that were greater than the SDWQG. Concentrations of dissolved and total metals and inorganics were less than the WQGs applicable to the site.

A Piper plot analysis of the leachate, surface, and groundwater indicated the following trends:

- The data from the 2022 Q1 sampling program is generally consistent with that collected during the 2021 Q4 sampling program.
- With regards to cation composition, the leachate samples are more sodium and potassium-rich when compared to the groundwater and surface water samples, which are more calcium-rich.
- With regards to the anion composition, the leachate sample is chloride-rich compared to the groundwater and surface water samples, which have nearly equal parts sulphate to carbonates or are more carbonate-rich.
- The surface water and groundwater samples plot in generally the same areas of the Piper plot indicating that the groundwater is likely sourced primarily from surface water infiltration.

Based on the Piper plot, there does not appear to be a mixing line connecting the leachate signature to the surface water/groundwater signature; therefore, leachate does not appear to be impacting the surface water or groundwater within the zones assessed.

The geotechnical site visits were limited to observational review and did not include any intrusive assessment or internal review of piping systems or confined space inspection of the leachate facility, piping, and tanks. During the February 2022 site visit, SLR observed an area of soil subsidence in the northeast corner of the PEA. In addition to the recommendations made in the 2021 Q4 annual monitoring report (SLR, 2021), it is recommended that the area of subsidence be backfilled and compacted as soon as possible to avoid water collection and/or seepage and further erosion and subsidence. The area should be graded to ensure that there isn't a concentrated flow at this location.

## 7.0 STATEMENT OF LIMITATIONS

This report has been prepared and the work referred to in this report has been undertaken by SLR Consulting (Canada) Ltd. (SLR) for Ralmax Ventures Ltd., hereafter referred to as the “Client”. It is intended for the sole and exclusive use of Ralmax Ventures Ltd. Other than by the Client and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted unless payment for the work has been made in full and express written permission has been obtained from SLR.

This report has been prepared for specific application to this site and site conditions existing at the time work for the report was completed. Any conclusions or recommendations made in this report reflect SLR’s professional opinion based on limited investigations including: visual observation of the site, surface and subsurface investigation at discrete locations and depths, and laboratory analysis of specific chemical parameters. The results cannot be extended to previous or future site conditions, portions of the site that were unavailable for direct investigation, subsurface locations which were not investigated directly, or chemical parameters and materials that were not addressed. Substances other than those addressed by the investigation may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated in concentrations that differ from those reported. SLR does not warranty information from third party sources used in the development of investigations and subsequent reporting.

Nothing in this report is intended to constitute or provide a legal opinion. SLR expresses no warranty to the accuracy of laboratory methodologies and analytical results. SLR makes no representation as to the requirements of compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

The Client may submit this report to the BC ENV and/or related BC environmental regulatory authorities or persons for review and comment purposes.

## 8.0 REFERENCES

- British Columbia Ministry of Environment and Climate Change Strategy. 2020. BC Source Drinking Water Quality Guidelines: Guideline Summary. Water Quality Guideline Series, WQG-01. Prov. BC, Victoria, BC.
- British Columbia Ministry of Environment and Climate Change Strategy. 2021. BC Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture – Guideline Summary. Water Quality Guideline Series, WQG-20. Prov. BC, Victoria, BC.
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- Sperling Hansen Associates. 2020b. Construction Wrap-up Report for the Cobble Hill Holdings Landfill Closure Project, Cobble Hill, British Columbia. Prepared for Cobble Hill Holdings Ltd. September 2020.
- Sperling Hansen Associates. 2021. Quarterly Post-Closure Report, Cobble Hill Landfill Closure. Prepared for Cobble Hill Holdings Ltd. January 26, 2021.

FP/dm



## **2022 Q1 Post-Closure Environmental Monitoring Report**

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

**TABLE 1: LEACHATE ANALYTICAL RESULTS -  
ALKALINITY, TURBIDITY, AND TOTAL  
DISSOLVED SOILDS**

	Alkalinity				EC	Turbidity	TDS
	alkalinity (bicarbonate)	alkalinity (carbonate)	alkalinity (P)	alkalinity (total) as CaCO <sub>3</sub>	electrical conductivity	turbidity	total dissolved solids
	mg/L	mg/L	mg/L	mg/L	µS/cm	NTU	mg/L
Reported Detection Limit	1	1	1	1	2	0.1	10

Site Area	Sample Location	Sample Date	Sample ID							
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	210	<1	<1	170	11,000	1.4	7700
		2022-Feb-11	SHA-LE1	190	<1	<1	150	9800	-	6600

**Notes:**

< - less than reported detection limit

CaCO<sub>3</sub> - calcium carbonate

EC - electrical conductivity

mg/L - milligrams per litre

µS/cm - microsiemens per centimetre

NTU - nephelometric turbidity units

TDS - total dissolved solids



**TABLE 2: LEACHATE ANALYTICAL RESULTS  
PETROLEUM HYDROCARBONS**

	Petroleum Hydrocarbons			
	EPH C10-C19	EPH C19-C32	LEPHw	HEPHw
	µg/L	µg/L	µg/L	µg/L
Reported Detection Limit	200	200	200	200
BC CSR DW	5000			
BC CSR AWF	5000	500		

Site Area	Sample Location	Sample Date	Sample ID				
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	<200	<200	<200	<200

**Standard/Guideline Descriptions**

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

**Notes:**

- formatting of cells indicates exceedances of like-formatted standards

< - less than reported detection limit

µg/L - micrograms per litre

EPHw10-19 - extractable petroleum hydrocarbons (C10-C19)

EPHw19-32 – extractable petroleum hydrocarbons (C19-C32) in water

LEPHw – light extractable petroleum hydrocarbons in water; EPHw10-19 minus PAH compounds: acenaphthene, acridine, anthracene, fluorene, naphthalene and phenanthrene

HEPHw - heavy extractable petroleum hydrocarbons in water; EPHw19-32 minus PAH compounds: benz(a)anthracene, benzo(a)pyrene, fluoranthene and pyrene

PAH - polycyclic aromatic hydrocarbons

**TABLE 3: LEACHATE ANALYTICAL RESULTS  
POLYCYCLIC AROMATIC HYDROCARBONS**

TABLE 3: LEACHATE ANALYTICAL RESULTS POLYCYCLIC AROMATIC HYDROCARBONS				PAHs																									
				acenaphthene	acenaphthylene	acridine	anthracene	benzo(a)anthracene	benzo(a)pyrene	benzo(b+j)fluoranthenes	benzo(g,h,i)perylene	benzo(k)fluoranthene	chrysene	dibenz(a,h)anthracene	fluoranthene	fluorene	indeno(1,2,3-cd)pyrene	methylnaphthalene, 1-	methylnaphthalene, 2-	naphthalene	phenanthrene	pyrene	quinoline	PAHs (sum of total)	heavy molecular weight PAHs	light molecular weight PAHs			
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L		
				Reported Detection Limit	0.05	0.05	0.05	0.01	0.01	0.005	0.03	0.05	0.05	0.02	0.003	0.02	0.05	0.05	0.05	0.05	0.1	0.10	0.05	0.02	0.02	0.10	0.05	0.10	
				BC CSR DW	250			1000	0.07	0.01	0.07			7	0.01	150	150		5.5	15	80		100	0.05					
BC CSR AWF	60		0.5	1	1	0.1				1		2	120				10	3	0.2	34									
Sample																													
Site Area	Location	Sample Date	Sample ID																										
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	<0.05	<0.05	<0.05	<0.01	<0.01	<0.005	<0.03	<0.05	<0.05	<0.02	<0.003	<0.02	<0.05	<0.05	<0.05	<0.1	0.14	<0.05	<0.02	<0.02	0.14	<0.05	0.14			

**Standard/Guideline Descriptions**

- BC CSR DW: BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF: BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

**Notes:**

- formatting of cells indicates exceedances of like-formatted standards

< - less than reported detection limit

µg/L - micrograms per litre

PAH - polycyclic aromatic hydrocarbons

TABLE 4: LEACHATE ANALYTICAL RESULTS -  
TOTAL METALS

TABLE 4: LEACHATE ANALYTICAL RESULTS - TOTAL METALS	Total Metals																																
	hardness as CaCO3	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	molybdenum	nickel	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium	
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
	Reported Detection Limit	0.5	15	2.5	0.5	5	0.5	5	250	0.050	0.25	5	1	1	25	1	10	0.25	5	5	5	250	0.5	0.1	0.25	5	0.05	25	25	0.50	25	25	0.5
	BC CSR DW	9500	6	10	1000	8	5000	5	50	20 <sup>#1</sup>	1500	10	8	250	80	10	20	200	2500	2500	20	20	3	1000	85	75 <sup>#2</sup>	3150 <sup>#2</sup>	*					
BC CSR AWF		90	50	10000	1.5	12000	0.5 - 4 *	10	40	20 - 90 *	40 - 160 *																						

Sample Location		Sample Date	Sample ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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Standard/Guideline Descriptions

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

Standard/Guideline Comments

#1:The site does not fall within the regions specified in Protocol 9, Table 1. Protocol 9 provides an interim value for cobalt (20 µg/L) that may be applied to all regions of BC not included in the Table 1 regions. The Protocol 9 values have been used to dismiss exceedances of the CSR Schedule 3.2 standards for cobalt.

#2:Results with hardness >500 mg/L should be evaluated on a site by site basis; refer to BC Protocol 10

Notes:	* BC CSR Parameter-Dependent Standards/Guidelines						
	Cd - AWF	Cu - AWF	Pb - AWF	Ni - AWF	Ag - AWF	Zn - AWF	
• formatting of cells indicates exceedances of like-formatted standards	0.5 @ H < 30	20 @ H < 50	40 @ H < 50	250 @ H < 60	0.5 @ H ≤ 100	75 @ H < 90	
< - less than reported detection limit	1.5 @ H 30<90	30 @ H 50<75	50 @ H 50<100	650 @ H 60<120	15 @ H > 100	150 @ H 90<100	
µg/L - micrograms per litre	2.5 @ H 90<150	40 @ H 75<100	60 @ H 100<200	1,100 @ H 120<180		900 @ H 100<200	
mg/L - milligrams per litre	3.5 @ H 150<210	50 @ H 100<125	110 @ H 200<300	1,500 @ H ≥ 180		1,650 @ H 200<300	
• BC CSR iron and manganese standards do not apply for lack of specific Schedule 2 industrial or commercial activities at the site	4 @ H ≥ 210	60 @ H 125<150	160 @ H ≥ 300			2,400 @ H 300<400	
see BC CSR Schedule 3.2, Footnotes 43, 44 and 46, 47		70 @ H 150<175					
• most stringent of chromium (III) and (VI) standards applied to chromium (total)		80 @ H 175<200					
* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample		90 @ H ≥ 200					
H - hardness in mg/L of calcium carbonate (CaCO <sub>3</sub> )							
• metals with hardness-dependent standards:							
Cd - cadmium, Cu - copper, Pb - lead, Ni - nickel, Ag - silver, Zn - zinc							

TABLE 5: LEACHATE ANALYTICAL REUSLTS  
DISSOLVED METALS

TABLE 5: LEACHATE ANALYTICAL REUSLTS DISSOLVED METALS	Dissolved Metals																															
	hardness as CaCO	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (II+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	molybdenum	nickel	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
	Reported Detection Limit	0.5	15	2.5	0.5	5	0.5	5	250	0.050	0.25	5	1	1	25	1	10	0.25	5	5	5	250	0.5	0.1	0.25	5	0.05	25	25	0.50	25	25
BC CSR DW		9500	6	10	1000	8		5000	5		50	20 <sup>#1</sup>	1500		10	8			250	80		10	20	200	2500		2500		20	20	3000	
BC CSR AWF			90	50	10000	1.5		12000	0.5 - 4 *		10	40	20 - 90 *		40 - 160 *				10000	250 - 1500 *		20	0.5 - 15 *			3		1000	85		75 <sup>#1</sup> - 3150 <sup>#1</sup> *	

Sample																																			
Site Area	Location	Sample Date	Sample ID																																
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	2590	<15	<2.5	<0.5	10.8	<0.5	<5	288	0.352	704	<5	1.3	1.9	<25	<1	<10	201	12,600	<5	5.7	23,800	<0.5	<0.1	1410	3630	<0.05	<25	<25	0.53	<25	<25	<0.5

Standard/Guideline Descriptions

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

Standard/Guideline Comments

#1:The site does not fall within the regions specified in Protocol 9, Table 1. Protocol 9 provides an interim value for cobalt (20 µg/L) that may be applied to all regions of BC not included in the Table 1 regions. The Protocol 9 values have been used to dismiss exceedances of the CSR Schedule 3.2 standards for cobalt.  
#2:Results with hardness >500 mg/L should be evaluated on a site by site basis; refer to BC Protocol 10

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- < - less than reported detection limit
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- BC CSR iron and manganese standards do not apply for lack of specific Schedule 2 industrial or commercial activities at the site see BC CSR Schedule 3.2, Footnotes 43, 44 and 46, 47
- most stringent of chromium (III) and (VI) standards applied to chromium (total)
- \* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- metals with hardness-dependent standards:
  - Cd - cadmium, Cu - copper, Pb - lead, Ni - nickel, Ag - silver, Zn - zinc

\* BC CSR Parameter-Dependent Standards/Guidelines

Cd - AWF	Cu - AWF	Pb - AWF	Ni - AWF	Ag - AWF	Zn - AWF
0.5 @ H < 30	20 @ H < 50	40 @ H < 50	250 @ H < 60	0.5 @ H ≤ 100	75 @ H < 90
1.5 @ H 30<90	30 @ H 50<75	50 @ H 50<100	650 @ H 60<120	15 @ H > 100	150 @ H 90<100
2.5 @ H 90<150	40 @ H 75<100	60 @ H 100<200	1,100 @ H 120<180		900 @ H 100<200
3.5 @ H 150<210	50 @ H 100<125	110 @ H 200<300	1,500 @ H ≥ 180		1,650 @ H 200<300
4 @ H ≥ 210	60 @ H 125<150	160 @ H ≥ 300			2,400 @ H 300<400
	70 @ H 150<175				
	80 @ H 175<200				
	90 @ H ≥ 200				

**TABLE 6: LEACHATE ANALYTICAL RESULTS  
INORGANICS**

Inorganics										
	chloride ion	fluoride	hydroxide	nitrate (as N)	nitrate and nitrite (as N)	nitrite (as N)	silicon	silicon (dissolved)	sulphate	sulphur as S
	mg/L	µg/L	mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L
Reported Detection Limit	100	50	1	0.02	0.02	0.005	500	500	10	15
BC CSR DW	250	1500		10	10	1			500	
BC CSR AWF	1500	2000 - 3000 *		400	400	0.2 <sup>#1</sup> - 2 <sup>#1</sup> *			1280 - 4290 *	

Site Area	Sample Location	Sample Date	Sample ID										
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	3000	82	<1	1.62	1.62	<0.005	7610	7100	1600	608
		2022-Feb-11	SHA-LE1	2600	72	<1	-	-	-	6950	-	1600	499

**Standard/Guideline Descriptions**

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

**Standard/Guideline Comments**

#1:Allowable concentrations of nitrite increase with ambient concentrations of chloride. The standard varies with chloride concentration to reflect the influence of chloride on nitrite toxicity and to provide adequate protection to the salmonids.

**Notes:**

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs
- < - less than reported detection limit
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- \* - range of parameter-dependent standards; value is compared to standard derived from parameter of individual sample
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- inorganics with hardness-dependent standards:
  - FI - fluoride, SO<sub>4</sub> - sulphate

**\* BC CSR Parameter-Dependent Standards/Guidelines**

**FI - AWF**

- 2,000 @ H < 50
- 3,000 @ H ≥ 50

**SO<sub>4</sub> - AWF**

- 1,280 mg/L @ H ≤ 30
- 2,180 mg/L @ H 31–75
- 3,090 mg/L @ H 76–180
- 4,290 mg/L @ H > 180

**TABLE 7: SURFACE WATER ANALYTICAL RESULTS - FIELD MEASUREMENTS, ALKALINITY, TOTAL DISSOLVED SOLIDS, AND DISSOLVED ORGANIC CARBON**

	Field				Alkalinity				TDS	DOC
	temperature	pH	EC	turbidity	alkalinity (bicarbonate)	alkalinity (carbonate)	alkalinity (P)	alkalinity (total) as CaCO <sub>3</sub>	total dissolved solids	dissolved organic carbon
	°C	pH Units	µS/cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Reported Detection Limit					1	1	1	1	10	0.5
BC SDWQG - MAC				1 <sup>#1</sup>						
BC WQG (Approved) AWF, Long-term	12 <sup>#2</sup>	6.5-9		2 <sup>#3</sup>						
BC WQG (Approved) AWF, Short-term	12 <sup>#2</sup>	6.5-9		8 <sup>#4</sup>						

Site Area	Sample Location	Sample Date	Sample ID										
Creek	SW-1	2022-Feb-16	SW-1	6	7.9	388	2.55	180	<1	<1	150	250	2.4

#### Standard/Guideline Descriptions

- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term

#### Standard/Guideline Comments

#1:Raw drinking water without treatment for particulates

#2:Maximum incubation temperature (spring/fall); otherwise mean weekly maximum temperature is 18 degrees Celsius

#3:Background +2 NTU at any one time over 30 days in clear water

#4:Background +8 NTU at any one time for a duration of 24 hours in clear waters (<8 NTU)

#### Notes:

- formatting of cells indicates exceedances of like-formatted standards

< - less than reported detection limit

°C - degrees Celsius

EC - electrical conductivity

µS/cm - microsiemens per centimetre

NTU - nephelometric turbidity units

mg/L - milligrams per litre

TDS - total dissolved solids

DOC - dissolved organic carbon

TABLE 8: SURFACE WATER ANALYTICAL RESULTS - TOTAL METALS	Total Metals																																	
	hardness as CaCO	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	phosphorus	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Reported Detection Limit	0.5	3	0.5	0.1	1	0.1	1	50	0.01	0.05	1	0.2	0.50	10	0.2	2	0.05	1	0.0019	1	1	10	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.1
BC SDWQG - AO													1000	300				20				10											5000	
BC SDWQG - MAC		9500	6	10				5000	5		50	1	2000 <sup>#4</sup>		5			120	1	88	80			10			7000				20		3000	
BC WQG (Approved) AWF, Long-term				5 <sup>#2</sup>				1200				4			3.4 <sup>#5</sup> - 19 <sup>#5</sup> *			770 <sup>#5</sup> - 2500 <sup>#5</sup> *	0.00125 <sup>#6</sup>	1000				2	0.05 <sup>#7</sup> - 1.5 <sup>#7</sup> *							7.5 <sup>#5</sup> - 315 <sup>#5</sup> *		
BC WQG (Approved) AWF, Short-term				5 <sup>#2</sup>								110		1000	3 <sup>#5</sup> - 402 <sup>#5</sup> *			810 <sup>#5</sup> - 3300 <sup>#5</sup> *		2000				0.1 <sup>#7</sup> - 3 <sup>#7</sup> *							33 <sup>#5</sup> - 340.5 <sup>#5</sup> *			
BC WQG (Working) AWF, Long-term			9 <sup>#1</sup>		1000 <sup>#1</sup>	0.13 <sup>#1</sup>					1 <sup>#3</sup>										25 <sup>#5</sup> - 150 <sup>#5</sup> *					0.8 <sup>#1</sup>		8.5 <sup>#1</sup>						

Sample																																					
Site Area	Location	Sample Date	Sample ID																																		
Creek	SW-1	2022-Feb-16	SW-1	200	5	<0.5	<0.1	10.4	<0.1	<1	<50	<0.01	64	<1	<0.2	1.13	<10	<0.2	<2	9.68	<1	<0.0019	<1	<1	<10	689	0.22	<0.02	8.32	176	<0.01	<5	<5	1.16	<5	<5	<0.1

Standard/Guideline Descriptions

- BC SDWQG - AO:BC Source Drinking Water Quality Guidelines, aesthetic objective
- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term
- BC WQG (Working) AWF, Long-term:BC Working Water Quality Guidelines, Freshwater Aquatic Life, Long-term

Standard/Guideline Comments

- #1:30 day
- #2:Interim WQG
- #3:30 day; guideline is for Cr(VI), speciated results supersede total chromium results
- #4:Includes shortterm and long-term exposure
- #5:Guideline is dependent on water hardness. Conservative hardness ranges used for comparison purposes. Exceedances to be confirmed against the formula in the regulatory guidance document.
- #6:30 day average. 0.00125 when MeHg=8.0% of THg, 0.01 when MeHg = 1.0% of THg, 0.02 when MeHg = 0.5% of THg
- #7:Guideline is dependent on water hardness in mg/L CaCO3

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- < - less than reported detection limit
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- \* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- metals with hardness-dependent standards:
  - Cd - cadmium, Pb - lead

\* BC Water Quality Parameter-Dependent Standards/Guidelines

Pb - AWF (30 d)	Mn - AWF (30 d)	Ni - AWF (30 d)	Ag - AWF (30 d)	Zn - AWF (30 d)
{3.31+e <sup>[1.273*ln(H)-4.704]</sup> }	{0.0044*H+0.605}			{7.5+0.75*(H-90)}
3.4 @ H < 10	700 @ H < 25	25 @ H < 60	0.05 @ H ≤ 100	7.5 @ H < 90
3.4 @ H=10<50	770 @ H=25<50	65 @ H=60<120	1.5 @ H > 100	15 @ H=100<200
4.6 @ H=50<100	800 @ H=50<100	110 @ H=120<180		90 @ H=200<300
6.4 @ H=100<150	1,000 @ H=100<150	150 @ H ≥ 180	Ag - AWF (max)	165 @ H=300<400
8.6 @ H=150<200	1,300 @ H=150<300		0.1 @ H ≤ 100	240 @ H=400<500
11 @ H=200<250	1,900 @ H=300<450		3 @ H > 100	315 @ H ≥ 500
13 @ H=250<300	2,500 @ H ≥ 450			
16 @ H=300<350				
19 @ H ≥ 350	Mn - AWF (max)			Zn - AWF (max)
	{0.01102*H+0.54}			{33+0.75*(H-90)}
Pb - AWF (max)	800 @ H < 25			33 @ H < 90
{e <sup>[1.273*ln(H)-1.460]</sup> }	810 @ H=25<50			40 @ H=100<200
3 @ H < 10	1,100 @ H=50<100			115 @ H=200<300
4 @ H=10<50	1,600 @ H=100<150			190 @ H=300<400
33 @ H=50<100	2,200 @ H=150<250			265 @ H=400<500
81 @ H=100<150	3,300 @ H=250<300			340.5 @ H ≥ 500
136 @ H=150<200	3,800 @ H ≥ 300			
197 @ H=200<250				
262 @ H=250<300				
330 @ H=300<350				
402 @ H ≥ 350				

TABLE 9: SURFACE WATER ANALYTICAL RESULTS - DISSOLVED METALS

TABLE 9: SURFACE WATER ANALYTICAL RESULTS - DISSOLVED METALS		Dissolved Metals																																	
		hardness as CaCO3	aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	phosphorus	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
		mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
Reported Detection Limit		0.5	3	0.5	0.1	1	0.1	1	50	0.01	0.05	1	0.2	0.20	5	0.2	2	0.05	1	0.0019	1	1	10	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.1
BC WQG (Approved) AWF, Long-term		5 <sup>#1</sup> - 50 <sup>#1</sup> *								0.018 <sup>#2</sup> - 0.44 <sup>#2</sup> *								1.4 <sup>#3</sup>																	
BC WQG (Approved) AWF, Short-term		20 <sup>#1</sup> - 100 <sup>#1</sup> *								0.04 <sup>#2</sup> - 2.8 <sup>#2</sup> *								8.5 <sup>#3</sup> 350																	

Sample																																					
Site Area	Location	Sample Date	Sample ID																																		
Creek	SW-1	2022-Feb-16	SW-1	198	<3	<0.5	<0.1	10.5	<0.1	<1	<50	<0.01	63.7	<1	<0.2	1.07	<5	<0.2	<2	9.56	<1	<0.0019	<1	<1	<10	672	0.24	<0.02	8.13	176	<0.01	<5	<5	1.13	<5	<5	<0.1

Standard/Guideline Descriptions

- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term
- BC WQG (Working) AWF, Long-term:BC Working Water Quality Guidelines, Freshwater Aquatic Life, Long-term

Standard/Guideline Comments

#1:Guideline is dependent on field pH; applies to dissolved concentrations  
#2:Guideline is dependent on water hardness. Conservative hardness ranges used for comparison purposes. Exceedances to be confirmed against the formula in the regulatory guidance document.  
#3:Calculated using the Biotic Ligand Model

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- < - less than reported detection limit
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- \* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- metals with hardness-dependent standards:
  - Cd - cadmium
- metals with pH-dependent standards:
  - Al - aluminum

\* BC Water Quality Parameter-Dependent Standards/Guidelines

Al - AWF (30 d)

$$\{e^{[1.6-3.327(-pH)+0.402(-pH)^2]}\}$$

- 5 @ pH < 5.0
- 7 @ pH=5.0<5.5
- 10 @ pH=5.5<6.0
- 20 @ pH=6.0<6.5
- 50 @ pH ≥ 6.5

Al - AWF (max)

$$\{e^{[1.209-2.426(pH)+0.286(pH)^2]}\}$$

- 20 @ pH < 5.0
- 23 @ pH=5.0<5.5
- 30 @ pH=5.5<6.0
- 50 @ pH=6.0<6.5
- 100 @ pH ≥ 6.5

Cd - AWF (30 d)

$$\{e^{[0.736*\ln(H)-4.943]}\}$$

- 0.0176 @ H=3.4<50
- 0.127 @ H=50<180
- 0.326 @ H=180<285
- 0.457 @ H ≥ 285

Cd - AWF (max)

$$\{e^{[1.03*\ln(H)-5.274]}\}$$

- 0.038 @ H=7<50
- 0.288 @ H=50<180
- 1.08 @ H=180<320
- 1.95 @ H=320<455
- 2.8 @ H ≥ 455



**TABLE 10: SURFACE WATER  
ANALYTICAL RESULTS - INORGANICS**

	Inorganics								
	chloride ion	fluoride	hydroxide	nitrate (as N)	silicon	silicon (dissolved)	sulphate	sulphur as S	sulphur as S (dissolved)
	mg/L	µg/L	mg/L	mg/L	µg/L	µg/L	mg/L	mg/L	mg/L
Reported Detection Limit	1	50	1	0.020	100	100	1	3	3
BC SDWQG - AO	250			500					
BC SDWQG - MAC	1500			10					
BC WQG (Approved) AWF, Long-term				3					
BC WQG (Approved) AWF, Short-term				32.8					

Sample												
Site Area	Location	Sample Date	Sample ID									
Creek	SW-1	2022-Feb-16	SW-1	10	<50	<1	0.218	4860	4900	55	18.6	19.4

**Standard/Guideline Descriptions**

- BC SDWQG - AO:BC Source Drinking Water Quality Guidelines, aesthetic objective
- BC SDWQG - MAC:BC Source Drinking Water Quality Guidelines, maximum allowable concentration
- BC WQG (Approved) AWF, Long-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Long-term
- BC WQG (Approved) AWF, Short-term:BC Approved Water Quality Guidelines, Freshwater Aquatic Life, Short-term

**Notes:**

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs

< - less than reported detection limit

µg/L - micrograms per litre

mg/L - milligrams per litre

**TABLE 11: GROUNDWATER ANALYTICAL RESULTS -  
FIELD MEASUREMENTS, ALKALINITY, AND TOTAL  
DISSOLVED SOLIDS**

					Field					Alkalinity				TDS
					depth to water	temperature	pH	EC	turbidity	alkalinity (bicarbonate)	alkalinity (carbonate)	alkalinity (p)	alkalinity (total) as CaCO <sub>3</sub>	total dissolved solids
					mbTOC	°C	pH Units	µS/cm	NTU	mg/L	mg/L	mg/L	mg/L	mg/L
Reported Detection Limit					-	-	-	-	-	1	1	1	1	10
Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID										
Groundwater Monitoring Wells	MW19-01	-	2022-Feb-16	MW19-01	8.345	9.9	7	796	>100	330	<1	<1	270	470
	MW19-02	-	2022-Feb-16	MW19-02	4.06	9	7	493	3.55	240	<1	<1	190	350
				DUP-A	4.06	9	7	493	3.55	240	<1	<1	200	340
				RPD (MW19-02 & DUP-A)	NC	NC	NC	NC	NC	0%	NC	NC	5%	3%
	MW-3S	15.20 - 21.30	2022-Feb-16	MW-3S	3.165	8.3	7.7	356	23.5	170	<1	<1	140	240
Seepage Blanket	SB-1	1.80 - 3.30	2022-Feb-16	SB-1	8.9	9.2	6.7	320	14.9	160	<1	<1	130	190
	SB-2	1.10 - 2.60	2022-Feb-16	SB-2	9.169	10.8	6.8	483	16.7	250	<1	<1	210	320
	SB-3	1.50 - 3.00	2022-Feb-16	SB-3	9.61	10.8	6.6	824	35.5	580	<1	<1	480	550

Notes:

- samples collected at the same location and date are blind field duplicate/parent pairs

< - less than reported detection limit

mbg - metres below grade

mbTOC - metres below top of casing

°C - degrees Celsius

EC - electrical conductivity

µS/cm - microsiemens per centimetre

NTU - nephelometric turbidity units

TDS - total dissolved solids

mg/L - milligrams per litre

RPD - relative percent difference

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.

RPD calculations not performed where results are less than five times the analytical detection limit.

NC - relative percent difference not calculated

TABLE 12: GROUNDWATER ANALYTICAL RESULTS - DISSOLVED METALS

TABLE 12: GROUNDWATER ANALYTICAL RESULTS - DISSOLVED METALS	hardness as CaCO	Dissolved Metals																															
		aluminum	antimony	arsenic	barium	beryllium	bismuth	boron	cadmium	calcium	chromium (III+VI)	cobalt	copper	iron	lead	lithium	magnesium	manganese	mercury	molybdenum	nickel	potassium	selenium	silver	sodium	strontium	thallium	tin	titanium	uranium	vanadium	zinc	zirconium
		mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
		0.5	3	0.5	0.10	1	0.1	1	50	0.010	0.05	1	0.20	0.20	5	0.2	2	0.05	1	0.0019	1	1	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5
Reported Detection Limit	0.5	3	0.5	0.10	1	0.1	1	50	0.010	0.05	1	0.20	0.20	5	0.2	2	0.05	1	0.0019	1	1	50	0.10	0.02	0.05	1	0.01	5	5	0.10	5	5	0.1
BC CSR DW		9500	6	10	1000	8		5000	5		50	20 <sup>#1</sup>	1500	6500	10	8		1500	1	250	80		10	20	200	2500		2500		20	20	3000	
BC CSR AWF			90	50	10000	1.5		12000	0.5 - 4 *		10	40	20 - 90 *		40 - 160 *				0.25	10000	250 - 1500 *		20	0.5 - 15 *		3		1000	85		75 <sup>#2</sup> - 3150 <sup>#2</sup> *		

Site Area	Sample	Well Screen																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	Location	Depth (mbg)	Sample Date	Sample ID																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				

Standard/Guideline Descriptions

- BC CSR DW:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF:BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

Standard/Guideline Comments

#1:The site does not fall within the regions specified in Protocol 9, Table 1. Protocol 9 provides an interim value for cobalt (20 µg/L) that may be applied to all regions of BC not included in the Table 1 regions. The Protocol 9 values have been used to dismiss exceedances of the CSR Schedule 3.2 standards for cobalt.  
#2:Results with hardness >500 mg/L should be evaluated on a site by site basis; refer to BC Protocol 10

Notes:

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs
- < - less than reported detection limit
- mbg - metres below grade
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- BC CSR iron and manganese standards do not apply for lack of specific Schedule 2 industrial or commercial activities at the site. See BC CSR Schedule 3.2, Footnotes 43, 44 and 46, 47
- most stringent of chromium (III) and (VI) standards applied to chromium (total)
- \* - range of paramater-dependent standards; value is compared to standard derived from parameter of individual sample

H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)

- metals with hardness-dependent standards:  
Cd - cadmium, Cu - copper, Pb - lead, Ni - nickel, Ag - silver, Zn - zinc

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.

RPD calculations not performed where results are less than five times the analytical detection limit.

NC - relative percent difference not calculated

UNDERLINED RPD values exceed the alert limit. The alert limit for metals and inorganics in water is 30%.

\* BC CSR Parameter-Dependent Standards/Guidelines

Cd - AWF

0.5 @ H < 30  
1.5 @ H 30<90  
2.5 @ H 90<150  
3.5 @ H 150<210  
4 @ H ≥ 210

Cu - AWF

20 @ H < 50  
30 @ H 50<75  
40 @ H 75<100  
50 @ H 100<125  
60 @ H 125<150  
70 @ H 150<175  
80 @ H 175<200  
90 @ H ≥ 200

Pb - AWF

40 @ H < 50  
50 @ H 50<100  
60 @ H 100<200  
110 @ H 200<300

Ni - AWF

250 @ H < 60  
650 @ H 60<120  
1,100 @ H 120<180  
1,500 @ H ≥ 180

Ag - AWF

0.5 @ H ≤ 100  
15 @ H > 100

Zn - AWF

75 @ H < 90  
150 @ H 90<100  
900 @ H 100<200  
1,650 @ H 200<300  
2,400 @ H 300<400

**TABLE 13: GROUNDWATER ANALYTICAL RESULTS - INORGANICS**

TABLE 13: GROUNDWATER ANALYTICAL RESULTS - INORGANICS		Inorganics							
		hardness as CaCO3	chloride ion	fluoride	hydroxide	nitrate (as N)	silicon (dissolved)	sulphate	sulphur as S (dissolved)
		mg/L	mg/L	µg/L	mg/L	mg/L	µg/L	mg/L	mg/L
Reported Detection Limit		0.5	1	50	1	0.020	100	1	3
BC CSR DW		250		1500		10		500	
BC CSR AWF		1500		2000 - 3000 *		400		1280 - 4290 *	

Site Area	Sample Location	Well Screen Depth (mbg)	Sample Date	Sample ID								
Groundwater Monitoring Wells	MW19-01	-	2022-Feb-16	MW19-01	402	35	99	<1	0.114	7880	110	41.4
	MW19-02	-	2022-Feb-16	MW19-02	277	8.7	<50	<1	0.583	5780	100	30.2
				DUP-A	278	8.9	<50	<1	0.605	5860	93	30.3
				RPD (MW19-02 & DUP-A)	0%	2%	NC	NC	4%	1%	7%	0%
	MW-3S	15.20 - 21.30	2022-Feb-16	MW-3S	183	22	52	<1	<0.020	7500	36	12.5
Seepage Blanket	SB-1	1.80 - 3.30	2022-Feb-16	SB-1	172	8.5	<50	<1	0.223	4360	49	17.1
	SB-2	1.10 - 2.60	2022-Feb-16	SB-2	249	24	<50	<1	0.089	6400	42	14.2
	SB-3	1.50 - 3.00	2022-Feb-16	SB-3	503	18	51	<1	0.178	8580	50	17.3

**Standard/Guideline Descriptions**

- BC CSR DW: BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Drinking Water
- BC CSR AWF: BC Contaminated Sites Regulation, Schedule 3.2 Generic Numerical Water Standards, Freshwater Aquatic Life

**Notes:**

- formatting of cells indicates exceedances of like-formatted standards
- samples collected at the same location and date are blind field duplicate/parent pairs
- < - less than reported detection limit
- mbg - metres below grade
- µg/L - micrograms per litre
- mg/L - milligrams per litre
- \* - range of parameter-dependent standards; value is compared to standard derived from parameter of individual sample
- H - hardness in mg/L of calcium carbonate (CaCO<sub>3</sub>)
- inorganics with hardness-dependent standards:
  - FI - fluoride, SO<sub>4</sub> - sulphate

RPD calculation is equal to the absolute value of the difference divided by the average of the results x 100%.

RPD calculations not performed where results are less than five times the analytical detection limit.

NC - relative percent difference not calculated

**UNDERLINED** RPD values exceed the alert limit. The alert limit for metals and inorganics in water is 30%.

**\* BC CSR Parameter-Dependent Standards/Guidelines**

FI - AWF	SO <sub>4</sub> - AWF
2,000 @ H < 50	1,280 mg/L @ H ≤ 30
3,000 @ H ≥ 50	2,180 mg/L @ H 31–75
	3,090 mg/L @ H 76–180
	4,290 mg/L @ H > 180



## **2022 Q1 Post-Closure Environmental Monitoring Report**

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000



Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S\_205-30042-00000-A3.dwg



NOTES:  
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

BASEDATA:  
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

LEGEND:  
- - - PROPERTY BOUNDARY  
SITE LOCATION

0 0.25 0.5 1.0 km  
SCALE 1:15,000  
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT  
NAD 1983 UTM Zone 10 U

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.  
460 STEBBINGS ROAD  
SHAWNIGAN LAKE, BC

2022 Q1 POST-CLOSURE ENVIRONMENTAL  
MONITORING REPORT

SITE LOCATION

Date: March 10, 2022

Project No. 205.30042.00000

Drawing No.

1





Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\S\_205-30042-00000-A3.dwg



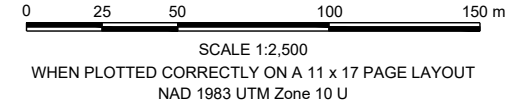
NOTES:  
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REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074  
FIGURE 1, DATE 2019/12/19

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

	PROPERTY BOUNDARY
	SITE BOUNDARY
	PERMANENT ENCAPSULATION AREA
	FORMER FACILITY/FEATURE
	BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
	BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
	SURFACE WATER SAMPLE (OTHERS)
	SEEPAGE BLANKET MONITORING WELL (OTHERS)
	LEACHATE SAMPLE (OTHERS)



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.  
460 STEBBINGS ROAD  
SHAWNIGAN LAKE, BC

2022 Q1 POST-CLOSURE ENVIRONMENTAL  
MONITORING REPORT

SITE PLAN

Date:	March 10, 2022	Drawing No. <b>2</b>
Project No.	205.30042.00000	





Cadfile name: N:\Vancouver\CAD\Project Drawings\205\205.30042\205.30042.00000\1S\_205-30042-00000-A3.dwg

				Metals				Inorganics	
				sodium	sodium (dissolved)	strontium	strontium (dissolved)	chloride ion	sulphate
				mg/L	mg/L	µg/L	µg/L	mg/L	mg/L
Reported Detection Limit				0.25	0.25	5	5	100	10
BC CSR DW				200	200	2500	2500	250	500
BC CSR AWF								1500	1280 - 4290
Site Area	Sample Location	Sample Date	Sample ID						
Leachate Tank	SHA-LE-1	2022-Jan-21	SHA-LE-1	1530	1410	3870	3630	3000	1600
		2022-Feb-11	SHA-LE1	1280	-	3040	-	2600	1600

NOTES:  
REFER TO TABLES FOR STANDARDS DESCRIPTIONS  
mg/L - MILLIGRAMS PER LITRE  
µg/L - MICROGRAMS PER LITRE  
"-" PARAMETER NOT ANALYZED  
**RED** - EXCEEDS ONE OR MORE APPLICABLE STANDARDS



NOTES:  
NOT A LEGAL SURVEY. DO NOT USE FOR CONSTRUCTION.

REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074  
FIGURE 1, DATE 2019/12/19

IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

- PROPERTY BOUNDARY
- SITE BOUNDARY
- PERMANENT ENCAPSULATION AREA
- FORMER FACILITY/FEATURE
- BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
- BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
- SURFACE WATER SAMPLE (OTHERS)
- SEEPAGE BLANKET MONITORING WELL (OTHERS)
- LEACHATE SAMPLE (OTHERS)
- SOIL LABORATORY ANALYSIS RESULTS**  
CONCENTRATIONS LESS THAN OR EQUAL TO APPLICABLE CSR STANDARDS
- CONCENTRATION(S) GREATER THAN APPLICABLE CSR STANDARD(S)

0 25 50 100 150 m

SCALE 1:2,500  
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT  
NAD 1983 UTM Zone 10 U

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RALMAX VENTURES LTD.  
460 STEBBINGS ROAD  
SHAWNIGAN LAKE, BC

2022 Q1 POST-CLOSURE ENVIRONMENTAL  
MONITORING REPORT

LEACHATE ANALYTICAL RESULTS

Date: March 10, 2022	Drawing No. <b>3</b>
Project No. 205.30042.00000	

**SLR**
















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FIGURE 1, DATE 2019/12/19

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LEGEND:

- |   |  |
|---|--|
|  | PROPERTY BOUNDARY  |
|  | SITE BOUNDARY  |
|  | PERMANENT ENCAPSULATION AREA                                   |
|  | FORMER FACILITY/FEATURE  |
|  | BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)               |
|  | BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)            |
|  | SURFACE WATER SAMPLE (OTHERS)                                  |
|  | SEEPAGE BLANKET MONITORING WELL (OTHERS)                       |
|  | LEACHATE SAMPLE (OTHERS)                                       |
| <b><u>WATER LABORATORY ANALYSIS RESULTS</u></b>                                     |  |
|  | CONCENTRATIONS LESS THAN OR EQUAL TO THE APPLICABLE GUIDELINES |
|  | CONCENTRATION(S) GREATER THAN THE APPLICABLE GUIDELINES        |



SCALE 1:2,500  
WHEN PLOTTED CORRECTLY ON A 11 x 17 PAGE LAYOUT  
NAD 1983 UTM Zone 10 U

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460 STEBBINGS ROAD  
SHAWNIGAN LAKE, BC

2022 Q1 POST-CLOSURE ENVIRONMENTAL  
MONITORING REPORT

## SURFACE WATER ANALYTICAL RESULTS

Date: March 10, 2022

Project No.	205.30042.00000
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Drawing No.
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4





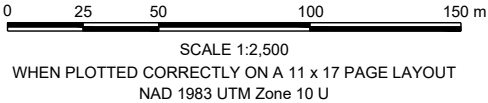
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NOTES:  
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REFERENCED FROM: SPERLING HANSEN ASSOCIATES, PROJECT No. PRJ19074  
FIGURE 1, DATE 2019/12/19  
IMAGERY: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,  
USGS, AeroGRID, IGN, and the GIS User Community (IMAGE DATE: JUNE 11, 2019)

LEGEND:

	PROPERTY BOUNDARY
	SITE BOUNDARY
	PERMANENT ENCAPSULATION AREA
	FORMER FACILITY/FEATURE
	BOREHOLE COMPLETED AS A MONITORING WELL (OTHERS)
	BOREHOLE COMPLETED AS A MONITORING WELL (DESTROYED)
	SURFACE WATER SAMPLE (OTHERS)
	SEEPAGE BLANKET MONITORING WELL (OTHERS)
	LEACHATE SAMPLE (OTHERS)
	<b>GROUNDWATER LABORATORY ANALYSIS RESULTS</b> CONCENTRATIONS LESS THAN OR EQUAL TO THE APPLICABLE STANDARDS



THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

RALMAX VENTURES LTD.  
460 STEBBINGS ROAD  
SHAWNIGAN LAKE, BC

2022 Q1 POST-CLOSURE ENVIRONMENTAL  
MONITORING REPORT

GROUNDWATER ANALYTICAL RESULTS

Date:	March 10, 2022	Drawing No. <b>5</b>
Project No.	205.30042.00000	





# **PHOTOGRAPHS**

## **2022 Q1 Post-Closure Environmental Monitoring Report**

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000



**Photo 1:** View of the southern portion of the permanent encapsulated area (PEA) cover from the southern drainage channel looking northeast (February 2022).



**Photo 2:** View of the middle portion of the PEA cover from the peak of the cap looking northeast (February 2022).



SITE PHOTOGRAPHS

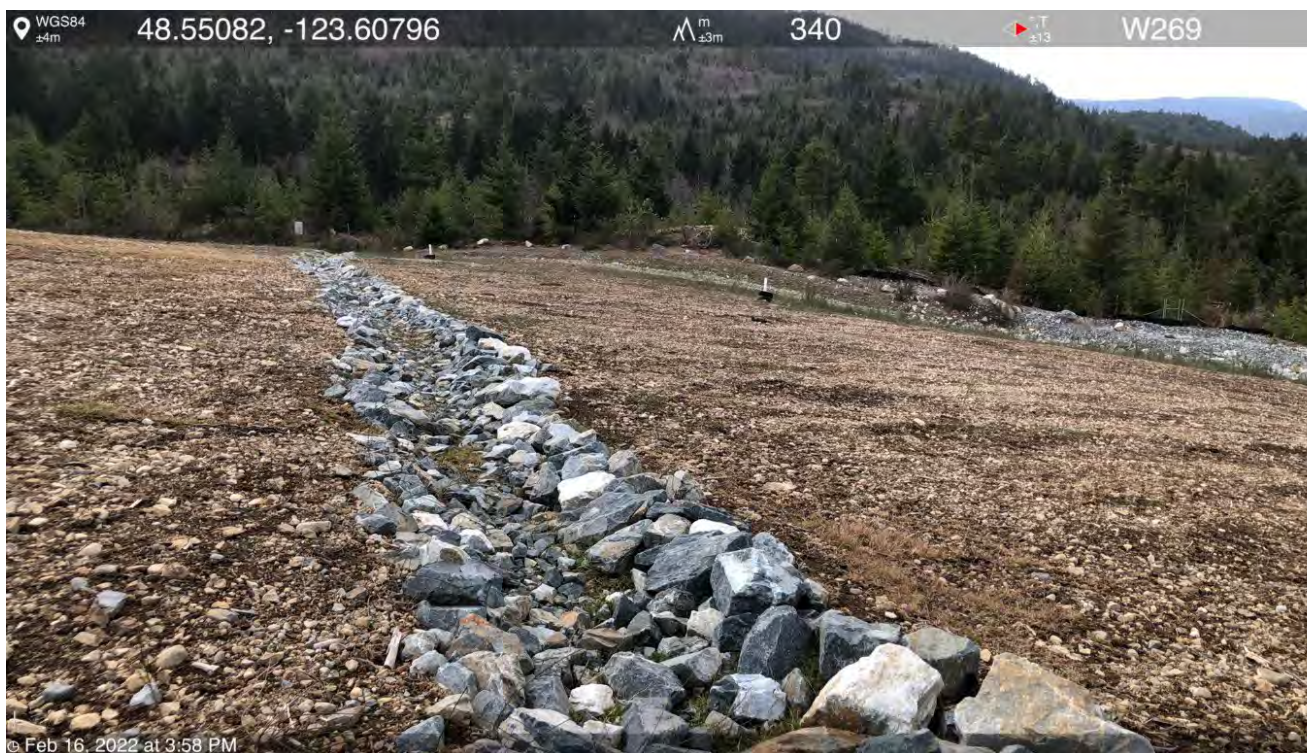
2022 Q1 Post-Closure Environmental Monitoring Report  
460 Stebbings Road  
Shawnigan Lake, BC

Project No: 205.30042.00000





**Photo 3:** View of the central and northern portion of the PEA cover from the east perimeter looking west (February 2022).



**Photo 4:** View of the mid-slope drainage ditch looking west (February 2022).



SITE PHOTOGRAPHS

2022 Q1 Post-Closure Environmental Monitoring Report  
460 Stebbings Road  
Shawnigan Lake, BC

Project No: 205.30042.00000





**Photo 5:** View of the PEA surface from the northeast corner looking southwest (February 2022).



**Photo 6:** View of standing water on the southern portion of the PEA cap looking east (November 2021).



SITE PHOTOGRAPHS

2022 Q1 Post-Closure Environmental Monitoring Report  
460 Stebbings Road  
Shawnigan Lake, BC

Project No: 205.30042.00000





**Photo 7:** View of standing water on the southern portion of the PEA cap looking northeast (January 2022).



**Photo 8:** View of erosional features north of the mid-slope drainage ditch looking west (January 2022).



SITE PHOTOGRAPHS

2022 Q1 Post-Closure Environmental Monitoring Report  
460 Stebbings Road  
Shawnigan Lake, BC

Project No: 205.30042.00000





**Photo 9:** View of area of subsidence in northeast corner of PEA looking northwest (February 2022).



**Photo 10:** View of frozen standing water at the south/southeast perimeter of the landfill looking north (December 2021).



SITE PHOTOGRAPHS

2022 Q1 Post-Closure Environmental Monitoring Report  
460 Stebbings Road  
Shawnigan Lake, BC

Project No: 205.30042.00000





**Photo 11:** View of standing water at the south/southeast perimeter of the landfill looking north (January 2022).

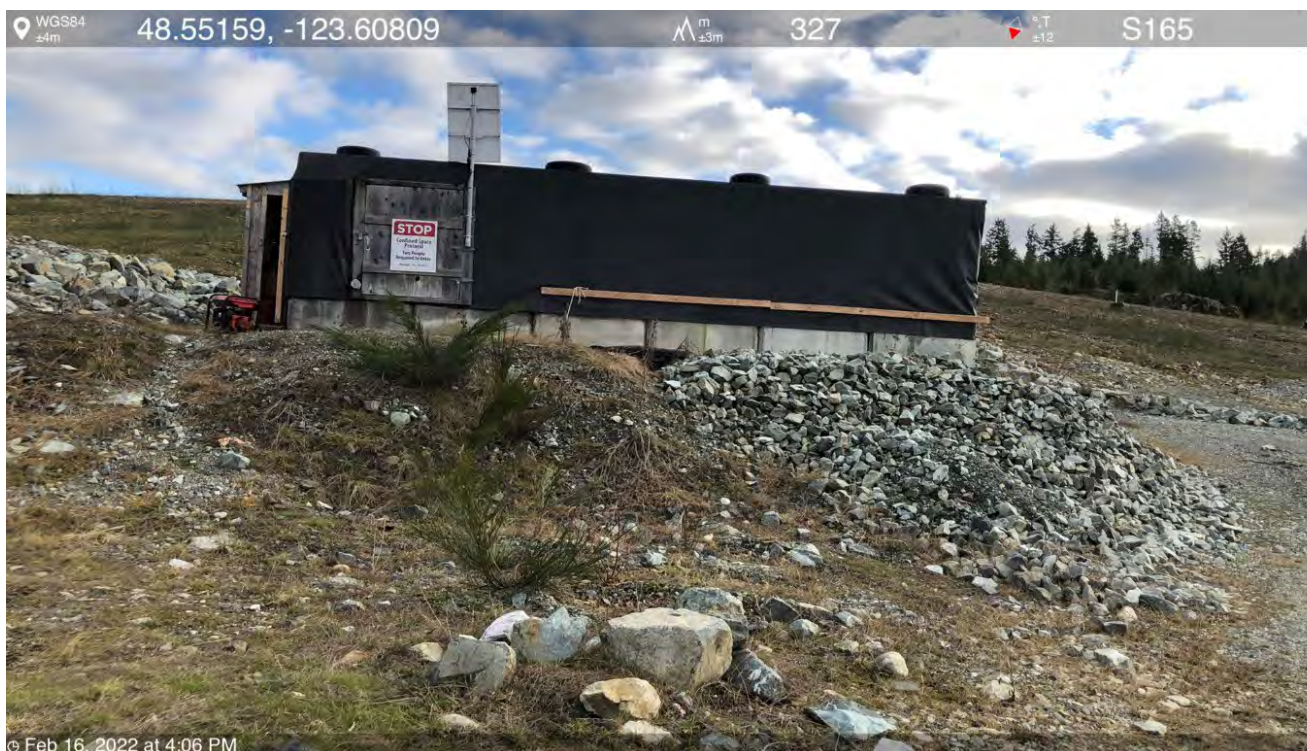


**Photo 12:** View of the sediment accumulation in the northern drainage ditch looking west (November 2021).





**Photo 13:** View of the south side of the storage tank facility and inlet pipes looking northeast (February 2022).



**Photo 14:** View of the north side of the storage tank facility looking south (February 2022).



# APPENDIX A LABORATORY CERTIFICATES OF ANALYSIS

## 2022 Q1 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000





Your Project #: 460 SLEBBINGS RD  
Your C.O.C. #: 655546-01-01

**Attention: Alana Duncan**

Ralmax Group Holdings Ltd.  
343A Bay Street  
Victoria, BC  
CANADA V8T 1P5

**Report Date: 2022/01/27**

Report #: R3127371

Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C203855**

**Received: 2022/01/21, 12:50**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	1	N/A	2022/01/25	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry	1	N/A	2022/01/26	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO <sub>4</sub> -E m
Conductivity @25C	1	N/A	2022/01/25	BBY6SOP-00026	SM 23 2510 B m
Fluoride	1	N/A	2022/01/27	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> ) (1)	1	N/A	2022/01/25	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO <sub>3</sub> )	1	N/A	2022/01/25	BBY WI-00033	Auto Calc
EPH in Water when PAH required	1	2022/01/24	2022/01/24	BBY8SOP-00029	BCMOE BCLM Sep2017 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2022/01/25	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (dissolved) (2)	1	N/A	2022/01/25	BBY7SOP-00002	EPA 6020b R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2022/01/22	2022/01/25	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	2022/01/24	2022/01/25	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrate + Nitrite (N)	1	N/A	2022/01/25	BBY6SOP-00010	SM 23 4500-NO <sub>3</sub> - I m
Nitrite (N) by CFA	1	N/A	2022/01/25	BBY6SOP-00010	SM 23 4500-NO <sub>3</sub> - I m
Nitrogen - Nitrate (as N)	1	N/A	2022/01/26	BBY WI-00033	Auto Calc
PAH in Water by GC/MS (SIM)	1	2022/01/24	2022/01/24	BBY8SOP-00021	BCMOE BCLM Jul2017m
Total LMW, HMW, Total PAH Calc (3)	1	N/A	2022/01/25	BBY WI-00033	Auto Calc
Filter and HNO <sub>3</sub> Preserve for Metals	1	N/A	2022/01/22	BBY7 WI-00004	SM 23 3030B m
pH @25°C (4)	1	N/A	2022/01/25	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue)	1	2022/01/25	2022/01/26	BBY6SOP-00033	SM 23 2540 C m
EPH less PAH in Water by GC/FID (5)	1	N/A	2022/01/25	BBY WI-00033	Auto Calc
Turbidity	1	N/A	2022/01/24	BBY6SOP-00027	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.



Your Project #: 460 SLEBBINGS RD  
Your C.O.C. #: 655546-01-01

**Attention: Alana Duncan**

Ralmax Group Holdings Ltd.  
343A Bay Street  
Victoria, BC  
CANADA V8T 1P5

**Report Date: 2022/01/27**  
Report #: R3127371  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**BV LABS JOB #: C203855**

**Received: 2022/01/21, 12:50**

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) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(2) Dissolved > Total Imbalance: When applicable, Dissolved and Total results were reviewed and data quality meets acceptable levels unless otherwise noted.

(3) Total PAHs in Water include: Quinoline, Naphthalene, 1-Methylnaphthalene, 2-Methylnaphthalene, Acenaphthylene, Acenaphthene, Fluorene, Phenanthrene, Anthracene, Acridine, Fluoranthene, Pyrene, Benzo(a)anthracene, Chrysene, Benzo(b&j)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Indeno(1,2,3-cd)pyrene, Dibenz(a,h)anthracene, and Benzo(g,h,i)perylene.

(4) 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 Laboratories endeavours to analyze samples as soon as possible after receipt.

(5) LEPH = EPH (C10 to C19) - (Acenaphthene + Acridine + Anthracene + Fluorene + Naphthalene + Phenanthrene)

HEPH = EPH (C19 to C32) - (Benzo(a)anthracene + Benzo(a)pyrene + Fluoranthene + Pyrene)

Encryption Key



**AUTHORIZED REPORT  
RAPPORT AUTORISÉ**

Bureau Veritas

27 Jan 2022 17:08:27

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Customer Solutions, Western Canada Customer Experience Team

Email: customersolutionswest@bureauveritas.com

Phone# (604) 734 7276

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BV Labs 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.

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Bureau Veritas ID</b>		ANI758		
<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>ANIONS</b>				
Nitrite (N)	mg/L	<0.0050	0.0050	A481160
<b>Calculated Parameters</b>				
Filter and HNO <sub>3</sub> Preservation	N/A	FIELD		ONSITE
Dissolved Hardness (CaCO <sub>3</sub> )	mg/L	2590	0.50	A478369
Total Hardness (CaCO <sub>3</sub> )	mg/L	2780	0.50	A478384
Nitrate (N)	mg/L	1.62	0.020	A478398
Low Molecular Weight PAH's	ug/L	0.14	0.10	A478371
High Molecular Weight PAH's	ug/L	<0.050	0.050	A478371
Total PAH	ug/L	0.14	0.10	A478371
<b>Misc. Inorganics</b>				
Conductivity	uS/cm	11000	2.0	A481844
pH	pH	7.82	N/A	A481838
Total Dissolved Solids	mg/L	7700 (1)	50	A481184
<b>Anions</b>				
Alkalinity (PP as CaCO <sub>3</sub> )	mg/L	<1.0	1.0	A481843
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	170	1.0	A481843
Bicarbonate (HCO <sub>3</sub> )	mg/L	210	1.0	A481843
Carbonate (CO <sub>3</sub> )	mg/L	<1.0	1.0	A481843
Dissolved Fluoride (F)	mg/L	0.082	0.050	A483044
Hydroxide (OH)	mg/L	<1.0	1.0	A481843
Dissolved Chloride (Cl)	mg/L	3000	100	A482169
Dissolved Sulphate (SO <sub>4</sub> )	mg/L	1600	10	A482169
<b>Nutrients</b>				
Nitrate plus Nitrite (N)	mg/L	1.62	0.020	A481157
<b>Physical Properties</b>				
Turbidity	NTU	1.4	0.10	A478519
RDL = Reportable Detection Limit N/A = Not Applicable (1) RDL raised due to high concentration of solids in the sample.				

**SEMIVOLATILE ORGANICS BY GC-MS (WATER)**

<b>Bureau Veritas ID</b>		ANI758		
<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Polycyclic Aromatics</b>				
Quinoline	ug/L	<0.020	0.020	A479461
Naphthalene	ug/L	0.14	0.10	A479461
1-Methylnaphthalene	ug/L	<0.050	0.050	A479461
2-Methylnaphthalene	ug/L	<0.10	0.10	A479461
Acenaphthylene	ug/L	<0.050	0.050	A479461
Acenaphthene	ug/L	<0.050	0.050	A479461
Fluorene	ug/L	<0.050	0.050	A479461
Phenanthrene	ug/L	<0.050	0.050	A479461
Anthracene	ug/L	<0.010	0.010	A479461
Acridine	ug/L	<0.050	0.050	A479461
Fluoranthene	ug/L	<0.020	0.020	A479461
Pyrene	ug/L	<0.020	0.020	A479461
Benzo(a)anthracene	ug/L	<0.010	0.010	A479461
Chrysene	ug/L	<0.020	0.020	A479461
Benzo(b&j)fluoranthene	ug/L	<0.030	0.030	A479461
Benzo(k)fluoranthene	ug/L	<0.050	0.050	A479461
Benzo(a)pyrene	ug/L	<0.0050	0.0050	A479461
Indeno(1,2,3-cd)pyrene	ug/L	<0.050	0.050	A479461
Dibenz(a,h)anthracene	ug/L	<0.0030	0.0030	A479461
Benzo(g,h,i)perylene	ug/L	<0.050	0.050	A479461
<b>Surrogate Recovery (%)</b>				
D10-ANTHRACENE (sur.)	%	83		A479461
D8-ACENAPHTHYLENE (sur.)	%	94		A479461
D8-NAPHTHALENE (sur.)	%	78		A479461
TERPHENYL-D14 (sur.)	%	76		A479461
RDL = Reportable Detection Limit				



### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

<b>Bureau Veritas ID</b>		ANI758		
<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	ug/L	<15	15	A479295
Dissolved Antimony (Sb)	ug/L	<2.5	2.5	A479295
Dissolved Arsenic (As)	ug/L	<0.50	0.50	A479295
Dissolved Barium (Ba)	ug/L	10.8	5.0	A479295
Dissolved Beryllium (Be)	ug/L	<0.50	0.50	A479295
Dissolved Bismuth (Bi)	ug/L	<5.0	5.0	A479295
Dissolved Boron (B)	ug/L	288	250	A479295
Dissolved Cadmium (Cd)	ug/L	0.352	0.050	A479295
Dissolved Chromium (Cr)	ug/L	<5.0	5.0	A479295
Dissolved Cobalt (Co)	ug/L	1.3	1.0	A479295
Dissolved Copper (Cu)	ug/L	1.9	1.0	A479295
Dissolved Iron (Fe)	ug/L	<25	25	A479295
Dissolved Lead (Pb)	ug/L	<1.0	1.0	A479295
Dissolved Lithium (Li)	ug/L	<10	10	A479295
Dissolved Manganese (Mn)	ug/L	12600	5.0	A479295
Dissolved Molybdenum (Mo)	ug/L	<5.0	5.0	A479295
Dissolved Nickel (Ni)	ug/L	5.7	5.0	A479295
Dissolved Selenium (Se)	ug/L	<0.50	0.50	A479295
Dissolved Silicon (Si)	ug/L	7100	500	A479295
Dissolved Silver (Ag)	ug/L	<0.10	0.10	A479295
Dissolved Strontium (Sr)	ug/L	3630	5.0	A479295
Dissolved Thallium (Tl)	ug/L	<0.050	0.050	A479295
Dissolved Tin (Sn)	ug/L	<25	25	A479295
Dissolved Titanium (Ti)	ug/L	<25	25	A479295
Dissolved Uranium (U)	ug/L	0.53	0.50	A479295
Dissolved Vanadium (V)	ug/L	<25	25	A479295
Dissolved Zinc (Zn)	ug/L	<25	25	A479295
Dissolved Zirconium (Zr)	ug/L	<0.50	0.50	A479295
Dissolved Calcium (Ca)	mg/L	704	0.25	A478370
Dissolved Magnesium (Mg)	mg/L	201	0.25	A478370
Dissolved Potassium (K)	mg/L	23.8	0.25	A478370
Dissolved Sodium (Na)	mg/L	1410	0.25	A478370
RDL = Reportable Detection Limit				



**ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

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<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Sulphur (S)	mg/L	569	15	A478370
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	ug/L	52	15	A479153
Total Antimony (Sb)	ug/L	<2.5	2.5	A479153
Total Arsenic (As)	ug/L	<0.50	0.50	A479153
Total Barium (Ba)	ug/L	11.8	5.0	A479153
Total Beryllium (Be)	ug/L	<0.50	0.50	A479153
Total Bismuth (Bi)	ug/L	<5.0	5.0	A479153
Total Boron (B)	ug/L	310	250	A479153
Total Cadmium (Cd)	ug/L	0.349	0.050	A479153
Total Chromium (Cr)	ug/L	<5.0	5.0	A479153
Total Cobalt (Co)	ug/L	1.5	1.0	A479153
Total Copper (Cu)	ug/L	<2.5	2.5	A479153
Total Iron (Fe)	ug/L	72	50	A479153
Total Lead (Pb)	ug/L	<1.0	1.0	A479153
Total Lithium (Li)	ug/L	<10	10	A479153
Total Manganese (Mn)	ug/L	13500	5.0	A479153
Total Molybdenum (Mo)	ug/L	<5.0	5.0	A479153
Total Nickel (Ni)	ug/L	6.3	5.0	A479153
Total Selenium (Se)	ug/L	<0.50	0.50	A479153
Total Silicon (Si)	ug/L	7610	500	A479153
Total Silver (Ag)	ug/L	<0.10	0.10	A479153
Total Strontium (Sr)	ug/L	3870	5.0	A479153
Total Thallium (Tl)	ug/L	<0.050	0.050	A479153
Total Tin (Sn)	ug/L	<25	25	A479153
Total Titanium (Ti)	ug/L	<25	25	A479153
Total Uranium (U)	ug/L	0.56	0.50	A479153
Total Vanadium (V)	ug/L	<25	25	A479153
Total Zinc (Zn)	ug/L	28	25	A479153
Total Zirconium (Zr)	ug/L	<0.50	0.50	A479153
Total Calcium (Ca)	mg/L	758	0.25	A478385
Total Magnesium (Mg)	mg/L	216	0.25	A478385
Total Potassium (K)	mg/L	25.4	0.25	A478385
RDL = Reportable Detection Limit				



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Bureau Veritas Job #: C203855

Report Date: 2022/01/27

Ralmax Group Holdings Ltd.

Client Project #: 460 SLEBBINGS RD

Sampler Initials: AD

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

<b>Bureau Veritas ID</b>		ANI758		
<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Sodium (Na)	mg/L	1530	0.25	A478385
Total Sulphur (S)	mg/L	608	15	A478385
RDL = Reportable Detection Limit				



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### TOTAL PETROLEUM HYDROCARBONS (WATER)

<b>Bureau Veritas ID</b>		ANI758		
<b>Sampling Date</b>		2022/01/21 10:45		
<b>COC Number</b>		655546-01-01		
	<b>UNITS</b>	<b>SHA-LE-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
LEPH (C10-C19 less PAH)	mg/L	<0.20	0.20	A478364
HEPH (C19-C32 less PAH)	mg/L	<0.20	0.20	A478364
<b>Ext. Pet. Hydrocarbon</b>				
EPH (C10-C19)	mg/L	<0.20	0.20	A479468
EPH (C19-C32)	mg/L	<0.20	0.20	A479468
<b>Surrogate Recovery (%)</b>				
O-TERPHENYL (sur.)	%	73		A479468
RDL = Reportable Detection Limit				



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### GENERAL COMMENTS

Sample ANI758 [SHA-LE-1] : Sample was analyzed past method specified hold time for Nitrate + Nitrite (N). 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 Nitrite (N) by CFA.

**Results relate only to the items tested.**



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Sampler Initials: AD

### QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
	A478519	JRV	Spiked Blank	Turbidity	2022/01/24		104	%	80 - 120
	A478519	JRV	Method Blank	Turbidity	2022/01/24	<0.10		NTU	
	A478519	JRV	RPD	Turbidity	2022/01/24	NC		%	20
	A479153	AA1	Matrix Spike	Total Aluminum (Al)	2022/01/25		102	%	80 - 120
				Total Antimony (Sb)	2022/01/25		103	%	80 - 120
				Total Arsenic (As)	2022/01/25		105	%	80 - 120
				Total Barium (Ba)	2022/01/25		102	%	80 - 120
				Total Beryllium (Be)	2022/01/25		102	%	80 - 120
				Total Bismuth (Bi)	2022/01/25		98	%	80 - 120
				Total Boron (B)	2022/01/25		99	%	80 - 120
				Total Cadmium (Cd)	2022/01/25		102	%	80 - 120
				Total Chromium (Cr)	2022/01/25		99	%	80 - 120
				Total Cobalt (Co)	2022/01/25		94	%	80 - 120
				Total Copper (Cu)	2022/01/25		91	%	80 - 120
				Total Iron (Fe)	2022/01/25		99	%	80 - 120
				Total Lead (Pb)	2022/01/25		103	%	80 - 120
				Total Lithium (Li)	2022/01/25		100	%	80 - 120
				Total Manganese (Mn)	2022/01/25		97	%	80 - 120
				Total Molybdenum (Mo)	2022/01/25		111	%	80 - 120
				Total Nickel (Ni)	2022/01/25		95	%	80 - 120
				Total Selenium (Se)	2022/01/25		103	%	80 - 120
				Total Silicon (Si)	2022/01/25		100	%	80 - 120
				Total Silver (Ag)	2022/01/25		100	%	80 - 120
				Total Strontium (Sr)	2022/01/25		NC	%	80 - 120
				Total Thallium (Tl)	2022/01/25		103	%	80 - 120
				Total Tin (Sn)	2022/01/25		102	%	80 - 120
				Total Titanium (Ti)	2022/01/25		103	%	80 - 120
				Total Uranium (U)	2022/01/25		110	%	80 - 120
				Total Vanadium (V)	2022/01/25		102	%	80 - 120
				Total Zinc (Zn)	2022/01/25		93	%	80 - 120
				Total Zirconium (Zr)	2022/01/25		109	%	80 - 120
	A479153	AA1	Spiked Blank	Total Aluminum (Al)	2022/01/25		105	%	80 - 120
				Total Antimony (Sb)	2022/01/25		103	%	80 - 120
				Total Arsenic (As)	2022/01/25		103	%	80 - 120
				Total Barium (Ba)	2022/01/25		103	%	80 - 120
				Total Beryllium (Be)	2022/01/25		105	%	80 - 120
				Total Bismuth (Bi)	2022/01/25		101	%	80 - 120
				Total Boron (B)	2022/01/25		104	%	80 - 120
				Total Cadmium (Cd)	2022/01/25		102	%	80 - 120
				Total Chromium (Cr)	2022/01/25		100	%	80 - 120
				Total Cobalt (Co)	2022/01/25		97	%	80 - 120
				Total Copper (Cu)	2022/01/25		96	%	80 - 120
				Total Iron (Fe)	2022/01/25		103	%	80 - 120
				Total Lead (Pb)	2022/01/25		105	%	80 - 120
				Total Lithium (Li)	2022/01/25		104	%	80 - 120
				Total Manganese (Mn)	2022/01/25		101	%	80 - 120
				Total Molybdenum (Mo)	2022/01/25		107	%	80 - 120
				Total Nickel (Ni)	2022/01/25		100	%	80 - 120
				Total Selenium (Se)	2022/01/25		103	%	80 - 120
				Total Silicon (Si)	2022/01/25		103	%	80 - 120
				Total Silver (Ag)	2022/01/25		101	%	80 - 120
				Total Strontium (Sr)	2022/01/25		98	%	80 - 120
				Total Thallium (Tl)	2022/01/25		101	%	80 - 120
				Total Tin (Sn)	2022/01/25		103	%	80 - 120



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Sampler Initials: AD

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A479153	AA1	Method Blank	Total Titanium (Ti)	2022/01/25		106	%	80 - 120
			Total Uranium (U)	2022/01/25		107	%	80 - 120
			Total Vanadium (V)	2022/01/25		100	%	80 - 120
			Total Zinc (Zn)	2022/01/25		101	%	80 - 120
			Total Zirconium (Zr)	2022/01/25		102	%	80 - 120
			Total Aluminum (Al)	2022/01/25	<3.0		ug/L	
			Total Antimony (Sb)	2022/01/25	<0.50		ug/L	
			Total Arsenic (As)	2022/01/25	<0.10		ug/L	
			Total Barium (Ba)	2022/01/25	<1.0		ug/L	
			Total Beryllium (Be)	2022/01/25	<0.10		ug/L	
			Total Bismuth (Bi)	2022/01/25	<1.0		ug/L	
			Total Boron (B)	2022/01/25	<50		ug/L	
			Total Cadmium (Cd)	2022/01/25	<0.010		ug/L	
			Total Chromium (Cr)	2022/01/25	<1.0		ug/L	
			Total Cobalt (Co)	2022/01/25	<0.20		ug/L	
			Total Copper (Cu)	2022/01/25	<0.50		ug/L	
			Total Iron (Fe)	2022/01/25	<10		ug/L	
			Total Lead (Pb)	2022/01/25	<0.20		ug/L	
			Total Lithium (Li)	2022/01/25	<2.0		ug/L	
			Total Manganese (Mn)	2022/01/25	<1.0		ug/L	
			Total Molybdenum (Mo)	2022/01/25	<1.0		ug/L	
			Total Nickel (Ni)	2022/01/25	<1.0		ug/L	
			Total Selenium (Se)	2022/01/25	<0.10		ug/L	
			Total Silicon (Si)	2022/01/25	<100		ug/L	
			Total Silver (Ag)	2022/01/25	<0.020		ug/L	
			Total Strontium (Sr)	2022/01/25	<1.0		ug/L	
			Total Thallium (Tl)	2022/01/25	<0.010		ug/L	
			Total Tin (Sn)	2022/01/25	<5.0		ug/L	
			Total Titanium (Ti)	2022/01/25	<5.0		ug/L	
			Total Uranium (U)	2022/01/25	<0.10		ug/L	
			Total Vanadium (V)	2022/01/25	<5.0		ug/L	
			Total Zinc (Zn)	2022/01/25	<5.0		ug/L	
			Total Zirconium (Zr)	2022/01/25	<0.10		ug/L	
A479153	AA1	RPD	Total Aluminum (Al)	2022/01/25	0.76		%	20
			Total Antimony (Sb)	2022/01/25	NC		%	20
			Total Arsenic (As)	2022/01/25	1.5		%	20
			Total Barium (Ba)	2022/01/25	1.1		%	20
			Total Beryllium (Be)	2022/01/25	NC		%	20
			Total Bismuth (Bi)	2022/01/25	NC		%	20
			Total Boron (B)	2022/01/25	0.0055		%	20
			Total Cadmium (Cd)	2022/01/25	NC		%	20
			Total Chromium (Cr)	2022/01/25	NC		%	20
			Total Cobalt (Co)	2022/01/25	0.21		%	20
			Total Copper (Cu)	2022/01/25	0.36		%	20
			Total Iron (Fe)	2022/01/25	2.6		%	20
			Total Lead (Pb)	2022/01/25	NC		%	20
			Total Lithium (Li)	2022/01/25	3.5		%	20
			Total Manganese (Mn)	2022/01/25	1.3		%	20
			Total Molybdenum (Mo)	2022/01/25	NC		%	20
			Total Nickel (Ni)	2022/01/25	2.2		%	20
			Total Selenium (Se)	2022/01/25	NC		%	20
			Total Silicon (Si)	2022/01/25	4.1		%	20
			Total Silver (Ag)	2022/01/25	NC		%	20
			Total Strontium (Sr)	2022/01/25	2.6		%	20



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VERITAS

Bureau Veritas Job #: C203855

Report Date: 2022/01/27

Ralmax Group Holdings Ltd.

Client Project #: 460 SLEBBINGS RD

Sampler Initials: AD

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A479295	AA1	Matrix Spike	Total Thallium (Tl)	2022/01/25	NC		%	20
			Total Tin (Sn)	2022/01/25	NC		%	20
			Total Titanium (Ti)	2022/01/25	NC		%	20
			Total Uranium (U)	2022/01/25	NC		%	20
			Total Vanadium (V)	2022/01/25	NC		%	20
			Total Zinc (Zn)	2022/01/25	0.40		%	20
			Total Zirconium (Zr)	2022/01/25	NC		%	20
			Dissolved Aluminum (Al)	2022/01/25		101	%	80 - 120
			Dissolved Antimony (Sb)	2022/01/25		100	%	80 - 120
			Dissolved Arsenic (As)	2022/01/25		104	%	80 - 120
			Dissolved Barium (Ba)	2022/01/25		98	%	80 - 120
			Dissolved Beryllium (Be)	2022/01/25		100	%	80 - 120
			Dissolved Bismuth (Bi)	2022/01/25		95	%	80 - 120
			Dissolved Boron (B)	2022/01/25		95	%	80 - 120
			Dissolved Cadmium (Cd)	2022/01/25		100	%	80 - 120
			Dissolved Chromium (Cr)	2022/01/25		95	%	80 - 120
			Dissolved Cobalt (Co)	2022/01/25		91	%	80 - 120
			Dissolved Copper (Cu)	2022/01/25		88	%	80 - 120
			Dissolved Iron (Fe)	2022/01/25		97	%	80 - 120
			Dissolved Lead (Pb)	2022/01/25		100	%	80 - 120
			Dissolved Lithium (Li)	2022/01/25		99	%	80 - 120
			Dissolved Manganese (Mn)	2022/01/25		95	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/01/25		108	%	80 - 120
			Dissolved Nickel (Ni)	2022/01/25		92	%	80 - 120
			Dissolved Selenium (Se)	2022/01/25		102	%	80 - 120
			Dissolved Silicon (Si)	2022/01/25		99	%	80 - 120
			Dissolved Silver (Ag)	2022/01/25		97	%	80 - 120
			Dissolved Strontium (Sr)	2022/01/25		NC	%	80 - 120
			Dissolved Thallium (Tl)	2022/01/25		98	%	80 - 120
			Dissolved Tin (Sn)	2022/01/25		101	%	80 - 120
			Dissolved Titanium (Ti)	2022/01/25		102	%	80 - 120
			Dissolved Uranium (U)	2022/01/25		106	%	80 - 120
			Dissolved Vanadium (V)	2022/01/25		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/01/25		93	%	80 - 120
			Dissolved Zirconium (Zr)	2022/01/25		109	%	80 - 120
A479295	AA1	Spiked Blank	Dissolved Aluminum (Al)	2022/01/25		103	%	80 - 120
			Dissolved Antimony (Sb)	2022/01/25		102	%	80 - 120
			Dissolved Arsenic (As)	2022/01/25		100	%	80 - 120
			Dissolved Barium (Ba)	2022/01/25		101	%	80 - 120
			Dissolved Beryllium (Be)	2022/01/25		102	%	80 - 120
			Dissolved Bismuth (Bi)	2022/01/25		98	%	80 - 120
			Dissolved Boron (B)	2022/01/25		100	%	80 - 120
			Dissolved Cadmium (Cd)	2022/01/25		101	%	80 - 120
			Dissolved Chromium (Cr)	2022/01/25		98	%	80 - 120
			Dissolved Cobalt (Co)	2022/01/25		95	%	80 - 120
			Dissolved Copper (Cu)	2022/01/25		95	%	80 - 120
			Dissolved Iron (Fe)	2022/01/25		101	%	80 - 120
			Dissolved Lead (Pb)	2022/01/25		99	%	80 - 120
			Dissolved Lithium (Li)	2022/01/25		101	%	80 - 120
			Dissolved Manganese (Mn)	2022/01/25		99	%	80 - 120
			Dissolved Molybdenum (Mo)	2022/01/25		103	%	80 - 120
			Dissolved Nickel (Ni)	2022/01/25		99	%	80 - 120
			Dissolved Selenium (Se)	2022/01/25		101	%	80 - 120
			Dissolved Silicon (Si)	2022/01/25		100	%	80 - 120



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A479295	AA1	Method Blank	Dissolved Silver (Ag)	2022/01/25		99	%	80 - 120
			Dissolved Strontium (Sr)	2022/01/25		97	%	80 - 120
			Dissolved Thallium (Tl)	2022/01/25		98	%	80 - 120
			Dissolved Tin (Sn)	2022/01/25		101	%	80 - 120
			Dissolved Titanium (Ti)	2022/01/25		104	%	80 - 120
			Dissolved Uranium (U)	2022/01/25		103	%	80 - 120
			Dissolved Vanadium (V)	2022/01/25		99	%	80 - 120
			Dissolved Zinc (Zn)	2022/01/25		100	%	80 - 120
			Dissolved Zirconium (Zr)	2022/01/25		100	%	80 - 120
			Dissolved Aluminum (Al)	2022/01/25	<3.0		ug/L	
			Dissolved Antimony (Sb)	2022/01/25	<0.50		ug/L	
			Dissolved Arsenic (As)	2022/01/25	<0.10		ug/L	
			Dissolved Barium (Ba)	2022/01/25	<1.0		ug/L	
			Dissolved Beryllium (Be)	2022/01/25	<0.10		ug/L	
			Dissolved Bismuth (Bi)	2022/01/25	<1.0		ug/L	
			Dissolved Boron (B)	2022/01/25	<50		ug/L	
			Dissolved Cadmium (Cd)	2022/01/25	<0.010		ug/L	
			Dissolved Chromium (Cr)	2022/01/25	<1.0		ug/L	
			Dissolved Cobalt (Co)	2022/01/25	<0.20		ug/L	
			Dissolved Copper (Cu)	2022/01/25	<0.20		ug/L	
			Dissolved Iron (Fe)	2022/01/25	<5.0		ug/L	
			Dissolved Lead (Pb)	2022/01/25	<0.20		ug/L	
			Dissolved Lithium (Li)	2022/01/25	<2.0		ug/L	
			Dissolved Manganese (Mn)	2022/01/25	<1.0		ug/L	
			Dissolved Molybdenum (Mo)	2022/01/25	<1.0		ug/L	
			Dissolved Nickel (Ni)	2022/01/25	<1.0		ug/L	
			Dissolved Selenium (Se)	2022/01/25	<0.10		ug/L	
			Dissolved Silicon (Si)	2022/01/25	<100		ug/L	
			Dissolved Silver (Ag)	2022/01/25	<0.020		ug/L	
			Dissolved Strontium (Sr)	2022/01/25	<1.0		ug/L	
			Dissolved Thallium (Tl)	2022/01/25	<0.010		ug/L	
			Dissolved Tin (Sn)	2022/01/25	<5.0		ug/L	
			Dissolved Titanium (Ti)	2022/01/25	<5.0		ug/L	
			Dissolved Uranium (U)	2022/01/25	<0.10		ug/L	
			Dissolved Vanadium (V)	2022/01/25	<5.0		ug/L	
			Dissolved Zinc (Zn)	2022/01/25	<5.0		ug/L	
			Dissolved Zirconium (Zr)	2022/01/25	<0.10		ug/L	
A479295	AA1	RPD	Dissolved Aluminum (Al)	2022/01/25	0.92		%	20
			Dissolved Antimony (Sb)	2022/01/25	NC		%	20
			Dissolved Arsenic (As)	2022/01/25	4.0		%	20
			Dissolved Barium (Ba)	2022/01/25	0.99		%	20
			Dissolved Beryllium (Be)	2022/01/25	NC		%	20
			Dissolved Bismuth (Bi)	2022/01/25	NC		%	20
			Dissolved Boron (B)	2022/01/25	0.43		%	20
			Dissolved Cadmium (Cd)	2022/01/25	NC		%	20
			Dissolved Chromium (Cr)	2022/01/25	NC		%	20
			Dissolved Cobalt (Co)	2022/01/25	3.4		%	20
			Dissolved Copper (Cu)	2022/01/25	0.21		%	20
			Dissolved Iron (Fe)	2022/01/25	4.9		%	20
			Dissolved Lead (Pb)	2022/01/25	NC		%	20
			Dissolved Lithium (Li)	2022/01/25	4.0		%	20
			Dissolved Manganese (Mn)	2022/01/25	0.13		%	20
			Dissolved Molybdenum (Mo)	2022/01/25	NC		%	20
			Dissolved Nickel (Ni)	2022/01/25	1.1		%	20





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### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A479461	JP1	Matrix Spike	Dissolved Selenium (Se)	2022/01/25	NC		%	20
			Dissolved Silicon (Si)	2022/01/25	4.0		%	20
			Dissolved Silver (Ag)	2022/01/25	NC		%	20
			Dissolved Strontium (Sr)	2022/01/25	1.7		%	20
			Dissolved Thallium (Tl)	2022/01/25	NC		%	20
			Dissolved Tin (Sn)	2022/01/25	NC		%	20
			Dissolved Titanium (Ti)	2022/01/25	NC		%	20
			Dissolved Uranium (U)	2022/01/25	NC		%	20
			Dissolved Vanadium (V)	2022/01/25	NC		%	20
			Dissolved Zinc (Zn)	2022/01/25	1.2		%	20
			Dissolved Zirconium (Zr)	2022/01/25	NC		%	20
			D10-ANTHRACENE (sur.)	2022/01/24		90	%	50 - 140
			D8-ACENAPHTHYLENE (sur.)	2022/01/24		97	%	50 - 140
			D8-NAPHTHALENE (sur.)	2022/01/24		69	%	50 - 140
			TERPHENYL-D14 (sur.)	2022/01/24		87	%	50 - 140
			Quinoline	2022/01/24		88	%	50 - 140
			Naphthalene	2022/01/24		69	%	50 - 140
			1-Methylnaphthalene	2022/01/24		78	%	50 - 140
			2-Methylnaphthalene	2022/01/24		84	%	50 - 140
			Acenaphthylene	2022/01/24		85	%	50 - 140
			Acenaphthene	2022/01/24		84	%	50 - 140
			Fluorene	2022/01/24		87	%	50 - 140
			Phenanthrene	2022/01/24		79	%	50 - 140
			Anthracene	2022/01/24		87	%	50 - 140
			Acridine	2022/01/24		95	%	50 - 140
			Fluoranthene	2022/01/24		94	%	50 - 140
			Pyrene	2022/01/24		90	%	50 - 140
			Benzo(a)anthracene	2022/01/24		94	%	50 - 140
			Chrysene	2022/01/24		89	%	50 - 140
			Benzo(b&j)fluoranthene	2022/01/24		79	%	50 - 140
			Benzo(k)fluoranthene	2022/01/24		81	%	50 - 140
			Benzo(a)pyrene	2022/01/24		95	%	50 - 140
			Indeno(1,2,3-cd)pyrene	2022/01/24		61	%	50 - 140
			Dibenz(a,h)anthracene	2022/01/24		62	%	50 - 140
			Benzo(g,h,i)perylene	2022/01/24		56	%	50 - 140
A479461	JP1	Spiked Blank	D10-ANTHRACENE (sur.)	2022/01/24		91	%	50 - 140
			D8-ACENAPHTHYLENE (sur.)	2022/01/24		88	%	50 - 140
			D8-NAPHTHALENE (sur.)	2022/01/24		74	%	50 - 140
			TERPHENYL-D14 (sur.)	2022/01/24		78	%	50 - 140
			Quinoline	2022/01/24		91	%	50 - 140
			Naphthalene	2022/01/24		73	%	50 - 140
			1-Methylnaphthalene	2022/01/24		75	%	50 - 140
			2-Methylnaphthalene	2022/01/24		75	%	50 - 140
			Acenaphthylene	2022/01/24		76	%	50 - 140
			Acenaphthene	2022/01/24		82	%	50 - 140
			Fluorene	2022/01/24		81	%	50 - 140
			Phenanthrene	2022/01/24		77	%	50 - 140
			Anthracene	2022/01/24		84	%	50 - 140
			Acridine	2022/01/24		93	%	50 - 140
			Fluoranthene	2022/01/24		80	%	50 - 140
			Pyrene	2022/01/24		77	%	50 - 140
			Benzo(a)anthracene	2022/01/24		90	%	50 - 140
			Chrysene	2022/01/24		88	%	50 - 140
			Benzo(b&j)fluoranthene	2022/01/24		82	%	50 - 140



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QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A479461	JP1	Method Blank	Benzo(k)fluoranthene	2022/01/24		85	%	50 - 140
			Benzo(a)pyrene	2022/01/24		94	%	50 - 140
			Indeno(1,2,3-cd)pyrene	2022/01/24		96	%	50 - 140
			Dibenz(a,h)anthracene	2022/01/24		99	%	50 - 140
			Benzo(g,h,i)perylene	2022/01/24		91	%	50 - 140
			D10-ANTHRACENE (sur.)	2022/01/24		91	%	50 - 140
			D8-ACENAPHTHYLENE (sur.)	2022/01/24		88	%	50 - 140
			D8-NAPHTHALENE (sur.)	2022/01/24		73	%	50 - 140
			TERPHENYL-D14 (sur.)	2022/01/24		76	%	50 - 140
			Quinoline	2022/01/24	<0.020		ug/L	
			Naphthalene	2022/01/24	<0.10		ug/L	
			1-Methylnaphthalene	2022/01/24	<0.050		ug/L	
			2-Methylnaphthalene	2022/01/24	<0.10		ug/L	
			Acenaphthylene	2022/01/24	<0.050		ug/L	
			Acenaphthene	2022/01/24	<0.050		ug/L	
			Fluorene	2022/01/24	<0.050		ug/L	
			Phenanthrene	2022/01/24	<0.050		ug/L	
			Anthracene	2022/01/24	<0.010		ug/L	
			Acridine	2022/01/24	<0.050		ug/L	
			Fluoranthene	2022/01/24	<0.020		ug/L	
			Pyrene	2022/01/24	<0.020		ug/L	
			Benzo(a)anthracene	2022/01/24	<0.010		ug/L	
			Chrysene	2022/01/24	<0.020		ug/L	
			Benzo(b&j)fluoranthene	2022/01/24	<0.030		ug/L	
			Benzo(k)fluoranthene	2022/01/24	<0.050		ug/L	
			Benzo(a)pyrene	2022/01/24	<0.0050		ug/L	
			Indeno(1,2,3-cd)pyrene	2022/01/24	<0.050		ug/L	
			Dibenz(a,h)anthracene	2022/01/24	<0.0030		ug/L	
			Benzo(g,h,i)perylene	2022/01/24	<0.050		ug/L	
A479461	JP1	RPD	Quinoline	2022/01/24	6.4		%	40
			Naphthalene	2022/01/24	NC		%	40
			2-Methylnaphthalene	2022/01/24	NC		%	40
			Acenaphthylene	2022/01/24	NC		%	40
			Acenaphthene	2022/01/24	NC		%	40
			Fluorene	2022/01/24	NC		%	40
			Phenanthrene	2022/01/24	1.9		%	40
			Anthracene	2022/01/24	NC		%	40
			Acridine	2022/01/24	NC		%	40
			Fluoranthene	2022/01/24	3.2		%	40
			Pyrene	2022/01/24	1.2		%	40
			Benzo(a)anthracene	2022/01/24	16		%	40
			Chrysene	2022/01/24	13		%	40
			Benzo(b&j)fluoranthene	2022/01/24	NC		%	40
			Benzo(k)fluoranthene	2022/01/24	NC		%	40
			Benzo(a)pyrene	2022/01/24	10		%	40
			Indeno(1,2,3-cd)pyrene	2022/01/24	NC		%	40
			Dibenz(a,h)anthracene	2022/01/24	NC		%	40
			Benzo(g,h,i)perylene	2022/01/24	NC		%	40
A479468	IT1	Spiked Blank	O-TERPHENYL (sur.)	2022/01/24		90	%	60 - 140
			EPH (C10-C19)	2022/01/24		90	%	70 - 130
			EPH (C19-C32)	2022/01/24		92	%	70 - 130
A479468	IT1	Method Blank	O-TERPHENYL (sur.)	2022/01/24		90	%	60 - 140
			EPH (C10-C19)	2022/01/24	<0.20		mg/L	
			EPH (C19-C32)	2022/01/24	<0.20		mg/L	



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A479468	IT1	RPD [ANI758-05]	EPH (C10-C19)	2022/01/24	NC		%	30
			EPH (C19-C32)	2022/01/24	NC		%	30
A481157	JRV	Matrix Spike	Nitrate plus Nitrite (N)	2022/01/25		101	%	80 - 120
A481157	JRV	Spiked Blank	Nitrate plus Nitrite (N)	2022/01/25		105	%	80 - 120
A481157	JRV	Method Blank	Nitrate plus Nitrite (N)	2022/01/25	<0.020		mg/L	
A481157	JRV	RPD	Nitrate plus Nitrite (N)	2022/01/25	1.4		%	25
A481160	JRV	Matrix Spike	Nitrite (N)	2022/01/25		35 (1)	%	80 - 120
A481160	JRV	Spiked Blank	Nitrite (N)	2022/01/25		99	%	80 - 120
A481160	JRV	Method Blank	Nitrite (N)	2022/01/25	<0.0050		mg/L	
A481160	JRV	RPD	Nitrite (N)	2022/01/25	NC		%	20
A481184	WZ1	Matrix Spike	Total Dissolved Solids	2022/01/26		97	%	80 - 120
A481184	WZ1	Spiked Blank	Total Dissolved Solids	2022/01/26		102	%	80 - 120
A481184	WZ1	Method Blank	Total Dissolved Solids	2022/01/26	<10		mg/L	
A481184	WZ1	RPD	Total Dissolved Solids	2022/01/26	1.7		%	20
A481838	BB3	Spiked Blank	pH	2022/01/25		101	%	97 - 103
A481838	BB3	RPD	pH	2022/01/25	0.28		%	N/A
A481843	BB3	Matrix Spike	Alkalinity (Total as CaCO3)	2022/01/25		99	%	80 - 120
A481843	BB3	Spiked Blank	Alkalinity (Total as CaCO3)	2022/01/25		93	%	80 - 120
A481843	BB3	Method Blank	Alkalinity (PP as CaCO3)	2022/01/25	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2022/01/25	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/01/25	<1.0		mg/L	
			Carbonate (CO3)	2022/01/25	<1.0		mg/L	
			Hydroxide (OH)	2022/01/25	<1.0		mg/L	
A481843	BB3	RPD	Alkalinity (PP as CaCO3)	2022/01/25	NC		%	20
			Alkalinity (Total as CaCO3)	2022/01/25	5.0		%	20
			Bicarbonate (HCO3)	2022/01/25	5.0		%	20
			Carbonate (CO3)	2022/01/25	NC		%	20
			Hydroxide (OH)	2022/01/25	NC		%	20
A481844	BB3	Spiked Blank	Conductivity	2022/01/25		99	%	80 - 120
A481844	BB3	Method Blank	Conductivity	2022/01/25	<2.0		uS/cm	
A481844	BB3	RPD	Conductivity	2022/01/25	0.20		%	10
A482169	TL9	Matrix Spike [ANI758-01]	Dissolved Chloride (Cl)	2022/01/26		NC	%	80 - 120
			Dissolved Sulphate (SO4)	2022/01/26		NC	%	80 - 120
A482169	TL9	Spiked Blank	Dissolved Chloride (Cl)	2022/01/26		99	%	80 - 120
			Dissolved Sulphate (SO4)	2022/01/26		105	%	80 - 120
A482169	TL9	Method Blank	Dissolved Chloride (Cl)	2022/01/26	<1.0		mg/L	
			Dissolved Sulphate (SO4)	2022/01/26	<1.0		mg/L	
A482169	TL9	RPD [ANI758-01]	Dissolved Chloride (Cl)	2022/01/26	0.70		%	20
			Dissolved Sulphate (SO4)	2022/01/26	2.3		%	20
A483044	TSO	Matrix Spike	Dissolved Fluoride (F)	2022/01/27		108	%	80 - 120
A483044	TSO	Spiked Blank	Dissolved Fluoride (F)	2022/01/27		102	%	80 - 120
A483044	TSO	Method Blank	Dissolved Fluoride (F)	2022/01/27	<0.050		mg/L	



### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC		QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
Batch	Init							
A483044	TSO	RPD	Dissolved Fluoride (F)	2022/01/27	NC		%	20
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.								
Spiked Blank: 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 $\leq 2 \times$ RDL).								
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								



BUREAU  
VERITAS

Bureau Veritas Job #: C203855

Report Date: 2022/01/27

Ralmax Group Holdings Ltd.

Client Project #: 460 SLEBBINGS RD

Sampler Initials: AD

### VALIDATION SIGNATURE PAGE

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

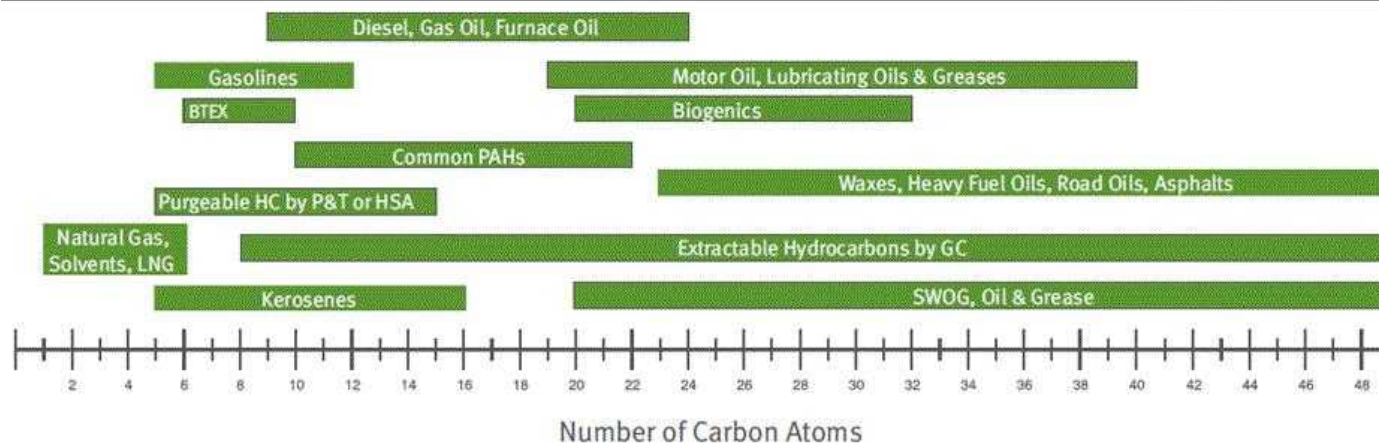
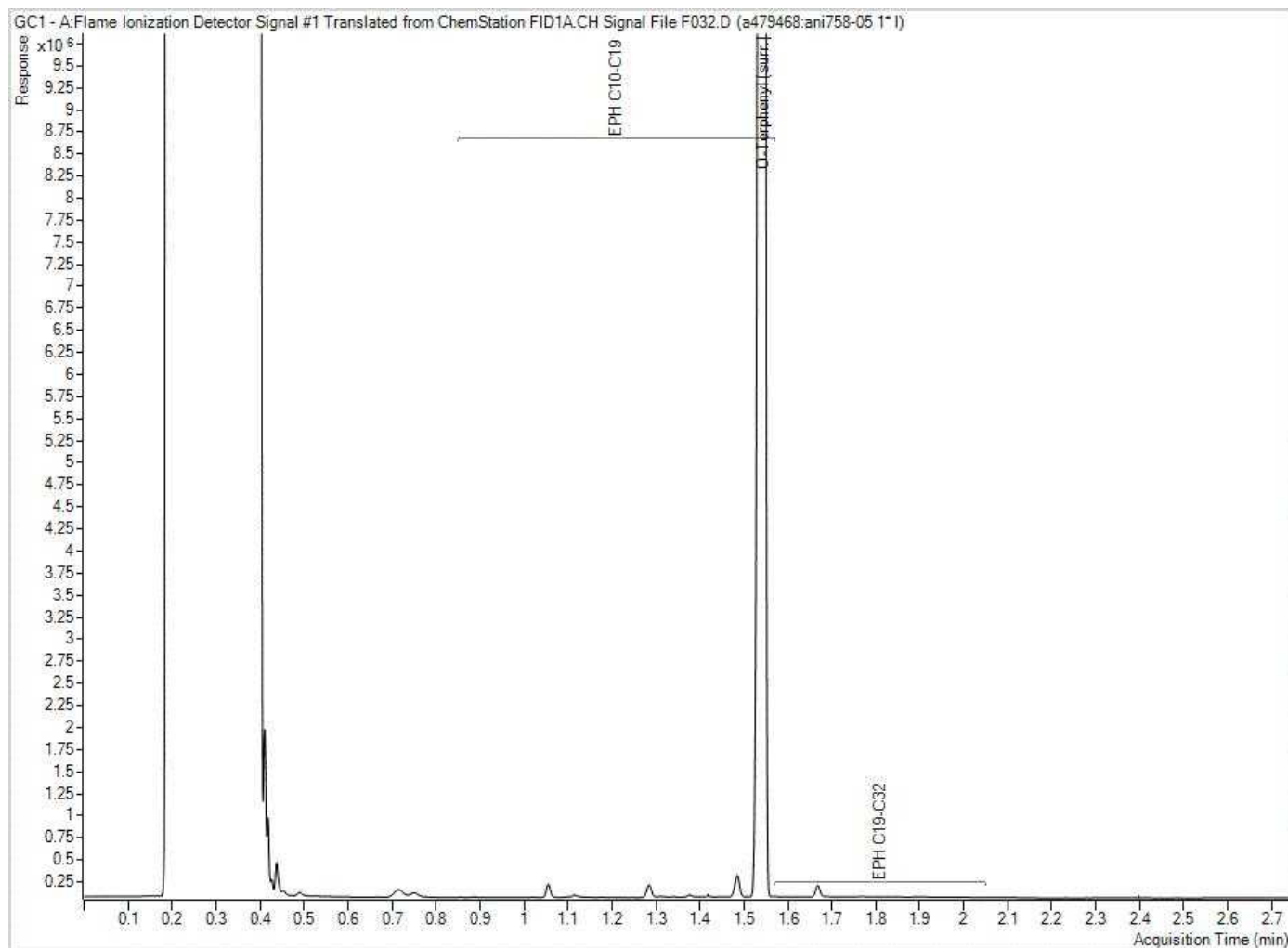
A handwritten signature in black ink, appearing to be 'David Huang', written over a horizontal line.

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

---

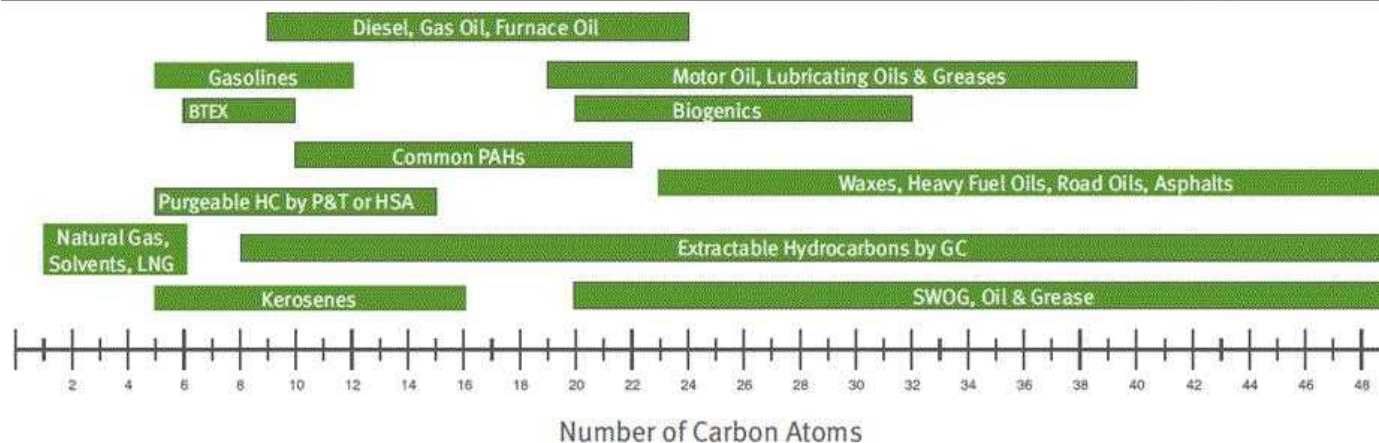
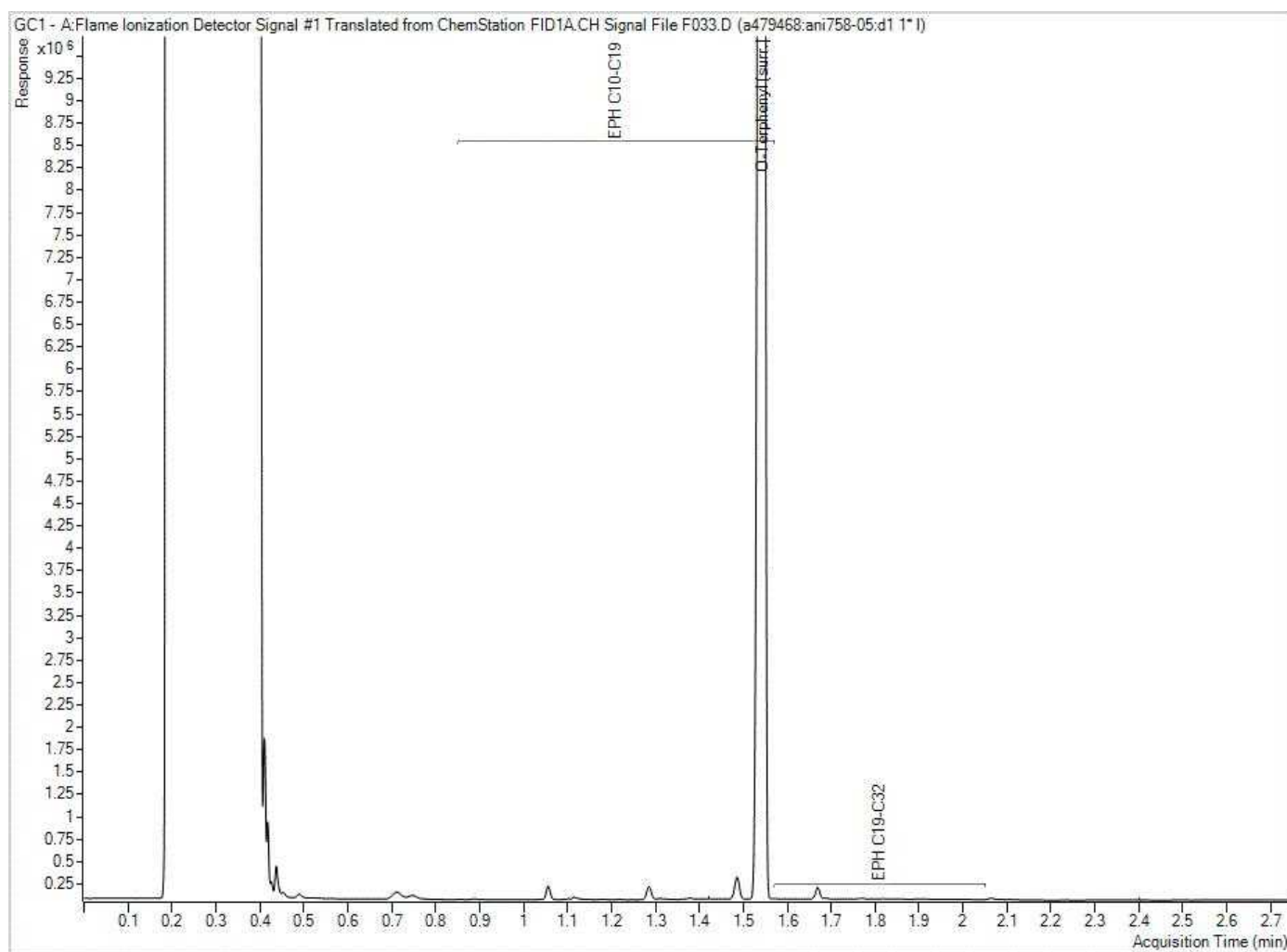
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

EPH in Water when PAH required Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.

EPH in Water when PAH required Chromatogram



Note: This information is provided for reference purposes only. Should detailed chemist interpretation or fingerprinting be required, please contact the laboratory.





BUREAU VERITAS

INVOICE TO:

Company Name #3332 Rainmax Group Holdings Ltd.  
Contact Name Accounts Payable  
Address 343A Bay Street  
Victoria BC V8T 1P5  
(250) 940-0936 Ext: 936 Fax:   
alanaduncan@rainmax.com

Company Name  
Contact Name Alana Duncan  
Address  
Phone alanaduncan@rainmax.com  
Email

Quotation # C10006  
P.O. #  
Project #  
Project Name  
Site #  
Sampled By Alana Duncan

Chain Of Custody Record  
Customer Solutions  
Bottle Order #: 653546  
Project Manager

Report Information

Project Information

Only

C203855\_COC



Special Instructions

Analysis Requested

Turnaround Time (TAT) Required

CSK  
BCW06

Note: For regulated drinking water samples - please use the Drinking Water Chain of Custody Form

Samples must be kept cool ( < 10°C ) from time of sampling until delivery to Bureau Veritas

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Regulated Drinking Water ? ( Y / N )	Metals Field Filtered ? ( Y / N )	LEPH & HEPH with CSR/CCME PAH in Water	CSR Dissolved Metals (No CV-Hg) in Water	CSR Total Metals (No CV-Hg) in Water	Nitrite & Nitrate in Water	Chloride, Sulphate, Fluoride, TDS, pH, Conductivity, Alkalinity	Turbidity	# of Bottles	Comments
1	SHA-LE-1	2022.01.21	10:45	Water			X	X	X	X	X	X	6	
2														
3														
4														
5														
6														
7														
8														
9														
10														

RELINQUISHED BY: (Signature/Print)

Date: (YY/MM/DD)

Time

RECEIVED BY: (Signature/Print)

Date: (YY/MM/DD)

Time

# jars used and not submitted

Time Sensitive

Lab Use Only

Custody Seal Intact on Cooler?

Alanaduncan / Alana Duncan

2022.01.21

12:50

Shaun Shauna Nicholson

2022.01.21

12:53

X

6.5.16

Yes X No N/A

\* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS'S 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.

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.





Your P.O. #: 03-2101  
Site Location: 460 SLEBBINGS RD  
Your C.O.C. #: G143954

**Attention: Alana Duncan**

Ralmax Group Holdings Ltd.  
343A Bay Street  
Victoria, BC  
CANADA V8T 1P5

**Report Date: 2022/02/15**  
Report #: R3134958  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C208672**

**Received: 2022/02/11, 10:18**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Alkalinity @25C (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	1	N/A	2022/02/15	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry	1	N/A	2022/02/14	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO <sub>4</sub> -E m
Conductivity @25C	1	N/A	2022/02/15	BBY6SOP-00026	SM 23 2510 B m
Fluoride	1	N/A	2022/02/12	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> ) (1)	1	N/A	2022/02/14	BBY WI-00033	Auto Calc
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2022/02/14	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	N/A	2022/02/14	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
pH @25°C (2)	1	N/A	2022/02/15	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue)	1	2022/02/14	2022/02/15	BBY6SOP-00033	SM 23 2540 C 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.

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) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be



Your P.O. #: 03-2101  
Site Location: 460 SLEBBINGS RD  
Your C.O.C. #: G143954

**Attention: Alana Duncan**

Ralmax Group Holdings Ltd.  
343A Bay Street  
Victoria, BC  
CANADA V8T 1P5

**Report Date: 2022/02/15**  
Report #: R3134958  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**BUREAU VERITAS JOB #: C208672**

**Received: 2022/02/11, 10:18**

used for compliance if available).

(2) 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.

Encryption Key



**AUTHORIZED REPORT  
RAPPORT AUTORISÉ**

Bureau Veritas

15 Feb 2022 16:26:36

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Customer Solutions, Western Canada Customer Experience Team

Email: customersolutionswest@bureauveritas.com

Phone# (604) 734 7276

=====

This report has been generated and distributed using a secure automated process.

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.



### RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID					AOK818		
Sampling Date					2022/02/11 09:00		
COC Number					G143954		
	UNITS	MAC	AO	OG	SHA-LE1	RDL	QC Batch
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	2290	0.50	A496471
Misc. Inorganics							
Conductivity	uS/cm	-	-	-	9800	2.0	A500369
pH	pH	-	-	7.0:10.5	7.83	N/A	A500364
Total Dissolved Solids	mg/L	-	500	-	6600	10	A498600
Anions							
Alkalinity (PP as CaCO3)	mg/L	-	-	-	<1.0	1.0	A500368
Alkalinity (Total as CaCO3)	mg/L	-	-	-	150	1.0	A500368
Bicarbonate (HCO3)	mg/L	-	-	-	190	1.0	A500368
Carbonate (CO3)	mg/L	-	-	-	<1.0	1.0	A500368
Dissolved Fluoride (F)	mg/L	1.5	-	-	0.072	0.050	A497684
Hydroxide (OH)	mg/L	-	-	-	<1.0	1.0	A500368
Chloride (Cl)	mg/L	-	250	-	2600	100	A498803
Sulphate (SO4)	mg/L	-	500	-	1600	10	A498803
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							
N/A = Not Applicable							



BUREAU  
VERITAS

Bureau Veritas Job #: C208672

Report Date: 2022/02/15

Ralmax Group Holdings Ltd.

Site Location: 460 SLEBBINGS RD

Your P.O. #: 03-2101

Sampler Initials: AD

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID					AOK818		
Sampling Date					2022/02/11 09:00		
COC Number					G143954		
	UNITS	MAC	AO	OG	SHA-LE1	RDL	QC Batch
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	2900	-	100	<15	15	A498694
Total Antimony (Sb)	ug/L	6	-	-	<2.5	2.5	A498694
Total Arsenic (As)	ug/L	10	-	-	<0.50	0.50	A498694
Total Barium (Ba)	ug/L	2000	-	-	<5.0	5.0	A498694
Total Beryllium (Be)	ug/L	-	-	-	<0.50	0.50	A498694
Total Bismuth (Bi)	ug/L	-	-	-	<5.0	5.0	A498694
Total Boron (B)	ug/L	5000	-	-	269	250	A498694
Total Cadmium (Cd)	ug/L	7	-	-	<0.050	0.050	A498694
Total Chromium (Cr)	ug/L	50	-	-	<5.0	5.0	A498694
Total Cobalt (Co)	ug/L	-	-	-	<1.0	1.0	A498694
Total Copper (Cu)	ug/L	2000	1000	-	<1.0	1.0	A498694
Total Iron (Fe)	ug/L	-	300	-	<25	25	A498694
Total Lead (Pb)	ug/L	5	-	-	8.0	1.0	A498694
Total Manganese (Mn)	ug/L	120	20	-	1820	5.0	A498694
Total Molybdenum (Mo)	ug/L	-	-	-	<5.0	5.0	A498694
Total Nickel (Ni)	ug/L	-	-	-	<5.0	5.0	A498694
Total Selenium (Se)	ug/L	50	-	-	<0.50	0.50	A498694
Total Silicon (Si)	ug/L	-	-	-	6950	500	A498694
Total Silver (Ag)	ug/L	-	-	-	<0.10	0.10	A498694
Total Strontium (Sr)	ug/L	7000	-	-	3040	5.0	A498694
Total Thallium (Tl)	ug/L	-	-	-	<0.050	0.050	A498694
Total Tin (Sn)	ug/L	-	-	-	<25	25	A498694
Total Titanium (Ti)	ug/L	-	-	-	<25	25	A498694
Total Uranium (U)	ug/L	20	-	-	0.62	0.50	A498694
Total Vanadium (V)	ug/L	-	-	-	<25	25	A498694
Total Zinc (Zn)	ug/L	-	5000	-	<25	25	A498694
Total Zirconium (Zr)	ug/L	-	-	-	<0.50	0.50	A498694
Total Calcium (Ca)	mg/L	-	-	-	622	0.25	A496955
Total Magnesium (Mg)	mg/L	-	-	-	178	0.25	A496955
Total Potassium (K)	mg/L	-	-	-	32.2	0.25	A496955
Total Sodium (Na)	mg/L	-	200	-	1280	0.25	A496955
No Fill	No Exceedance Exceeds 1 criteria policy/level Exceeds both criteria/levels						
Grey							
Black							
RDL = Reportable Detection Limit							



BUREAU  
VERITAS

Bureau Veritas Job #: C208672

Report Date: 2022/02/15

Ralmax Group Holdings Ltd.

Site Location: 460 SLEBBINGS RD

Your P.O. #: 03-2101

Sampler Initials: AD

### ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)

Bureau Veritas ID					AOK818		
Sampling Date					2022/02/11 09:00		
COC Number					G143954		
	UNITS	MAC	AO	OG	SHA-LE1	RDL	QC Batch
Total Sulphur (S)	mg/L	-	-	-	499	15	A496955
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							



## GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)

It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

### Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.

Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

**Results relate only to the items tested.**



**BUREAU  
VERITAS**

Bureau Veritas Job #: C208672

Report Date: 2022/02/15

Ralmax Group Holdings Ltd.

Site Location: 460 SLEBBINGS RD

Your P.O. #: 03-2101

Sampler Initials: AD

### QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A497684	TSO	Matrix Spike	Dissolved Fluoride (F)	2022/02/12		108	%	80 - 120
A497684	TSO	Spiked Blank	Dissolved Fluoride (F)	2022/02/12		96	%	80 - 120
A497684	TSO	Method Blank	Dissolved Fluoride (F)	2022/02/12	<0.050		mg/L	
A497684	TSO	RPD	Dissolved Fluoride (F)	2022/02/12	0		%	20
A498600	WZ1	Matrix Spike	Total Dissolved Solids	2022/02/15		100	%	80 - 120
A498600	WZ1	Spiked Blank	Total Dissolved Solids	2022/02/15		94	%	80 - 120
A498600	WZ1	Method Blank	Total Dissolved Solids	2022/02/15	<10		mg/L	
A498600	WZ1	RPD	Total Dissolved Solids	2022/02/15	15		%	20
A498694	VBA	Matrix Spike	Total Aluminum (Al)	2022/02/14		99	%	80 - 120
			Total Antimony (Sb)	2022/02/14		103	%	80 - 120
			Total Arsenic (As)	2022/02/14		99	%	80 - 120
			Total Barium (Ba)	2022/02/14		97	%	80 - 120
			Total Beryllium (Be)	2022/02/14		96	%	80 - 120
			Total Bismuth (Bi)	2022/02/14		93	%	80 - 120
			Total Boron (B)	2022/02/14		99	%	80 - 120
			Total Cadmium (Cd)	2022/02/14		103	%	80 - 120
			Total Chromium (Cr)	2022/02/14		99	%	80 - 120
			Total Cobalt (Co)	2022/02/14		103	%	80 - 120
			Total Copper (Cu)	2022/02/14		NC	%	80 - 120
			Total Iron (Fe)	2022/02/14		104	%	80 - 120
			Total Lead (Pb)	2022/02/14		98	%	80 - 120
			Total Manganese (Mn)	2022/02/14		97	%	80 - 120
			Total Molybdenum (Mo)	2022/02/14		103	%	80 - 120
			Total Nickel (Ni)	2022/02/14		100	%	80 - 120
			Total Selenium (Se)	2022/02/14		106	%	80 - 120
			Total Silicon (Si)	2022/02/14		NC	%	80 - 120
			Total Silver (Ag)	2022/02/14		100	%	80 - 120
			Total Strontium (Sr)	2022/02/14		NC	%	80 - 120
			Total Thallium (Tl)	2022/02/14		94	%	80 - 120
			Total Tin (Sn)	2022/02/14		105	%	80 - 120
			Total Titanium (Ti)	2022/02/14		102	%	80 - 120
			Total Uranium (U)	2022/02/14		100	%	80 - 120
			Total Vanadium (V)	2022/02/14		100	%	80 - 120
			Total Zinc (Zn)	2022/02/14		108	%	80 - 120
			Total Zirconium (Zr)	2022/02/14		100	%	80 - 120
A498694	VBA	Spiked Blank	Total Aluminum (Al)	2022/02/14		101	%	80 - 120
			Total Antimony (Sb)	2022/02/14		105	%	80 - 120
			Total Arsenic (As)	2022/02/14		100	%	80 - 120
			Total Barium (Ba)	2022/02/14		99	%	80 - 120
			Total Beryllium (Be)	2022/02/14		98	%	80 - 120
			Total Bismuth (Bi)	2022/02/14		96	%	80 - 120
			Total Boron (B)	2022/02/14		100	%	80 - 120
			Total Cadmium (Cd)	2022/02/14		104	%	80 - 120
			Total Chromium (Cr)	2022/02/14		100	%	80 - 120
			Total Cobalt (Co)	2022/02/14		105	%	80 - 120
			Total Copper (Cu)	2022/02/14		100	%	80 - 120
			Total Iron (Fe)	2022/02/14		102	%	80 - 120
			Total Lead (Pb)	2022/02/14		101	%	80 - 120
			Total Manganese (Mn)	2022/02/14		99	%	80 - 120
			Total Molybdenum (Mo)	2022/02/14		101	%	80 - 120
			Total Nickel (Ni)	2022/02/14		102	%	80 - 120
			Total Selenium (Se)	2022/02/14		103	%	80 - 120
			Total Silicon (Si)	2022/02/14		105	%	80 - 120





**BUREAU  
VERITAS**

Bureau Veritas Job #: C208672  
Report Date: 2022/02/15

Ralmax Group Holdings Ltd.  
Site Location: 460 SLEBBINGS RD  
Your P.O. #: 03-2101  
Sampler Initials: AD

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A498694	VBA	Method Blank	Total Silver (Ag)	2022/02/14		102	%	80 - 120
			Total Strontium (Sr)	2022/02/14		97	%	80 - 120
			Total Thallium (Tl)	2022/02/14		98	%	80 - 120
			Total Tin (Sn)	2022/02/14		103	%	80 - 120
			Total Titanium (Ti)	2022/02/14		102	%	80 - 120
			Total Uranium (U)	2022/02/14		102	%	80 - 120
			Total Vanadium (V)	2022/02/14		100	%	80 - 120
			Total Zinc (Zn)	2022/02/14		110	%	80 - 120
			Total Zirconium (Zr)	2022/02/14		101	%	80 - 120
			Total Aluminum (Al)	2022/02/14	<3.0		ug/L	
			Total Antimony (Sb)	2022/02/14	<0.50		ug/L	
			Total Arsenic (As)	2022/02/14	<0.10		ug/L	
			Total Barium (Ba)	2022/02/14	<1.0		ug/L	
			Total Beryllium (Be)	2022/02/14	<0.10		ug/L	
			Total Bismuth (Bi)	2022/02/14	<1.0		ug/L	
			Total Boron (B)	2022/02/14	<50		ug/L	
			Total Cadmium (Cd)	2022/02/14	<0.010		ug/L	
			Total Chromium (Cr)	2022/02/14	<1.0		ug/L	
			Total Cobalt (Co)	2022/02/14	<0.20		ug/L	
			Total Copper (Cu)	2022/02/14	<0.20		ug/L	
			Total Iron (Fe)	2022/02/14	<5.0		ug/L	
			Total Lead (Pb)	2022/02/14	<0.20		ug/L	
			Total Manganese (Mn)	2022/02/14	<1.0		ug/L	
			Total Molybdenum (Mo)	2022/02/14	<1.0		ug/L	
			Total Nickel (Ni)	2022/02/14	<1.0		ug/L	
			Total Selenium (Se)	2022/02/14	<0.10		ug/L	
			Total Silicon (Si)	2022/02/14	<100		ug/L	
			Total Silver (Ag)	2022/02/14	<0.020		ug/L	
			Total Strontium (Sr)	2022/02/14	<1.0		ug/L	
			Total Thallium (Tl)	2022/02/14	<0.010		ug/L	
			Total Tin (Sn)	2022/02/14	<5.0		ug/L	
			Total Titanium (Ti)	2022/02/14	<5.0		ug/L	
			Total Uranium (U)	2022/02/14	<0.10		ug/L	
			Total Vanadium (V)	2022/02/14	<5.0		ug/L	
			Total Zinc (Zn)	2022/02/14	<5.0		ug/L	
			Total Zirconium (Zr)	2022/02/14	<0.10		ug/L	
A498694	VBA	RPD	Total Aluminum (Al)	2022/02/14	4.9		%	20
			Total Antimony (Sb)	2022/02/14	NC		%	20
			Total Arsenic (As)	2022/02/14	NC		%	20
			Total Barium (Ba)	2022/02/14	2.9		%	20
			Total Beryllium (Be)	2022/02/14	NC		%	20
			Total Bismuth (Bi)	2022/02/14	NC		%	20
			Total Boron (B)	2022/02/14	NC		%	20
			Total Cadmium (Cd)	2022/02/14	NC		%	20
			Total Chromium (Cr)	2022/02/14	NC		%	20
			Total Cobalt (Co)	2022/02/14	NC		%	20
			Total Copper (Cu)	2022/02/14	0.99		%	20
			Total Iron (Fe)	2022/02/14	4.0		%	20
			Total Lead (Pb)	2022/02/14	0.85		%	20
			Total Manganese (Mn)	2022/02/14	NC		%	20
			Total Molybdenum (Mo)	2022/02/14	NC		%	20
			Total Nickel (Ni)	2022/02/14	NC		%	20
			Total Selenium (Se)	2022/02/14	NC		%	20



**BUREAU  
VERITAS**

Bureau Veritas Job #: C208672

Report Date: 2022/02/15

Ralmax Group Holdings Ltd.

Site Location: 460 SLEBBINGS RD

Your P.O. #: 03-2101

Sampler Initials: AD

### QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
A498803	TL9	Matrix Spike	Total Silicon (Si)	2022/02/14	0.14		%	20
			Total Silver (Ag)	2022/02/14	4.7		%	20
			Total Strontium (Sr)	2022/02/14	2.1		%	20
			Total Thallium (Tl)	2022/02/14	NC		%	20
			Total Tin (Sn)	2022/02/14	NC		%	20
			Total Titanium (Ti)	2022/02/14	NC		%	20
			Total Uranium (U)	2022/02/14	NC		%	20
			Total Vanadium (V)	2022/02/14	NC		%	20
			Total Zinc (Zn)	2022/02/14	2.2		%	20
			Total Zirconium (Zr)	2022/02/14	NC		%	20
A498803	TL9	Spiked Blank	Chloride (Cl)	2022/02/14		102	%	80 - 120
			Sulphate (SO4)	2022/02/14		NC	%	80 - 120
A498803	TL9	Method Blank	Chloride (Cl)	2022/02/14		100	%	80 - 120
			Sulphate (SO4)	2022/02/14		102	%	80 - 120
A498803	TL9	RPD	Chloride (Cl)	2022/02/14	<1.0		mg/L	
			Sulphate (SO4)	2022/02/14	<1.0		mg/L	
A500364	BB3	Spiked Blank	Chloride (Cl)	2022/02/14	1.6		%	20
			Chloride (Cl)	2022/02/14	NC		%	20
			Sulphate (SO4)	2022/02/14	0.86		%	20
			pH	2022/02/15		101	%	97 - 103
A500364	BB3	RPD [AOK818-01]	pH	2022/02/15	0.89		%	N/A
A500364	BB3	RPD	pH	2022/02/15	0.50		%	N/A
A500368	BB3	Matrix Spike [AOK818-01]	Alkalinity (Total as CaCO3)	2022/02/15		NC	%	80 - 120
A500368	BB3	Spiked Blank	Alkalinity (Total as CaCO3)	2022/02/15		93	%	80 - 120
A500368	BB3	Method Blank	Alkalinity (PP as CaCO3)	2022/02/15	<1.0		mg/L	
			Alkalinity (Total as CaCO3)	2022/02/15	<1.0		mg/L	
			Bicarbonate (HCO3)	2022/02/15	<1.0		mg/L	
			Carbonate (CO3)	2022/02/15	<1.0		mg/L	
			Hydroxide (OH)	2022/02/15	<1.0		mg/L	
			Alkalinity (PP as CaCO3)	2022/02/15	NC		%	20
			Alkalinity (Total as CaCO3)	2022/02/15	2.2		%	20
A500368	BB3	RPD [AOK818-01]	Bicarbonate (HCO3)	2022/02/15	2.2		%	20
			Carbonate (CO3)	2022/02/15	NC		%	20
			Hydroxide (OH)	2022/02/15	NC		%	20
			Alkalinity (PP as CaCO3)	2022/02/15	NC		%	20
			Alkalinity (Total as CaCO3)	2022/02/15	0.41		%	20
			Bicarbonate (HCO3)	2022/02/15	0.41		%	20
			Carbonate (CO3)	2022/02/15	NC		%	20
A500368	BB3	RPD	Hydroxide (OH)	2022/02/15	NC		%	20
			Conductivity	2022/02/15		100	%	80 - 120
A500369	BB3	Spiked Blank	Conductivity	2022/02/15	<2.0		uS/cm	

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.

Spiked Blank: 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.

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).



BUREAU  
VERITAS

Bureau Veritas Job #: C208672

Report Date: 2022/02/15

Ralmax Group Holdings Ltd.

Site Location: 460 SLEBBINGS RD

Your P.O. #: 03-2101

Sampler Initials: AD

### 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

---

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.







Your P.O. #: VIC3817  
Your Project #: 205.30042.00000  
Your C.O.C. #: 45300

**Attention: Jonathon Risinger**

SLR CONSULTING (CANADA) LTD  
#303-3960 Quadra Street  
VICTORIA, BC  
CANADA V8X 4A3

**Report Date: 2022/02/24**

Report #: R3139000

Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**BUREAU VERITAS JOB #: C210132**

**Received: 2022/02/17, 10:12**

Sample Matrix: Water  
# Samples Received: 8

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Alkalinity @25C (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	8	N/A	2022/02/19	BBY6SOP-00026	SM 23 2320 B m
Chloride/Sulphate by Auto Colourimetry	8	N/A	2022/02/23	BBY6SOP-00011 / BBY6SOP-00017	SM23-4500-Cl/SO <sub>4</sub> -E m
Carbon (DOC) (1, 2)	1	N/A	2022/02/23	AB SOP-00087	MMCW 119 1996 m
Fluoride	8	N/A	2022/02/18	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> ) (3)	1	N/A	2022/02/23	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO <sub>3</sub> )	8	N/A	2022/02/23	BBY WI-00033	Auto Calc
Mercury (Dissolved) by CV (4)	8	2022/02/22	2022/02/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Mercury (Total) by CV	1	2022/02/22	2022/02/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	8	N/A	2022/02/23	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (dissolved) (4)	8	N/A	2022/02/22	BBY7SOP-00002	EPA 6020b R2 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	2022/02/17	2022/02/23	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	1	2022/02/22	2022/02/23	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Nitrogen - Nitrate (as N)	8	N/A	2022/02/19	BBY WI-00033	Auto Calc
Filter and HNO <sub>3</sub> Preserve for Metals	8	N/A	2022/02/17	BBY7 WI-00004	SM 23 3030B m
pH @25°C (5)	8	N/A	2022/02/19	BBY6SOP-00026	SM 23 4500-H+ B m
Total Dissolved Solids (Filt. Residue)	2	2022/02/22	2022/02/23	BBY6SOP-00033	SM 23 2540 C m
Total Dissolved Solids (Filt. Residue)	6	2022/02/23	2022/02/24	BBY6SOP-00033	SM 23 2540 C 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.

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



Your P.O. #: VIC3817  
Your Project #: 205.30042.00000  
Your C.O.C. #: 45300

**Attention: Jonathon Risinger**

SLR CONSULTING (CANADA) LTD  
#303-3960 Quadra Street  
VICTORIA, BC  
CANADA V8X 4A3

**Report Date: 2022/02/24**

Report #: R3139000

Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**BUREAU VERITAS JOB #: C210132**

**Received: 2022/02/17, 10:12**

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) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).

(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.

Encryption Key



**AUTHORIZED REPORT  
RAPPORT AUTORISÉ**

Bureau Veritas

24 Feb 2022 16:51:35

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Veronica Laporte, B.Sc., Supervisor, Project Submissions and Support

Email: Veronica.Laporte@bureauveritas.com

Phone# (604) 734 7276

=====

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For Service Group specific validation please refer to the Validation Signature Page.



BUREAU  
VERITAS

Bureau Veritas Job #: C210132  
Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD  
Client Project #: 205.30042.00000  
Your P.O. #: VIC3817  
Sampler Initials: FP

### RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AOT015			AOT016		AOT017		AOT018		
Sampling Date		2022/02/16 15:20			2022/02/16 12:25		2022/02/16 14:20		2022/02/16 15:05		
COC Number		45300			45300		45300		45300		
	<b>UNITS</b>	<b>SW-1</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW19-01</b>	<b>QC Batch</b>	<b>MW19-02</b>	<b>QC Batch</b>	<b>MW-3S</b>	<b>RDL</b>	<b>QC Batch</b>

#### Calculated Parameters

Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	ONSITE	FIELD	ONSITE	FIELD		ONSITE
Nitrate (N)	mg/L	0.218	0.020	A502233	0.114	A502233	0.583	A502233	<0.020	0.020	A502233

#### Misc. Inorganics

Dissolved Organic Carbon (C)	mg/L	2.4	0.50	A505538							
pH	pH	7.97	N/A	A505568	8.03	A505568	7.80	A505546	8.03	N/A	A505568
Total Dissolved Solids	mg/L	250	10	A506804	470	A505595	350	A506804	240	10	A506804

#### Anions

Alkalinity (PP as CaCO3)	mg/L	<1.0	1.0	A505572	<1.0	A505572	<1.0	A505561	<1.0	1.0	A505572
Alkalinity (Total as CaCO3)	mg/L	150	1.0	A505572	270	A505572	190	A505561	140	1.0	A505572
Bicarbonate (HCO3)	mg/L	180	1.0	A505572	330	A505572	240	A505561	170	1.0	A505572
Carbonate (CO3)	mg/L	<1.0	1.0	A505572	<1.0	A505572	<1.0	A505561	<1.0	1.0	A505572
Dissolved Fluoride (F)	mg/L	<0.050	0.050	A504080	0.099	A504080	<0.050	A504080	0.052	0.050	A504080
Hydroxide (OH)	mg/L	<1.0	1.0	A505572	<1.0	A505572	<1.0	A505561	<1.0	1.0	A505572
Chloride (Cl)	mg/L	10	1.0	A506294	35	A506294	8.7	A506287	22	1.0	A506294
Sulphate (SO4)	mg/L	55	1.0	A506294	110	A506294	100	A506287	36	1.0	A506294

RDL = Reportable Detection Limit

N/A = Not Applicable



BUREAU  
VERITAS

Bureau Veritas Job #: C210132  
Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD  
Client Project #: 205.30042.00000  
Your P.O. #: VIC3817  
Sampler Initials: FP

### RESULTS OF CHEMICAL ANALYSES OF WATER

Bureau Veritas ID		AOT019		AOT020		AOT021		AOT022		
Sampling Date		2022/02/16 11:55		2022/02/16 13:20		2022/02/16 13:45		2022/02/16 14:20		
COC Number		45300		45300		45300		45300		
	<b>UNITS</b>	<b>SB-1</b>	<b>QC Batch</b>	<b>SB-2</b>	<b>QC Batch</b>	<b>SB-3</b>	<b>QC Batch</b>	<b>DUP-A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>										
Filter and HNO3 Preservation	N/A	FIELD	ONSITE	FIELD	ONSITE	FIELD	ONSITE	FIELD		ONSITE
Nitrate (N)	mg/L	0.223	A502233	0.089	A502233	0.178	A502233	0.605	0.020	A502233
<b>Misc. Inorganics</b>										
pH	pH	7.67	A505568	7.56	A505546	7.87	A505568	7.84	N/A	A505568
Total Dissolved Solids	mg/L	190	A505595	320	A506804	550	A506804	340	10	A506804
<b>Anions</b>										
Alkalinity (PP as CaCO <sub>3</sub> )	mg/L	<1.0	A505572	<1.0	A505561	<1.0	A505572	<1.0	1.0	A505572
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	130	A505572	210	A505561	480	A505572	200	1.0	A505572
Bicarbonate (HCO <sub>3</sub> )	mg/L	160	A505572	250	A505561	580	A505572	240	1.0	A505572
Carbonate (CO <sub>3</sub> )	mg/L	<1.0	A505572	<1.0	A505561	<1.0	A505572	<1.0	1.0	A505572
Dissolved Fluoride (F)	mg/L	<0.050	A504049	<0.050	A504080	0.051	A504049	<0.050	0.050	A504080
Hydroxide (OH)	mg/L	<1.0	A505572	<1.0	A505561	<1.0	A505572	<1.0	1.0	A505572
Chloride (Cl)	mg/L	8.5	A506287	24	A506287	18	A506287	8.9	1.0	A506287
Sulphate (SO <sub>4</sub> )	mg/L	49	A506287	42	A506287	50	A506287	93	1.0	A506287
RDL = Reportable Detection Limit										
N/A = Not Applicable										



BUREAU  
VERITAS

Bureau Veritas Job #: C210132

Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD

Client Project #: 205.30042.00000

Your P.O. #: VIC3817

Sampler Initials: FP

### CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		AOT015	AOT016	AOT017	AOT018	AOT019	AOT020		
Sampling Date		2022/02/16 15:20	2022/02/16 12:25	2022/02/16 14:20	2022/02/16 15:05	2022/02/16 11:55	2022/02/16 13:20		
COC Number		45300	45300	45300	45300	45300	45300		
	<b>UNITS</b>	<b>SW-1</b>	<b>MW19-01</b>	<b>MW19-02</b>	<b>MW-3S</b>	<b>SB-1</b>	<b>SB-2</b>	<b>RDL</b>	<b>QC Batch</b>

#### Calculated Parameters

Dissolved Hardness (CaCO <sub>3</sub> )	mg/L	198	402	277	183	172	249	0.50	A502200
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#### Elements

Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019 (1)	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A502568
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#### Dissolved Metals by ICPMS

Dissolved Aluminum (Al)	ug/L	<3.0	<3.0	<3.0	<3.0	3.5	<3.0	3.0	A503750
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A503750
Dissolved Arsenic (As)	ug/L	<0.10	0.38	<0.10	1.63	<0.10	<0.10	0.10	A503750
Dissolved Barium (Ba)	ug/L	10.5	34.0	16.5	30.8	7.6	8.6	1.0	A503750
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A503750
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A503750
Dissolved Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	50	A503750
Dissolved Cadmium (Cd)	ug/L	<0.010	<0.010	<0.010	<0.010	0.013	0.019	0.010	A503750
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A503750
Dissolved Cobalt (Co)	ug/L	<0.20	1.70	<0.20	0.34	<0.20	<0.20	0.20	A503750
Dissolved Copper (Cu)	ug/L	1.07	<0.20	0.97	<0.20	2.09	1.01	0.20	A503750
Dissolved Iron (Fe)	ug/L	<5.0	1060	<5.0	216	<5.0	<5.0	5.0	A503750
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.20	A503750
Dissolved Lithium (Li)	ug/L	<2.0	4.1	<2.0	<2.0	<2.0	<2.0	2.0	A503750
Dissolved Manganese (Mn)	ug/L	<1.0	1560	<1.0	437	<1.0	1.6	1.0	A503750
Dissolved Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	2.9	<1.0	<1.0	1.0	A503750
Dissolved Nickel (Ni)	ug/L	<1.0	3.3	<1.0	<1.0	5.8	4.9	1.0	A503750
Dissolved Selenium (Se)	ug/L	0.24	<0.10	0.25	<0.10	0.21	0.11	0.10	A503750
Dissolved Silicon (Si)	ug/L	4900	7880	5780	7500	4360	6400	100	A503750
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A503750
Dissolved Strontium (Sr)	ug/L	176	483	229	318	149	242	1.0	A503750
Dissolved Thallium (Tl)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A503750
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A503750
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A503750
Dissolved Uranium (U)	ug/L	1.13	4.42	1.12	0.63	0.73	1.16	0.10	A503750
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A503750
Dissolved Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A503750

RDL = Reportable Detection Limit

(1) Matrix spike exceeds acceptance limits due to probable matrix interference.





**CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)**

Bureau Veritas ID		AOT015	AOT016	AOT017	AOT018	AOT019	AOT020		
Sampling Date		2022/02/16 15:20	2022/02/16 12:25	2022/02/16 14:20	2022/02/16 15:05	2022/02/16 11:55	2022/02/16 13:20		
COC Number		45300	45300	45300	45300	45300	45300		
	<b>UNITS</b>	<b>SW-1</b>	<b>MW19-01</b>	<b>MW19-02</b>	<b>MW-3S</b>	<b>SB-1</b>	<b>SB-2</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Zirconium (Zr)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A503750
Dissolved Calcium (Ca)	mg/L	63.7	132	90.9	57.8	55.7	81.6	0.050	A502201
Dissolved Magnesium (Mg)	mg/L	9.56	17.6	12.2	9.39	7.93	11.1	0.050	A502201
Dissolved Potassium (K)	mg/L	0.672	2.30	0.859	0.534	0.505	0.899	0.050	A502201
Dissolved Sodium (Na)	mg/L	8.13	16.7	11.0	8.61	6.60	15.2	0.050	A502201
Dissolved Sulphur (S)	mg/L	19.4	41.4	30.2	12.5	17.1	14.2	3.0	A502201
RDL = Reportable Detection Limit									

**CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)**

Bureau Veritas ID		AOT021	AOT022		
Sampling Date		2022/02/16 13:45	2022/02/16 14:20		
COC Number		45300	45300		
	<b>UNITS</b>	<b>SB-3</b>	<b>DUP-A</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
Dissolved Hardness (CaCO <sub>3</sub> )	mg/L	503	278	0.50	A502200
<b>Elements</b>					
Dissolved Mercury (Hg)	ug/L	<0.0019	<0.0019	0.0019	A502568
<b>Dissolved Metals by ICPMS</b>					
Dissolved Aluminum (Al)	ug/L	6.8	<3.0	3.0	A503750
Dissolved Antimony (Sb)	ug/L	<0.50	<0.50	0.50	A503750
Dissolved Arsenic (As)	ug/L	0.45	<0.10	0.10	A503750
Dissolved Barium (Ba)	ug/L	13.7	16.5	1.0	A503750
Dissolved Beryllium (Be)	ug/L	<0.10	<0.10	0.10	A503750
Dissolved Bismuth (Bi)	ug/L	<1.0	<1.0	1.0	A503750
Dissolved Boron (B)	ug/L	<50	<50	50	A503750
Dissolved Cadmium (Cd)	ug/L	0.032	<0.010	0.010	A503750
Dissolved Chromium (Cr)	ug/L	<1.0	<1.0	1.0	A503750
Dissolved Cobalt (Co)	ug/L	1.14	<0.20	0.20	A503750
Dissolved Copper (Cu)	ug/L	6.78	0.98	0.20	A503750
Dissolved Iron (Fe)	ug/L	40.1	<5.0	5.0	A503750
Dissolved Lead (Pb)	ug/L	<0.20	<0.20	0.20	A503750
Dissolved Lithium (Li)	ug/L	<2.0	<2.0	2.0	A503750
Dissolved Manganese (Mn)	ug/L	1360	<1.0	1.0	A503750
Dissolved Molybdenum (Mo)	ug/L	<1.0	<1.0	1.0	A503750
Dissolved Nickel (Ni)	ug/L	3.4	<1.0	1.0	A503750
Dissolved Selenium (Se)	ug/L	0.35	0.25	0.10	A503750
Dissolved Silicon (Si)	ug/L	8580	5860	100	A503750
Dissolved Silver (Ag)	ug/L	<0.020	<0.020	0.020	A503750
Dissolved Strontium (Sr)	ug/L	451	226	1.0	A503750
Dissolved Thallium (Tl)	ug/L	<0.010	<0.010	0.010	A503750
Dissolved Tin (Sn)	ug/L	<5.0	<5.0	5.0	A503750
Dissolved Titanium (Ti)	ug/L	<5.0	<5.0	5.0	A503750
Dissolved Uranium (U)	ug/L	1.58	1.13	0.10	A503750
Dissolved Vanadium (V)	ug/L	<5.0	<5.0	5.0	A503750
Dissolved Zinc (Zn)	ug/L	10.9	<5.0	5.0	A503750
Dissolved Zirconium (Zr)	ug/L	<0.10	<0.10	0.10	A503750
RDL = Reportable Detection Limit					



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Bureau Veritas Job #: C210132

Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD

Client Project #: 205.30042.00000

Your P.O. #: VIC3817

Sampler Initials: FP

### CSR DISSOLVED METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		AOT021	AOT022		
Sampling Date		2022/02/16 13:45	2022/02/16 14:20		
COC Number		45300	45300		
	<b>UNITS</b>	<b>SB-3</b>	<b>DUP-A</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Calcium (Ca)	mg/L	134	91.2	0.050	A502201
Dissolved Magnesium (Mg)	mg/L	40.9	12.3	0.050	A502201
Dissolved Potassium (K)	mg/L	1.40	0.875	0.050	A502201
Dissolved Sodium (Na)	mg/L	25.2	11.1	0.050	A502201
Dissolved Sulphur (S)	mg/L	17.3	30.3	3.0	A502201
RDL = Reportable Detection Limit					



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Bureau Veritas Job #: C210132  
Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD  
Client Project #: 205.30042.00000  
Your P.O. #: VIC3817  
Sampler Initials: FP

### CSR TOTAL METALS IN WATER WITH CV HG (WATER)

Bureau Veritas ID		AOT015		
Sampling Date		2022/02/16 15:20		
COC Number		45300		
	<b>UNITS</b>	<b>SW-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO <sub>3</sub> )	mg/L	200	0.50	A502223
<b>Elements</b>				
Total Mercury (Hg)	ug/L	<0.0019	0.0019	A505082
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	ug/L	5.0	3.0	A505049
Total Antimony (Sb)	ug/L	<0.50	0.50	A505049
Total Arsenic (As)	ug/L	<0.10	0.10	A505049
Total Barium (Ba)	ug/L	10.4	1.0	A505049
Total Beryllium (Be)	ug/L	<0.10	0.10	A505049
Total Bismuth (Bi)	ug/L	<1.0	1.0	A505049
Total Boron (B)	ug/L	<50	50	A505049
Total Cadmium (Cd)	ug/L	<0.010	0.010	A505049
Total Chromium (Cr)	ug/L	<1.0	1.0	A505049
Total Cobalt (Co)	ug/L	<0.20	0.20	A505049
Total Copper (Cu)	ug/L	1.13	0.50	A505049
Total Iron (Fe)	ug/L	<10	10	A505049
Total Lead (Pb)	ug/L	<0.20	0.20	A505049
Total Lithium (Li)	ug/L	<2.0	2.0	A505049
Total Manganese (Mn)	ug/L	<1.0	1.0	A505049
Total Molybdenum (Mo)	ug/L	<1.0	1.0	A505049
Total Nickel (Ni)	ug/L	<1.0	1.0	A505049
Total Phosphorus (P)	ug/L	<10	10	A505049
Total Selenium (Se)	ug/L	0.22	0.10	A505049
Total Silicon (Si)	ug/L	4860	100	A505049
Total Silver (Ag)	ug/L	<0.020	0.020	A505049
Total Strontium (Sr)	ug/L	176	1.0	A505049
Total Thallium (Tl)	ug/L	<0.010	0.010	A505049
Total Tin (Sn)	ug/L	<5.0	5.0	A505049
Total Titanium (Ti)	ug/L	<5.0	5.0	A505049
Total Uranium (U)	ug/L	1.16	0.10	A505049
Total Vanadium (V)	ug/L	<5.0	5.0	A505049
Total Zinc (Zn)	ug/L	<5.0	5.0	A505049
RDL = Reportable Detection Limit				



**CSR TOTAL METALS IN WATER WITH CV HG (WATER)**

Bureau Veritas ID		AOT015		
Sampling Date		2022/02/16 15:20		
COC Number		45300		
	<b>UNITS</b>	<b>SW-1</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zirconium (Zr)	ug/L	<0.10	0.10	A505049
Total Calcium (Ca)	mg/L	64.0	0.050	A502451
Total Magnesium (Mg)	mg/L	9.68	0.050	A502451
Total Potassium (K)	mg/L	0.689	0.050	A502451
Total Sodium (Na)	mg/L	8.32	0.050	A502451
Total Sulphur (S)	mg/L	18.6	3.0	A502451
RDL = Reportable Detection Limit				





### GENERAL COMMENTS

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

Package 1	3.7°C
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Results relate only to the items tested.

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Bureau Veritas Job #: C210132

Report Date: 2022/02/24

## QUALITY ASSURANCE REPORT

SLR CONSULTING (CANADA) LTD  
Client Project #: 205.30042.00000  
Your P.O. #: VIC3817  
Sampler Initials: FP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A502568	Dissolved Mercury (Hg)	2022/02/22	76 (1)	80 - 120	97	80 - 120	<0.0019	ug/L	NC	20
A503750	Dissolved Aluminum (Al)	2022/02/22	99	80 - 120	101	80 - 120	<3.0	ug/L	NC	20
A503750	Dissolved Antimony (Sb)	2022/02/22	101	80 - 120	101	80 - 120	<0.50	ug/L	NC	20
A503750	Dissolved Arsenic (As)	2022/02/22	105	80 - 120	100	80 - 120	<0.10	ug/L	NC	20
A503750	Dissolved Barium (Ba)	2022/02/22	98	80 - 120	97	80 - 120	<1.0	ug/L	2.2	20
A503750	Dissolved Beryllium (Be)	2022/02/22	95	80 - 120	98	80 - 120	<0.10	ug/L	NC	20
A503750	Dissolved Bismuth (Bi)	2022/02/22	95	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
A503750	Dissolved Boron (B)	2022/02/22	103	80 - 120	100	80 - 120	<50	ug/L	NC	20
A503750	Dissolved Cadmium (Cd)	2022/02/22	99	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
A503750	Dissolved Chromium (Cr)	2022/02/22	96	80 - 120	97	80 - 120	<1.0	ug/L	NC	20
A503750	Dissolved Cobalt (Co)	2022/02/22	94	80 - 120	98	80 - 120	<0.20	ug/L	NC	20
A503750	Dissolved Copper (Cu)	2022/02/22	91	80 - 120	97	80 - 120	<0.20	ug/L	2.8	20
A503750	Dissolved Iron (Fe)	2022/02/22	99	80 - 120	101	80 - 120	<5.0	ug/L	NC	20
A503750	Dissolved Lead (Pb)	2022/02/22	98	80 - 120	100	80 - 120	<0.20	ug/L	NC	20
A503750	Dissolved Lithium (Li)	2022/02/22	94	80 - 120	96	80 - 120	<2.0	ug/L	NC	20
A503750	Dissolved Manganese (Mn)	2022/02/22	97	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
A503750	Dissolved Molybdenum (Mo)	2022/02/22	106	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
A503750	Dissolved Nickel (Ni)	2022/02/22	94	80 - 120	99	80 - 120	<1.0	ug/L	NC	20
A503750	Dissolved Selenium (Se)	2022/02/22	109	80 - 120	99	80 - 120	<0.10	ug/L	3.1	20
A503750	Dissolved Silicon (Si)	2022/02/22	102	80 - 120	106	80 - 120	<100	ug/L	0.78	20
A503750	Dissolved Silver (Ag)	2022/02/22	97	80 - 120	97	80 - 120	<0.020	ug/L	NC	20
A503750	Dissolved Strontium (Sr)	2022/02/22	NC	80 - 120	97	80 - 120	<1.0	ug/L	1.4	20
A503750	Dissolved Thallium (Tl)	2022/02/22	98	80 - 120	99	80 - 120	<0.010	ug/L	NC	20
A503750	Dissolved Tin (Sn)	2022/02/22	99	80 - 120	98	80 - 120	<5.0	ug/L	NC	20
A503750	Dissolved Titanium (Ti)	2022/02/22	105	80 - 120	104	80 - 120	<5.0	ug/L	NC	20
A503750	Dissolved Uranium (U)	2022/02/22	102	80 - 120	106	80 - 120	<0.10	ug/L	0.25	20
A503750	Dissolved Vanadium (V)	2022/02/22	101	80 - 120	100	80 - 120	<5.0	ug/L	NC	20
A503750	Dissolved Zinc (Zn)	2022/02/22	99	80 - 120	109	80 - 120	<5.0	ug/L	NC	20
A503750	Dissolved Zirconium (Zr)	2022/02/22	105	80 - 120	98	80 - 120	<0.10	ug/L	NC	20
A504049	Dissolved Fluoride (F)	2022/02/18	104	80 - 120	106	80 - 120	<0.050	mg/L	NC	20
A504080	Dissolved Fluoride (F)	2022/02/18	104	80 - 120	106	80 - 120	<0.050	mg/L	NC	20

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Bureau Veritas Job #: C210132

Report Date: 2022/02/24

## QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD

Client Project #: 205.30042.00000

Your P.O. #: VIC3817

Sampler Initials: FP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A505049	Total Aluminum (Al)	2022/02/23	107	80 - 120	104	80 - 120	<3.0	ug/L	2.1	20
A505049	Total Antimony (Sb)	2022/02/23	105	80 - 120	103	80 - 120	<0.50	ug/L	NC	20
A505049	Total Arsenic (As)	2022/02/23	107	80 - 120	103	80 - 120	<0.10	ug/L	3.1	20
A505049	Total Barium (Ba)	2022/02/23	106	80 - 120	103	80 - 120	<1.0	ug/L	1.0	20
A505049	Total Beryllium (Be)	2022/02/23	104	80 - 120	104	80 - 120	<0.10	ug/L	NC	20
A505049	Total Bismuth (Bi)	2022/02/23	98	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
A505049	Total Boron (B)	2022/02/23	106	80 - 120	105	80 - 120	<50	ug/L	NC	20
A505049	Total Cadmium (Cd)	2022/02/23	104	80 - 120	104	80 - 120	<0.010	ug/L	12	20
A505049	Total Chromium (Cr)	2022/02/23	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20
A505049	Total Cobalt (Co)	2022/02/23	98	80 - 120	100	80 - 120	<0.20	ug/L	NC	20
A505049	Total Copper (Cu)	2022/02/23	96	80 - 120	99	80 - 120	<0.50	ug/L	3.6	20
A505049	Total Iron (Fe)	2022/02/23	102	80 - 120	104	80 - 120	<10	ug/L	0.30	20
A505049	Total Lead (Pb)	2022/02/23	101	80 - 120	103	80 - 120	<0.20	ug/L	NC	20
A505049	Total Lithium (Li)	2022/02/23	103	80 - 120	105	80 - 120	<2.0	ug/L	NC	20
A505049	Total Manganese (Mn)	2022/02/23	NC	80 - 120	102	80 - 120	<1.0	ug/L	0.71	20
A505049	Total Molybdenum (Mo)	2022/02/23	111	80 - 120	105	80 - 120	<1.0	ug/L	NC	20
A505049	Total Nickel (Ni)	2022/02/23	98	80 - 120	101	80 - 120	<1.0	ug/L	NC	20
A505049	Total Phosphorus (P)	2022/02/23	111	80 - 120	107	80 - 120	<10	ug/L		
A505049	Total Selenium (Se)	2022/02/23	109	80 - 120	104	80 - 120	<0.10	ug/L	0.91	20
A505049	Total Silicon (Si)	2022/02/23	NC	80 - 120	111	80 - 120	<100	ug/L	0.49	20
A505049	Total Silver (Ag)	2022/02/23	102	80 - 120	101	80 - 120	<0.020	ug/L	NC	20
A505049	Total Strontium (Sr)	2022/02/23	NC	80 - 120	103	80 - 120	<1.0	ug/L	1.3	20
A505049	Total Thallium (Tl)	2022/02/23	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20
A505049	Total Tin (Sn)	2022/02/23	102	80 - 120	103	80 - 120	<5.0	ug/L	NC	20
A505049	Total Titanium (Ti)	2022/02/23	105	80 - 120	106	80 - 120	<5.0	ug/L	NC	20
A505049	Total Uranium (U)	2022/02/23	107	80 - 120	105	80 - 120	<0.10	ug/L	NC	20
A505049	Total Vanadium (V)	2022/02/23	105	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
A505049	Total Zinc (Zn)	2022/02/23	101	80 - 120	102	80 - 120	<5.0	ug/L	NC	20
A505049	Total Zirconium (Zr)	2022/02/23	109	80 - 120	104	80 - 120	<0.10	ug/L	NC	20
A505082	Total Mercury (Hg)	2022/02/22	99	80 - 120	99	80 - 120	<0.0019	ug/L	5.5	20
A505538	Dissolved Organic Carbon (C)	2022/02/23	106	80 - 120	113	80 - 120	<0.50	mg/L	1.2	20



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Bureau Veritas Job #: C210132

Report Date: 2022/02/24

## QUALITY ASSURANCE REPORT(CONT'D)

SLR CONSULTING (CANADA) LTD  
Client Project #: 205.30042.00000  
Your P.O. #: VIC3817  
Sampler Initials: FP

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
A505546	pH	2022/02/19			101	97 - 103			3.0	N/A
A505561	Alkalinity (PP as CaCO <sub>3</sub> )	2022/02/19					<1.0	mg/L	NC	20
A505561	Alkalinity (Total as CaCO <sub>3</sub> )	2022/02/19			93	80 - 120	<1.0	mg/L	0.23	20
A505561	Bicarbonate (HCO <sub>3</sub> )	2022/02/19					<1.0	mg/L	0.23	20
A505561	Carbonate (CO <sub>3</sub> )	2022/02/19					<1.0	mg/L	NC	20
A505561	Hydroxide (OH)	2022/02/19					<1.0	mg/L	NC	20
A505568	pH	2022/02/19			101	97 - 103			0.56	N/A
A505572	Alkalinity (PP as CaCO <sub>3</sub> )	2022/02/19					<1.0	mg/L	NC	20
A505572	Alkalinity (Total as CaCO <sub>3</sub> )	2022/02/19	NC	80 - 120	93	80 - 120	<1.0	mg/L	3.2	20
A505572	Bicarbonate (HCO <sub>3</sub> )	2022/02/19					<1.0	mg/L	3.2	20
A505572	Carbonate (CO <sub>3</sub> )	2022/02/19					<1.0	mg/L	NC	20
A505572	Hydroxide (OH)	2022/02/19					<1.0	mg/L	NC	20
A505595	Total Dissolved Solids	2022/02/23	94	80 - 120	97	80 - 120	<10	mg/L	6.9	20
A506287	Chloride (Cl)	2022/02/23	NC	80 - 120	103	80 - 120	<1.0	mg/L		
A506287	Sulphate (SO <sub>4</sub> )	2022/02/23	NC	80 - 120	104	80 - 120	<1.0	mg/L	2.3	20
A506294	Chloride (Cl)	2022/02/23	90	80 - 120	102	80 - 120	<1.0	mg/L		
A506294	Sulphate (SO <sub>4</sub> )	2022/02/23	NC	80 - 120	105	80 - 120	<1.0	mg/L	0.75	20
A506804	Total Dissolved Solids	2022/02/24	NC	80 - 120	97	80 - 120	<10	mg/L	6.7	20

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.

Spiked Blank: 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.

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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Bureau Veritas Job #: C210132

Report Date: 2022/02/24

SLR CONSULTING (CANADA) LTD

Client Project #: 205.30042.00000

Your P.O. #: VIC3817

Sampler Initials: FP

### VALIDATION SIGNATURE PAGE

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

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David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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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.





## Custody Tracking Form



W45300-H

Please use this form for custody tracking when submitting the work instructions via eCOC (electronic Chain of Custody). Please ensure your form has a barcode or a Bureau Veritas eCOC confirmation number in the top right hand side. This number links your electronic submission to your samples. This form should be placed in the cooler with your samples.

First Sample: SW-1  
Last Sample: DUP-A  
Sample Count: 8

Relinquished By				Received By			
Forest Pimm		Date	2022/02/17	Sarah L.		Date	2022/02/17
		Time (24 HR)	09:30			Time (24 HR)	10:12
		Date				Date	
		Time (24 HR)				Time (24 HR)	
		Date				Date	
		Time (24 HR)				Time (24 HR)	

Unless otherwise agreed to, submissions and use of services are governed by Bureau Veritas' standard terms and conditions which can be found at [www.bvna.com](http://www.bvna.com).

### Triage Information

Sampled By (Print)

Forest Pimm

# of Coolers/Pkgs:

1

Rush ☐Immediate Test ☐Food Residue ☐Micro ☐Food Chemistry ☐

### \*\*\* LABORATORY USE ONLY \*\*\*

Received At

Lab Comment

Labeled By

Verified By



C210132\_COC

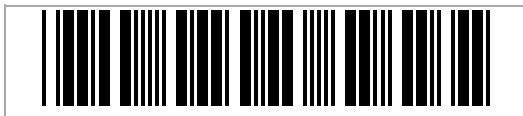
Custody Seal		Cooling Media	Temperature °C		
Present (Y/N)	Intact (Y/N)	Present (Y/N)	1	2	3
N	N	Y	2	4	5
Drinking Water Metals Preservation Check Done (Circle)			YES	NO	

COR FCD-00383/3

Page 1 of 1



eCOC: W45300



Project Information: C210132  
Job Received: 2022/02/17 10:12  
Results Required By: 2022/02/25 10:00  
Expected Arrival: 2022/02/17 10:00  
Submitted By: Forest Pimm  
Submitted To: Victoria-Environmental Services

**Invoice Information**

Attn: Jonathon Risinger  
SLR CONSULTING (CANADA) LTD  
#303-3960 Quadra Street  
VICTORIA, BC, V8X 4A3  
Email to:  
jrisinger@slrconsulting.com

**Report Information**

Attn: Jonathon Risinger  
SLR CONSULTING (CANADA) LTD  
#303-3960 Quadra Street  
VICTORIA, BC, V8X 4A3  
Email to:  
jrisinger@slrconsulting.com  
fpimm@slrconsulting.com

**Project Information**

Quote #: C10408  
PO/AFE#: VIC3817  
Project #: 205.30042.00000  
Site Location:

**Analytical Summary**

A: 2022/02/25 10:00

Client Sample ID	Clnt Ref	Sampling Date/Time	Matrix	#Cont	CSR Dissolved Metals in Water with CV Hg	CSR Total Metals in Water with CV Hg	Anion Package - Water	Alkalinity @25C (pp, total), CO <sub>3</sub> ,HCO <sub>3</sub> ,OH	Carbon (DOC)	PH @25°C	Total Dissolved Solids (Filt. Residue)	Set Number
SW-1	1	2022/02/16 15:20	SURFACE WATER	8	A	A	A	A	A	A	A	1
MW19-01	2	2022/02/16 12:25	GROUND WATER	5	A		A	A		A	A	2
MW19-02	3	2022/02/16 14:20	GROUND WATER	5	A		A	A		A	A	2
MW-3S	4	2022/02/16 15:05	GROUND WATER	5	A		A	A		A	A	2
SB-1	5	2022/02/16 11:55	WATER	5	A		A	A		A	A	2
SB-2	6	2022/02/16 13:20	WATER	5	A		A	A		A	A	2
SB-3	7	2022/02/16 13:45	WATER	5	A		A	A		A	A	2
DUP-A	8	2022/02/16 14:20	GROUND WATER	5	A		A	A		A	A	2

Deadlines are estimates only and are subject to change. Please refer to your Job Confirmation report for final due dates.

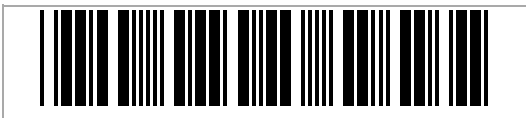
**Submission Information**

# of Samples: 8

Details: Anion Package - report only chloride, fluoride, nitrate, sulfate  
Dissolved Metals Package - include calcium, magnesium, manganese, potassium, sodium



eCOC: W45300



Project Information: C210132  
Job Received: 2022/02/17 10:12  
Results Required By: 2022/02/25 10:00  
Expected Arrival: 2022/02/17 10:00  
Submitted By: Forest Pimm  
Submitted To: Victoria-Environmental Services

### Sample Set Listing

Set 1 (1 sample)	Set 2 (7 samples)
SW-1	MW19-01 MW19-02 MW-3S SB-1 SB-2 SB-3 DUP-A



# APPENDIX B BIOTIC LIGAND MODEL RESULTS

## 2022 Q1 Post-Closure Environmental Monitoring Report

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

## Acute Copper Biotic Ligand Model (BLM) for Aquatic Life

British Columbia Copper BLM Software Version 1.11  
(Based on Windward BLM Version 3.40.2.45)

For the following calculation, the BLM is used in conjunction with acceptable acute toxicity data for copper.

BLM Cu toxicity values normalized to chemistry found in the file:  
C:\Users\fpimm\OneDrive - SLR Consulting Limited\Desktop\BLM\_2022-Q1.blm

### Site Characteristics:

Site Name	Sample Name	Temp. C	pH	DOC mg C/L	HA %	Alkalinity mg/L CaCO3
SW-1	C210132_AOT015	6	7.9	2.4	10	150

Site Name	Sample Name	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SO4 mg/L	Cl mg/L
SW-1	C210132_AOT015	63.7	9.56	8.13	0.672	55	10

\*The lower limit of this parameter was used in the model because input value was too low.

\*\*The upper limit of this parameter was used in the model because input value was too high.

### Aquatic Life Guideline:

#	Site Name	Sample Name	Copper Concentration (ug/L)	Acute Guideline (ug/L)
1	SW-1	C210132_AOT015	1.07	8.5

### Parameter Limits:



Parameter	Units	Lower Limit	Upper Limit
-----			
Temp.	C	4.4	27
pH		5	9
DOC	mg C/L	0.05	20
HA	%	0.01	99
Ca	mg/L	2.2	72.94
Mg	mg/L	0.58	18.4
Na	mg/L	0.86	70.97
K	mg/L	0.59	156
SO4	mg/L	0.5	1320
Cl	mg/L	0.2	119.8
Alkalinity	mg/L CaCO3	3	160

## Chronic Copper Biotic Ligand Model (BLM) for Aquatic Life

British Columbia Copper BLM Software Version 1.11  
(Based on Windward BLM Version 3.40.2.45)

For the following calculation, the BLM is used in conjunction with acceptable chronic toxicity data for copper.

BLM Cu toxicity values normalized to chemistry found in the file:  
C:\Users\fpimm\OneDrive - SLR Consulting Limited\Desktop\BLM\_2022-Q1.blm

### Site Characteristics:

Site Name	Sample Name	Temp. C	pH	DOC mg C/L	HA %	Alkalinity mg/L CaCO3
SW-1	C210132_AOT015	6	7.9	2.4	10	150

Site Name	Sample Name	Ca mg/L	Mg mg/L	Na mg/L	K mg/L	SO4 mg/L	Cl mg/L
SW-1	C210132_AOT015	63.7	9.56	8.13	0.672	55	10

\*The lower limit of this parameter was used in the model because input value was too low.

\*\*The upper limit of this parameter was used in the model because input value was too high.

### Aquatic Life Guideline:

#	Site Name	Sample Name	Copper Concentration (ug/L)	Chronic Guideline (ug/L)
1	SW-1	C210132_AOT015	1.07	1.4

### Parameter Limits:

Parameter	Units	Lower Limit	Upper Limit
-----			
Temp.	C	4.4	27
pH		5	9
DOC	mg C/L	0.05	20
HA	%	0.01	99
Ca	mg/L	2.2	72.94
Mg	mg/L	0.58	18.4
Na	mg/L	0.86	70.97
K	mg/L	0.59	156
SO4	mg/L	0.5	1320
Cl	mg/L	0.2	119.8
Alkalinity	mg/L CaCO3	3	160





## APPENDIX C PIPER PLOT

### **2022 Q1 Post-Closure Environmental Monitoring Report**

Ralmax Ventures Ltd.

460 Stebbings Road, Shawnigan Lake, BC

SLR Project No: 205.30042.00000

